THE SOCIO-ECONOMIC IMPACT OF THE LESOTHO HIGHLANDS WATER PROJECT RESETTLEMENT PROGRAMME AT MAKHOAKHOENG

by

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Declaration

I declare that the thesis hereby submitted by me for the degree Philosophiae Doctor (Sociology) at the University of the Free State is my own independent work and has not previously been submitted by me at another university. All sources referred to in this study have been duly acknowledged. I furthermore cede copyright of the thesis in favour of the University of the Free State.

Mampho N. Kotelo-Molaoa

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List of Acronyms and Abbreviations

ACP	African- Caribbean Pacific
AGOA	African Growth Opportunities Act
ARIs	Acute Respiratory Infections
BOS	Bureau of Statistics
CBA	Cost Benefit Analysis
CBD	Convention on Biological Diversity
CBOs	Community Based Organisations
CCF	Community Conservation Forum
CIDA	Canadian International Development Agency
CLCs	Community Liaison Committees
COP	Conference of the Parties
CRTT	Compensation and Resettlement Task Team
CSIR	Council for Scientific and Industrial Research
CSW	Commission on the Status of Women
CWIQ	Core Welfare Indicators Questionnaire
CYJV	Yangtze Joint Venture
DAP	Dam Affected People
DAPA	Dam Affected People Association
DDP	Dams and Development Project
DRD	Declaration on the Right to Development
DRWS	Department of Rural Water Supply
DWA	Department of Water Affairs
EAP	Environment Action Plans
EDF	Environmental Defense Fund
EGAT	Electricity Generating Authority of Thailand
EIA	Environmental Impact Assessment
EIRR	Economic Internal Rate of Return
EIT	Economies In Transition
ESSG	Environment and Social Services Group
EU	European Union
FAO	Food and Agricultural Organisation
FIVAS	International Water and Forest Studies- Norway
FOB	Field Operations Branch
FOTs	Field Operations Teams
FPIC	Free, Prior Informed Consent
GDP	Gross Domestic Product
GEF	Global Environment Facility
GEM	Group on Environmental Monitoring
GNI	Gross National Income
GNP	Gross National Product
GoL	Government of Lesotho
HDI	Human Development Index
HIV/AIDS	Human Immunodeficiency Virus/ Acquired Immuno Deficiency Syndrome
HPI	Human Poverty Index
I&APs	Interested and Affected Parties

IA	Impact Assessment
IBRD	International Bank for Reconstruction and Development
IDA	International Development Association
IRN	International Rivers Network
ISA	Initial Social Assessment
I UCN	International Union for the Conservation of Nature & Natural Resources
IWGIA	International Working Group for Indigenous Affairs
JPI	Johannesburg Plan of Implementation
kWh	kiloWatt-hours
LCN	Lesotho Council of NGOs
LDC	Least Developed Countries
LEC	Lesotho Electricity Corporation
LFCD	Lesotho Fund for Community Development
LHDA	Lesotho Highlands Development Authority
LHLDC	Lesotho Housing and Land Development Corporation
LHWC	Lesotho Highlands Water Commission
LHWP	Lesotho Highlands Water Project
LLEs	Local Legal Entities
MAB	National Movement of Dam-Affected People
MDBs	Multi Development Banks
MDGs	Millennium Development Goals
MoA	Ministry of Agriculture
MoHSW	Ministry of Health and Social Welfare
MoU	Memorandum of Understanding
MW	Mega Watts
NAPAs	National Adaptation Programmes of Action
NAWISA	Network for advocacy on Water Issues Southern Africa
NES	National Environment Secretariat
NGOs	Non-Governmental Organisations
NWRMP	National Water Resources Management Policy
O & M	Operation and Maitenance
OAS	Organisation of American States
OECD	Organization for Economic Co-operation and Development
OMVS	The organization pour la Mise en Valeur du fleuve Senegal
OPEC	Organisation of Oil Producing and Exporting Countries
ORPS	Orange River Planning Study
PAP	Project Affected People
PIC	Prior Informed Consent
PoE	Panel of Experts
PRB	Population Reference Bureau
PrepCom	Preparation Committee
PTC	Production Through Conservation
RSA	Republic of South Africa
RSAP	Regional Strategic Action Plan
RWESA	Rivers Watch East and South East Asia
SADC	Southern African Development Community
SAIEA	Southern African Institute of Environmental Assessments
SARDC	Southern African Research Documentation Centre
SARP	South Asia Solidarity for Rivers and Peoples

SEEDCO	Senqu Engineers, Environment and Development Consultants
SIA	Social Impact Assessment
STDs	Sexually Transmitted Diseases
STIs	Sexually Transmitted Infections
SWaCAP	Soil and Water Conservation and Agro- forestry
TRIPS	Trade Related Intellectual Property Rights
TV	Television
UK	United Kingdom
UN	United Nations
UNAIDS	United Nations AIDS.
UNCED	United Nations Conference on Environment and Development
UNDP	United Nations Development Programme
UNECE	United Nations Economic Commission for Europe
UNEP	United Nations Environment Programme
UNICEF	United Nations Children Fund
UNRISD	United Nations Research Institute for Social Development
USA	United States of America
VIP	Ventilated Improved Pit
WASA	Water and Sewerage Authority
WCD	World Commission on Dams
WEHAB	Water, Energy, Health, Agriculture and Biodiversity
WFP	World Food Programme
WHO	World Health Organisation
WID	Women In Development
WRI	World Resources Institute
WSSD	World Summit on sustainable Development
WTO	World Trade Organisation
ZRA	Zambezi River Authority

Abstract

Large dams are constructed for irrigation, generation of hydroelectricity, consumption and so forth. In the case of Lesotho, the LHWP was constructed with the sole purpose of selling water to South Africa in order to earn royalties and to generate hydroelectricity. Although a number of factors are used to justify the construction of large dams, worldwide experience has shown that the consequences emanating from their construction are sometimes irreversible and painful like having to be resettled.

This study therefore sought to establish the extent of the impacts emanating from the LHWP Resettlement Programme at Makhoakhoeng, whether the standard of living of resettlees as measured in terms of access to services has improved or not, the extent of their participation in the resettlement programme, and their perception on their standard of living.

The specific study objectives were to:

i) determine the socio-economic impacts of the resettlement on the resettled communities;

ii) elicit the perceptions of the displaced people about their participation in resettlement programme decision making;

iii) evaluate the adequacy of the compensation and resettlement packages; and

iv) ascertain the level of satisfaction of the resettlees with the resettlement programme.

A combination of research techniques was used to collect both the qualitative and the quantitative data. Data collection instruments employed were:

i) ***A literature review*** was undertaken to provide background information to the problem statement, the design of the methodology, and also on the theories and other factors used to justify the construction of large dams. Perusal of the existing literature also led to a deeper understanding of the impacts of large dams, international experiences and reaction towards construction of large dams and

Lesotho's experience regarding the construction of large dams.

ii) ***Key informants interviews*** were conducted with selected individuals who in one way or another were key in terms of implementing the resettlement programme at Makhoakhoeng.

iii) ***A questionnaire survey*** was conducted with the households who came from Molika-Liko and were resettled at Makhoakhoeng.

iv) ***A focus group discussion*** was held with some of the resettlees.

Information collected through filling in the questionnaire was keyed into the micro-computer network system using Microsoft Excel to produce graphs and tables.

The data collected through key informants, special cases and focus group discussions were collated and written into descriptive reports, i.e., summarised field discussion records.

The LHWP Resettlement Programme at Makhoakhoeng has resulted in both positive and the negative impacts. Furthermore, the study has concluded that there is a need to:

i) engage with all the stakeholders affected by involuntary resettlement through an open and transparent public participation process

ii) pay attention to the identification of more sustainable means of livelihoods

iii) conduct SIAs that can point to those intangible aspects of resettlement

iv) put in place an appeal system that is affordable and accessible to people who are dissatisfied with the resettlement package

v) present resettlees with information on each of the options so as to enable them to make informed decisions

vi) honour promises in order to build trust with the resettlees.

The following recommendations are being made for future resettlement programmes:

i) Change the mindset of those charged with the management of resettlement programmes so that they are more empathetic towards resettlees

ii) Reform institutions within the water sector

iii) Adopt a multidisciplinary approach in resettlement programmes

iv) Differentiate resettlees into subgroups

v) Engage in an open and transparent public participation process

vi) Conduct SIAs with a monitoring and evaluation component

vii) Identify sustainable means of livelihoods for the resettlees

viii) Compensate affected people for loss of access to common property.

Opsomming

Groot damme word vir doeleindes van besproeiing, die opwek van hidro-elektrisiteit, waterverbruik, ensovoorts opgerig. Die LHWP in Lesotho is gebou met die uitsluitlike doel om water aan Suid-Afrika te verkoop om tantieme te verdien en om hidro-elekrisiteit op te wek. Hoewel daar ‘n aantal faktore gebruik word om die konstruksie van groot damme te regverdig, het ervaring van oor die wêreld geleer dat die gevolge van sodanige konstruksies soms onomkeerbaar en pynlik is, soos om hervestig te word.

Aldus het hierdie studie ten doel gehad die bepaling van die omvang van die impak voortspruitend uit die LHWP Hervestigingsprojek in Makhoakhoeng en of hervestigdes se lewenstandaard - soos gemeet aan die toegang tot dienste - verbeter het al dan nie, asook die omvang van hul deelname aan die hervestigingsprogram en hul persepsies van hul lewenstandaard.

Die spesifieke studiedoelwitte was om:

i) die sosio-ekonomiese impak van die hervestiging op die hervestigde gemeenskappe te bepaal;

ii) die persepsies van die ontworteldes omtrent hul deelname aan die besluitneming omtrent die hervestigingsprogram bloot te lê;

iii) die toereikendheid van die kompensasie- en hervestigingspakette te evalueer; en

iv) die mate van tevredenheid van die hervestigdes met die hervestigingsprogram vas te stel.

‘n Kombinasie van navorsingstegnieke is gebruik om sowel kwalitatiewe as kwantitatiewe data te bekom. Die volgende data-insamelingsinstrumente is gebruik:

i) ***‘n Literatuuroorsig*** om agtergrondinligting te verskaf vir die probleemstelling, vir die metodologie-ontwerp, asook omtrent die teorieë en ander faktore wat gebruik word om die konstruksie van groot damme te regverdig. ‘n Oorsig van die bestaande literatuur het gelei tot ‘n meer grondige begrip van die impak van groot damme, internasionale ervarings en reaksies op die konstruksie van groot

damme en Lesotho se ervaring ten opsigte van die oprigting van groot damme.

ii) ***Onderhoude met sleutelinformante:*** onderhoude met geselekteerde individue wat op die een of ander wyse ‘n sleutelrol gespeel het in die implementering van die hervestigingsprogram in Makhoakhoeng.

iii) ***‘n Vraelysopname*** onder die huishoudings afkomstig van Molika-Liko en in Makhoakhoeng hervestig.

iv) ***Fokusgroeponderhoude*** met sommige van die hervestigdes.

Die inligting, by wyse van die vraelyste ingesamel, is in die mikrorekenaarnetwerkstelsel ingesleutel en Microsoft Excel is gebruik vir die daarstelling van grafieke en tabelle.

Die data bekom vanaf die sleutelinformante, spesiale gevalle en fokusgroepbesprekings is gekollasioneer en in beskrywende verslae weergegee, dit wil sê, opgesomde veldbesprekingsrekords.

Die LHWP Hervestigingsprogram in Makhoakhoeng het positiewe en negatiewe gevolge. Die studie identifiseer verder ook ‘n behoefte om:

i) alle belanghebbendes deur die gedwonge hervestiging geraak by ‘n oop en deursigtige openbare deelnemingsproses te betrek.

ii) aandag te gee aan die identifisering van meer volhoubare bestaanswyses.

iii) sosiale impakstudies uit te voer om die nie-tasbare eienskappe van hervestiging uit te wys.

iv) ‘n appèlstelsel in plek te stel wat bekostigbaar en toeganklik is vir diegene wat ontevrede is met die hervestigingspakket.

v) diegene wat hervestig word van inligting te voorsien ten einde hulle te bemagtig om ingeligte besluite te neem.

vi) beloftes gestand te doen ten einde vertroue by hervestigdes in te boesem.

Die volgende aanbevelings word aan die hand gedoen ten opsigte van toekomstige hervestigingsprogramme:

i) Verander die ingesteldheid van diegene gemoeid met die bestuur van hervestigingsprogramme om hulle meer empaties teenoor dié wat hervestig word, in te stel.

ii) Hervorm instellings binne die watersektor.

iii) Gebruik ‘n multidissiplinêre benadering ten opsigte van hervestigingsprogramme.

iv) Verdeel diegene wat hervestig word in subgroeperinge.

v) Raak betrokke by ‘n oop en deursigtige openbare deelnemingsproses.

vi) Voer sosiale impakstudies met ‘n moniterings- en evalueringskomponent uit.

vii) Identifiseer volhoubare bestaanswyses vir die hervestigdes.

viii) Vergoed diegene wat nadelig geraak word vir verlies aan gemeenskaplike eiendom.

CHAPTER ONE

INTRODUCTION

"The fact that planned programmes often produce long-term gains for those defined as being project beneficiaries does not make the hardships of being uprooted lighter for those displaced"

(Cernea, 1997:1579).

1.1 Background

Since the dawn of history, dams were built by successive ancient civilizations in Sumeria, Babylon, Egypt, Ceylon and Cambodia, and people have been constructing dams to harness water resources for more than 5000 years (Barlow & Clarke, 2002; Goldsmith & Hildyard, 1984). Goldsmith & Hildyard also mention that the modern era of large dam construction dates as far back as the 1930s in the United States of America (USA), when the 221m long Hoover Dam was constructed on the Colorado River. Such large dams are constructed for irrigation purposes and for hydro-electric schemes to meet energy requirements of the growing industries and the urban population. All of these are meant to improve people's standard of living and to develop both the local and the national economies. Cernea (1997) states that at times, during the course of constructing large dams[1], involuntary resettlement[2] is unavoidable and that this then results in the inequitable distribution of gains and pains, benefits and losses.

[1] Definition of large dams is provided in paragraph 1.12.

[2] Involuntary resettlement, which is used synonymously with forced relocation in this study, is defined as the process whereby people are compelled to vacate their places of abode owing to external factors (beyond their households) uch as the construction of large dams.

However, the pains that emanate from involuntary resettlement are of particular concern in the light of worldwide experiences regarding the construction of large dams, where, in most cases, the results are catastrophic and the marked impoverishment of those who have been resettled has been observed despite the fact that development projects such as the construction of large dams are planned and are therefore not natural disasters. Thus, in trying to mitigate the adverse effects of the construction of large dams, it is vital that mitigation plans are part of the overall project planning.

Unfortunately, integrating mitigation plans into the overall planning process of large dam construction seems to be fraught with problems that eventually result in bitter experiences. For instance, in the case of the Kiambere Hydropower Project in Kenya, Mbuguru (1994) makes the following observations: (i) that farmers' landholding dropped from 13 to 6 hectares after resettlement; and (ii) in the same project after resettlement, the average income of resettlees dropped from Ksh[3]. 10 968, to Ksh. 1 976. Cernea (1997) mentions that in Manitoba, Canada, the economic activities of resettled people, such as fishery and fur processing, discontinued, thus, resulting in loss of income. In China, the Danjiangkou Reservoir left 20% of the resettlees homeless and destitute.

However, despite these bitter worldwide experiences related to the construction of large dams, governments have a responsibility of ensuring that people's welfare is maintained through the provision of basic needs such as water, electricity, food, etc. According to Stewart (1985; Molaoa, 1996b), basic needs as a development approach that aims at meeting the basic needs of all people by addressing the problem of deprivation, is confronted with a real challenge when it comes to the translation of basic needs into actual plans, policies and projects. Therefore, the greatest challenge for many governments is to provide safe water supplies for the enhancement of food security and for development in countries experiencing stagnating economies (Figuẽres, Tortajada & Rockström, 2003). Stewart (1985), draws a distinction between two types of basic approaches: i) meeting the very basic minimum needs based on the identified minimum threshold; and ii) the full-life approach to basic needs, covering broader issues like access to clean water where quality of water is the need. Nevertheless, governments can adopt economic policies that enable them to achieve their economic goals. For instance, if the main economic objective of a government is to improve on its income in order to respond to the national demands of

[3]Kenyan shillings.

providing basic needs such as water, the government may choose a monetarist strategy that places emphasis of reliance on the private sector whereby the public-owned assets are transferred to private companies (Barlow & Clarke, 2002). On the other hand, some governments may opt for investment in large dam projects, which can speedily earn a country an income in the form of royalties, from selling water to another country as has been the case with the Lesotho Highlands Water Project - LHWP (Central Bank of Lesotho, 2003). With such income, governments are able to provide for the basic needs of their nationals.

Though governments can earn substantial income from construction of large dams, opponents of large dams opine that there is an overemphasis on construction of these infrastructures as a means of meeting basic needs without paying much attention to the full social and environmental costs (WCD, 2000). In the same vein, Covello (1981) cautions that though it may be novel to invest in water projects which can have immediate results in terms of positive socio-economic impacts, there is a very real danger of people being predisposed to the risks associated with the social costs of such investments. Risk in this instance being defined as `… potential realisation of unwanted consequences of an event' (Rowe, 1981: 61). In spite of the risks and social costs associated with the construction of these large dams, their construction was on the increase until the 1980s, which was however subsequently characterised by a steady decrease as reflected in Figure 1.1.

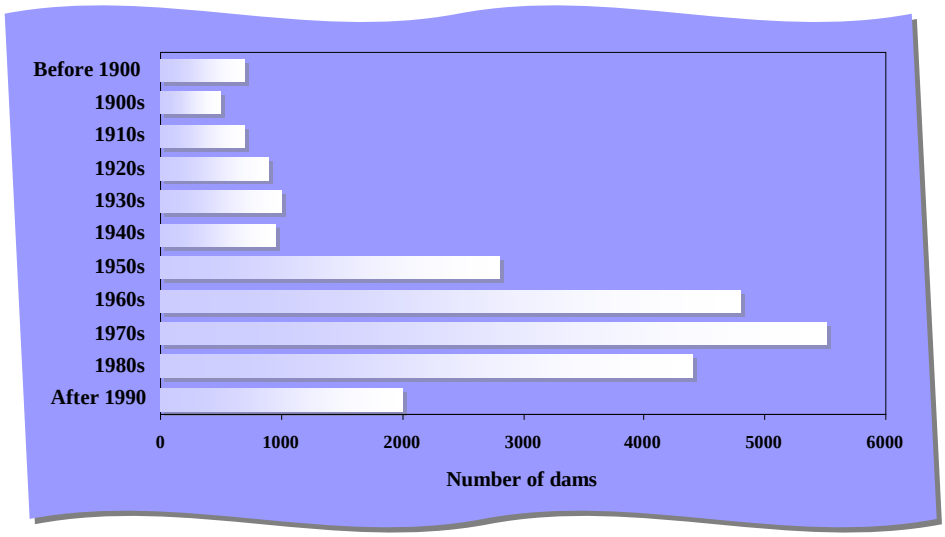

Figure 1.1: Trends in the construction of large dams before and after 1990

Source: WCD, 2000

The WCD (2000) states that worldwide, 5000 large dams had been constructed by 1949. A further increase was again seen by the end of the 20th century with 45 000 dams having by that time been constructed in 140 countries. During the 1950s to the 1970s there was a high economic growth globally after the recession experienced as a result of World War II. Development of industries and the provision of basic needs such as water called for more investment in the construction of large dams. However, as already stated above, a steady decline was observed from the 1980s onwards. Figure 1.2 shows that most of the large dams have been constructed in Asia, particularly China, followed by North America, the implications being that issues associated with the construction of large dams have mostly been experienced in Asia, especially in China. It is also in Asia where anti-dam campaigns became very strong owing to catastrophes experienced as a result of the construction of large dams.

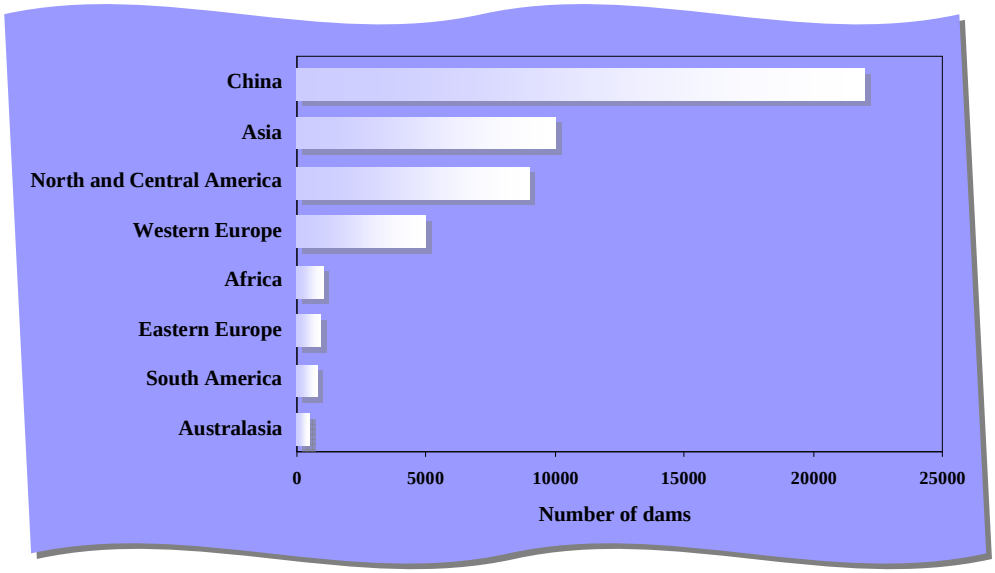

Figure 1.2: Regional distribution of large dams by the end of the 20th century

Source: WCD, 2000

Although there was a steady decline in the construction of large dams since the 1980s, the decline was particularly marked for Australasia, Asia and North America (see Figure. 1.3). Yet, in the case of Africa and South America, the converse trend was observed with an actual increase being observed in the construction of large dams.

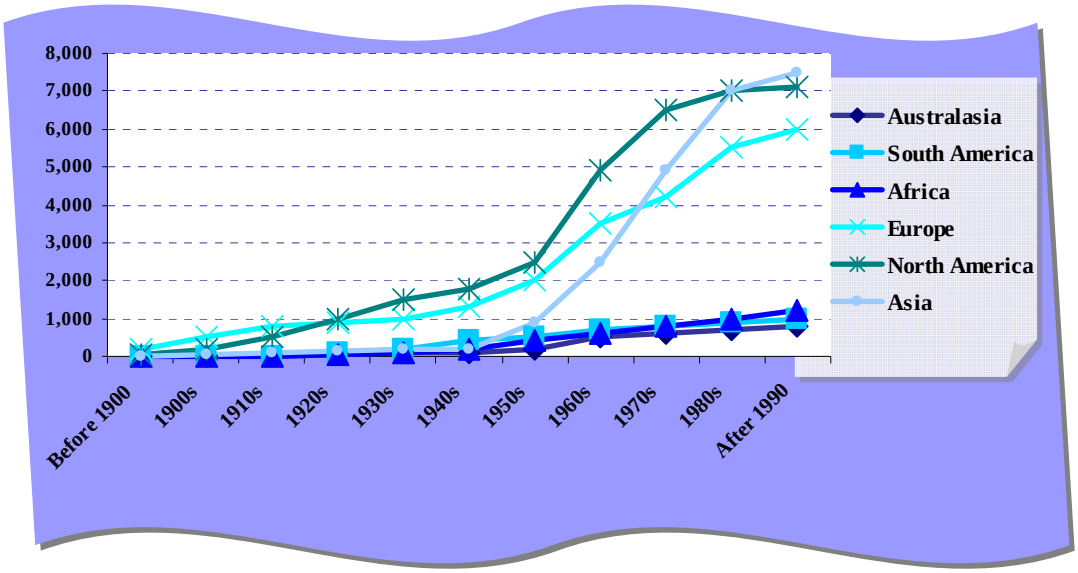

Figure 1.3: Dam construction by region between 1900 and 2000

Source: WDC, 2000

In the same vein, Table 1.1 also attests to the fact that more dams are being constructed in the developing countries in comparison with the developed world. This is reflected in the investment pattern in developing countries regarding the construction of large dams, which has more than doubled since the 1950s. Goldsmith & Hildyard (1984) state that since the construction of large dams is financed through the money that has been borrowed from the financial institutions in the first world, this has largely resulted in the Third World countries owing more than US$700 billion to the western financial institutions. This is perceived as posing a threat to the stability of the global economy and also to the ability of those countries to pay back the money.

Table 1.1: Estimated annual investment in dams in the 1900s ($US billion per year)

Purpose	Developing countries	Developed countries	Total
Dams for hydropower	12.18	7.10	19.28
Dams for irrigation	8.11	3.50	13.63
Dams for water supply	1.50		
Dams for flood control	0.52		
Total	**22.31**	**10.60**	**32.91**

Source: WCD, 2000.

Nonetheless, the WCD forwards one of the main causes of increased large dam construction as reflecting an increase in the water demand, which far outweighs available water supply in many parts of the world, particularly the developing countries. The water demand is for irrigation, for industrial needs and for consumption by the growing world population estimated at more than 6.5 billion (PRB, 2007). Yet, Guerquin, Ahmed, Hua, Ikeda, Özbilen and Schuttelaar (2003) observe that although water was previously regarded as being plentifully available, people from the different parts of the world are today experiencing the availability of water differently in their daily living. Furthermore, population growth and economic development worldwide are increasingly putting pressure on water resources. De Satgé (2002) estimates that, 1.7 billion people live in countries that are water stressed; and this figure is expected to rise to 5 billion by the year 2025. According to Goldsmith & Hildyard (1984), the construction of large dams accelerated dramatically since the World War II, with the first loan having been made to Chile in 1984. Yet, by 1982, the World Bank had already made available 26.7 billion US Dollars for agricultural projects alone. Goldsmith & Hildyard (1984) estimated that about 150 dams of more than 150 metres in height and more than 260 man-made reservoirs with a surface area of 100 to 1,000 km^2 with 4,000 cm^3 approximated to equal one-third of the water of the earth's atmosphere, would have been constructed by 1990.

Molaoa (1996a) states categorically that the construction of large dams, irrespective of whether for water storage, for consumption, irrigation, power generation, or for any other purpose, is a result of decisions taken by national governments in terms of allocating resources to various sectors with a view to achieving national priorities. The primary focus of governments is not the project(s) themselves, but rather the net effects earned after completion of such project(s) in terms of the impact they would have on the standards of living of people. Brokensha & Scudder (1968) argue that the construction of large dams is more often than not the result of decisions taken by national governments at the central level, as they are responsible for setting up national priorities geared towards betterment of life - the general masses have no option but to abide by such top-down decisions. Furthermore, the UNDP (2002) points out that decision making regarding construction of large dams is not always transparent and offers no opportunities for the participation of those affected by the project. As a result, involuntary resettlement becomes compulsory because people are compelled to vacate their places of abode in order to give way to development project(s). Brokensha & Scudder (1968) observed that, the role of

government(s) becomes contradictory in that, on the one hand, the government is the initiator of development projects that have the repercussions of denying people their civil rights and freedoms of living where they have chosen by uprooting them for 'general good', while, on the other hand, the government assumes the role of protecting the rights of the people, which are taken away in order to make way for the construction of large dams.

Nonetheless, the construction of large dams in most cases alters the environment and often affects the lives of people negatively (World Bank, 1994). As already mentioned, this happens despite the fact that the primary intention of governments for investing in the construction of such infrastructure is to meet the basic needs of its population in an attempt to improve on the general standard of living. While the construction of large dams is but one of the strategies for governments to provide for basic needs, these, on the other hand, come at a cost of disturbing the social/human ecology, in that patterns of living are disturbed through the uprooting of people from their places of residence and then being resettled in totally new environments. This process is hereinafter referred to as involuntary resettlement. More information on involuntary resettlement is provided in the paragraph below.

1.2 Involuntary Resettlement

Involuntary resettlement also herein refers to the displacement or relocation of people from one location to another. It is by no means a new social phenomenon and has been occurring for decades and is a consequence of both planned and unplanned change that displaces people out of their place of abode (World Bank, 1994; Baker, 1995). According to Vincent (2001), there are numerous causes of involuntary displacement, and these include: civil strife as was the case in Burundi, which resulted in the displacement of about 630 000 people, and in Khartoum, which resulted in the displacement of more than a quarter of the population, estimated at 1.8 million; man-made or natural disasters to make way for development projects such as the construction of highways, transportation corridors, railways, transmission lines (Birkeland & Gomes, 2001; Jacobsen *et al.*, 2001); the construction of dams for irrigation as was the case with the Aswan Dam in Egypt (WCD, 2000); and hydroenergy water supply which creates man-made lakes as was in the case of Kariba (Colson, 1971). Nonetheless, this study focuses on the particular form of involuntary resettlement resulting from the construction of large dams where people had to

be moved from a physically life-threatening environment to a much more conducive one. Although several studies have tried to articulate the problems involved in the processes of the various types of resettlement, the major focus of this work is developmental relocation, i.e the planned removal of individuals or groups of people from one area to another in order to facilitate major development projects like large dam construction. This type of relocation differs from those arising from natural disasters and the like, in that, there is sufficient time to plan for and anticipate problems, some time ahead of the relocation.

1.2.1 Involuntary resettlement resulting from the construction of large dams

The construction of large dams has resulted in the displacement of an estimated 40 to 80 million people worldwide (WCD, 2000). However, as also noted by the WCD, the scale and range of socio-economic impacts[4] vary from region to region and some of the impacts are project specific. Thus, they cannot be generalised to the broader contexts.

The World Bank (1994) lists some of the socio-economic costs or risks usually experienced by resettled populations owing to large dam construction. These include: loss of jobs; deterioration of health care; disruption of: labour markets, informal social networks forming part of daily sustenance systems such as providing mutual help in child care, food security, revenue transfers, short-term credit, labour exchange and other issues of social capital that are either threatened or lost. Local organisations that are formal or informal associations disappear as a result of dispersion of their members. Traditional community and authority systems can lose their leaders, while symbolic markers such as ancestral shrines and graves are abandoned, thereby breaking links with the past and cultural identity and further compounding impacts on the social capital.

The World Bank further states that whenever relocation occurs, it more often than not affects the lives of very ordinary people. This is because development in most cases is brought to those areas that are largely underdeveloped and are characterised by high levels of poverty amongst their inhabitants. In these areas, there are usually low levels of infrastructure services, and which are, in most cases, inhabited by the marginal groups such as pastoralists or ethnic minorities.

[4] Details on the socio-economic impacts of large dams' construction are discussed in Chapter Two.

Since involuntary resettlement itself is compulsory in that people are compelled to move out to a new environment in order to make way for the construction of large dams, it tends to create much stress because people are not moving out of their own initiative (Scudder, 1968). Scudder refers to what he calls the multidimensional characteristics of stress caused by involuntary resettlement. This comprises firstly of physiological stress, which in most cases results in a high mortality rate[5] due to an increased morbidity rate[6] from the interplay of factors resulting from high population densities in the new settlements. Hence, contact with the new diseases caused by an increase in the incidence of diseases like *malarial* parasites and the likes were observed among the resettlees in Kainji, Northern Nigeria. Secondly, psychological stress resulting from being compelled to move to a totally new environment causes mental stress. Thirdly, there is the socio-cultural stress that tends to be more apparent among those sectors of the population who have derived most of their support from the local resources for as long as they remember. However, if involuntary resettlement is handled well, it can prevent some of these adverse effects like stress, pain, impoverishment, and even reduce poverty by rebuilding sustainable livelihoods[7] (De Satgé, 2002).

Nonetheless, it is important to always remember that, whenever resettlement programmes are conceived, designed, and implemented, it is usually with the sole purpose of rehabilitating the lives of those people affected by forced relocation. The planning and the execution of such programmes still remain a challenge; and the end results in most cases have been violation of human rights[8], which can extend to genocide and ethnocide in order to obtain a natural resource such as water in the ancestral territories of indigenous peoples (González-Parra, 2001). The implications being that some of the lofty ideas articulated in resettlement programmes are not easily translated into reality on the ground. The ordinary folk who for a long time, have been content to live their lives in the relative peace ensured by isolation, end up being transported into a different environment, within which they have to learn new methods of survival. Either way, resettlement can end up being an economic and/or social nightmare.

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[5] Mortality Rate denotes the number of deaths occurring in a given population over a specific period of time (Peterson & Peterson, 1986).

[6] Morbidity Rate denotes diseases occurring in a population over a specific period of time (Peterson & Peterson, 1986).

[7] Livelihoods are sustainable when they can cope or recover from stresses and shocks and maintain and enhance their capabilities and assets both now and in the future, while maintaining the natural resource base (De Satgé, 2002).

[8] More information on human rights as they relate to involuntary resettlement as a result of large dam construction is provided in Chapters Two, Three and Four.

1.3 Problem statement: the case study of the Lesotho Highlands Water Project (LHWP)

In 1986, the Kingdom of Lesotho[9] entered into agreement with the Republic of South Africa[10] through the Lesotho Highlands Water Project Treaty, to construct the LHWP-Phase I, of which the cost was more than R15 billion (LHDA, 1999). The LHWP is a result of a feasibility study that explored the possibility of diverting the waters of the Senqu River System for export from Lesotho to South Africa (Lahmeyer Macdonald Consortium & Oliver Shand Consortium, 1986a). The findings of the study culminated in the signing of the treaty on the LHWP by the two governments in 1986. The LHWP comprises five dams, water transfer tunnels and a hydroelectric power plant, the first of its kind in Lesotho.

The LHWP design is such that it is phased into four stages of which the first is divided into two phases (IA and IB), both of which have been completed. Phase II was originally conceived as the Mashai Dam but it is now the Polihali Dam. Phase III is the Tsoelike Dam and Phase IV is the Ntoahae Dam. Phase IB, which is the Mohale Dam catchment area, is the focus of this study in that, the communities that were resettled at Makhoakhoeng, which is on the eastern part of the capital, Maseru, came from Molika-Liko in the catchment area of Mohale in the Senqu River Valley. A number of communities from Molika-Liko had to be relocated in order to provide for the inundation of the Mohale Reservoir. The dam is situated at the confluence of the Senqunyane and Jorotane rivers. These communities from Molika-Liko were resettled in various locations like: Ha Makhalayane, which, though situated in the foothills, can to some extent be classified as rural; others were relocated at Thetsane-West within the urban boundaries of the Maseru Municipal area, whilst others were resettled at Makhoakhoeng, which is the focus of the study.

The resettlement programme at Makhoakhoeng was part of the Lesotho Highlands Water Project (LHWP) resettlement programme for Phase IB. The main objective of the Phase IB resettlement programme was specifically to assist the displaced people in their efforts to improve or, at the very least, restore their living standards in terms of income-generation capacities and to gain access to valued resources and social benefits such as

[9] The Kingdom of Lesotho is also referred to in the document as Lesotho.
[8] The Republic of South Africa is referred to in the document as South Africa.

health, education, water and so forth (LHDA, 2002b). The design of the LHWP resettlement programme has been greatly influenced by section 44 of the LHDA Order (GoL, 1986a), which created the Lesotho Highlands Development Authority (LHDA). The Order stipulates that compensation in respect of the rights or interests in land, servitude, fisheries, fishing rights or other rights whatsoever shall be paid by the authority in accordance with the law(s) of Lesotho (GoL, 1986a). Furthermore, in the same section, it is stated that the implementing agency (LHDA) shall ensure that as far as reasonably possible, the standard of living and income of persons displaced by the construction of an approved scheme shall not be reduced from the standard of living and the income existing prior to the displacement of such persons.

Like most large dam construction resulting in involuntary resettlement, effects of displacement in the case of Phase IB needed to be established particularly in the light of unpleasant experiences[11] in other similar projects in the world. Some of the notable adverse conditions caused by displacement that result from the construction of large dams include inconvenience, the need for re-acclimatisation in the new environment, loss of jobs, destabilisation and the disruption both of established market system(s) and social order (Scudder, 2005). But again, as already mentioned in the earlier sections, if resettlement is handled well, the effects can be beneficial and lead to an improvement in the quality of life. Thus the outcome of the resettlement programme - in terms of its impacts on the resettlees - is largely dependent on how the implementing agency, which in this case is the LHDA, managed the resettlement programme at Makhoakhoeng.

When the construction of Phase IB was completed and resettlement at Makhoakhoeng was also completed, it was necessary to understand in some detail the extent of the impact of the resettlement programme on the affected people's livelihoods. This was particularly necessary in the light of some of the issues already alluded to above regarding painful issues like loss of land, and other properties being left behind, which ironically caused resettlees a major setback in that they had to be relocated and would therefore have to find other means of making a living in the new environment. Therefore the study sought to establish the extent of the impact and whether, through social capital, the resettlees have actually adjusted and regained their means of livelihood. Social capital in this instance refers to those social resources that people draw upon in pursuit of their livelihood

[11] The details of the effects of the resettlement projects are discussed in Chapters Two, Three and Six.

objectives. The social resources include social networks, organisations, the relations of trust and reciprocity within and between families, within the social networks and in communities, and support provided by religious, cultural and informal organisations (De Satgé, 2002). Thus, the researcher needed to have a better understanding of how both the material and non-material aspects have been factored into the resettlement programme at Makhoakhoeng.

According to Scudder (1968), there is a tendency of according a disproportionate emphasis to the material aspects of development. Therefore the tendency to give more the material aspects of development a higher and disproportionate weighting than the intangible aspects amounts to a violation of human rights (Brokensha & Scudder, 1968). This is particularly so because the focus of most resettlement programmes tends to be more on material aspects such as provision of water supply and electricity as opposed to the actual development of the resettlees. Unfortunately, the psychological and social consequences of resettlement schemes on the affected people are as crucial if not more crucial, especially because in most cases they are underestimated and unfortunately are not always easily quantifiable. Korsching, Donnemeyer & Burge (1980) also share the view that the intangible aspects of relocation - in terms of how the formal and informal networks of social relationships are affected by relocation - are not always understood or considered. It is therefore important to determine the extent to which such intangible aspects of resettlement have been incorporated into the resettlement programme. This is particularly necessary in the case of the LHWP - Phase IB, where the resettled population had actually been subjected to drastic changes of environment.

It is important to bear in mind that resettlees are not a homogenous group of people. There are subgroups like men, women, the elderly and children. It was therefore necessary to find out how the needs of each of the subgroups had been addressed by the LHWP resettlement programme at Makhoakhoeng.

Understanding how the needs of the subgroups mentioned above, were addressed, is critical, because the treaty[12] signed by the two governments in relation to resettlement stipulates that the affected people shall be compensated according to the laws of Lesotho. Suffice it to say that the laws of Lesotho have a gender bias in favour of men, since the

[12] The treaty is also dealt with in much more details in Chapter Five.

country is patrilineal both in nature and in practice (Ntlafalang, 2002a), regardless of the role and contribution of some of the women as *de facto* heads of households because (particularly in the rural areas where the resettlees originated) men are either away from home and temporarily at work in South Africa, or the husband is deceased, separated, or had never married. Although the Government of Lesotho ratified the Convention on the Elimination of All Forms of Discrimination Against Women in 1995, there seemed, on the part of the government, to be a lack of commitment towards addressing equality because it was only in 2001, when the Married Persons Equality Bill was made available for wider public consultation. This Bill was eventually enacted in 2006. It is in this light that the researcher factored issues of subgroups into this research in order to establish whether the division responsible for environmental and social issues paid adequate attention to ensuring that the needs of the subgroups are adequately addressed in resettlement programme at Makhoakhoeng.

The implementing authority, through its division responsible for environmental and social issues, had envisaged some of the impacts that would be experienced by the affected communities, owing to the implementation of the LHWP, through the feasibility study (Lahmeyer Macdonald Consortium & Oliver Shand Consrtium, 1986b). As a result, plans were put in place to assist the affected people in their plight through minimising the adverse impacts accruing from the construction of the LHWP. To date, the affected people have been resettled in the new environment although the objectives of the resettlement have not been assessed for their achievement. This is to say, no concerted effort has been made to ascertain the extent to which integration of the resettled people into the new environment has actually taken place, nor have the successes and failures of the resettlement programme been addressed. This is particularly necessary in the light of the experience worldwide in respect of the construction of large dam projects, which have in most cases had devastating results on the lives of the affected communities; hence the current wave of opposition regarding the construction of such large dams. Furthermore, respect for human dignity demands that the extent to which the resettlees have acclimatised and are satisfied with the whole resettlement programme - especially after completion of physical relocation and compensation payments have been effected - be ascertained. This was especially necessary here because the resettlees were people from

the mountain region who, for the most part have lived their lives under such conditions[13] in terms of the climate, economic and social activities, as well as the actual physical location. The resettlement exercise has involuntarily forced them to the lowlands that have different geographical features, climatic conditions, and social and economic demands. Therefore, respect for human dignity calls for assessment of the opinion of the resettlees in terms of their perceptions and feelings regarding their new environment. This is particularly necessary because, according to Égré & Senécal (2003), perceptions on impacts in most cases influence behaviour to a far greater extent than do the actual impacts. This can have devastating consequences that can result in community tensions and in counter-productive attitudes that could negatively affect resettlement programmes.

In the same vein, involuntary resettlement has affected the economic life of the people. Some of the people who were cattle rearers, farmers or petty traders have been forced into cash economy through being displaced by the project. Therefore, this research has led both to a much better understanding of the nature of how resettlees are adjusting and coping in their new environments, and of the role of the implementing agency in the whole process. The above mentioned issues have a direct bearing on the sustainability of the resettlement programme. Sustainability in this instance starts with the realisation of the objectives of the resettlement and compensation programme, including the rebuilding of the rural economy, so that local people are provided with opportunities for generating the income they had previously earned from assets latteraly acquired by the project. Besides, the LHDA, through the Rural Development Plan, provides for certain development activities which are believed to be of priority for equity purposes and income-generating potential.

Although these are decidedly sound and lofty ideas, there was nevertheless a need to ascertain the practicality of the objectives at the community level. Otherwise, the sustainability of the programme would be no more than rhetoric.

1.4 Research aim and objectives

In implementing the LHWP, the LHDA had to ensure that as far as is reasonably possible, the standard of living and the income of the persons displaced by the construction of an approved scheme shall not be reduced from the one existing prior to the displacement of such persons (GoL, 1986b). Therefore the aim of the research was to

[13] These conditions alluded to pertain to where the resettlees originate from, i.e. the mountainous rural areas.

ascertain the extent to which this goal had been achieved for people who had been resettled at Makhoakhoeng.

The specific study objectives were to thus,

i) determine the socio-economic impacts of the resettlement on the resettled communities;

ii) elicit the perceptions of the displaced people about their participation in resettlement programme decision making;

iii) evaluate the adequacy of the compensation and resettlement packages in terms of their comprehensiveness; and

iv) ascertain the level of satisfaction of the resettlees with the resettlement programme.

It is to be noted that it was not within the scope of the study to examine perceptions of the resettlees regarding the performance of LHDA on the project management, nor to predict the success or failure of the larger project.

Some of the specific questions to which the study has attempted to provide answers include the following:

i) To what extent have the women from the resettled households participated in decision making in respect of the design and implementation of the resettlement programme at Makhoakhoeng?

ii) To what extent do the resettled people have access to basic social services such as education, health services, water and energy, relative to their previous environment?

iii) Granted that the physical relocation has been implemented and the direct compensation paid, to what extent has the reinstatement of the income-generating capacities[14] of the resettlees been effected?

iv) What is/are the perception(s) of the resettlees with regard to the total resettlement programme at Makhoakhoeng?

1.5 Research design and methodology

The study approach recognises that there are two schools of thought regarding dam construction of which involuntary resettlement is but a consequence: i) there are those who support the construction of large dams; and ii) those who oppose the construction of large dams. These views are fundamental in that they have a direct bearing in terms of the study outcome, depending on the school of thought on which the interviewee is inclined. For instance, water developments in the form of irrigation schemes, provision of safe drinking water, hydroelectricity schemes, and flood control are used by those who support the construction of large dams as justification for their construction. Whilst their opponents point to the debt burden, cost overruns, displacements of people, impoverishment of people, destruction of important ecosystems, fishery resources and the inequitable sharing of costs and benefits (WCD, 2000). Nevertheless, the research was embedded in the interconnection between the environment and social theory, which

i) Provides a descriptive account of how the varying views on non-human environment are translated into development direction, for instance, how the harnessing of natural resources like water, through damming of rivers, impacts on the lives of those resettled; and also how the resettlement programme was designed and implemented, all of which were factored into the research analysis.

ii) Provides a prescription on how future resettlement programmes can be mainstreamed within the broader dam projects.

The nature of the study thus called for exploratory research with a view to bringing to the fore issues around the involuntary resettlement programme at Makhoakhoeng. This, to a large extent, also demanded description of the activities undertaken during the planning

[14] For instance, if the resettled communities were farmers, has the implementing agency provided alternative land for cultivation, or has it provided income-generating employment (Cernea, 1997)?

and implementation of the programme. This was particularly necessary as the literature revealed that the process of integrating those people affected by involuntary resettlement into their new environment is a mammoth task often fraught with problems during the design stage[15] or during the execution stage[16], or both. These problems do, to a large extent, result in the violation of basic human rights whereby human beings are merely viewed as the means to an end (Brokensha & Scudder, 1968). It is against this background that the researcher also deals with issues of human rights, particularly because the LHWP was planned and implemented during the era of military rule in Lesotho[17]. The then government of Lesotho did not represent the views of the majority, thus calling into question the legitimacy of its exercise of power over the majority; community involvement in decision making created an interest in terms of how it was done - whether all sectors of the society were represented; how the aspirations of subgroups of the affected communities were factored into the planning process and at what stage of the project were stakeholders engaged, if indeed they were. The researcher has therefore assessed the extent of the resettlees' satisfaction with the compensation arrangements.

1.6 Demarcation of the Study

In carrying out this study, the researcher focused specifically on the following issues:

- What criteria were used to determine eligibility for resettlement?
- What were the likely positive and negative impacts on the resettlees?
- Did the type of mitigation measures, in the form of the compensation package developed and adopted, have satisfactory results for the resettlees at Makhoakhoeng?
- What was the type of public participation process for the resettlement programme?

[15] The design stage refers to the planning of the resettlement programme.

[16] The execution stage refers to the implementation of the resettlement programme.

[17] Military rule was from 1986-1992

In the design of the study, the researcher ensured that the baseline information gathered during the LHDA Census for Phase IB was available in order to conduct a comparative assessment where necessary. The study focused on some of the following aspects:

1.6.1 Demographic level

This entailed an assessment of the involvement of all subgroups in the decision-making processes regarding relocation and determination of the contents of the compensation package.

1.6.2 Institutional level

This entailed an assessment of whether the resettlees at Makhoakhoeng actually have access to social services such as health, education, valued resources, water and energy when compared with what they had previously had. Access to these social services is used by the United Nations Human Development Indices to measure the standard of living. Hence they have also been adopted in this study with the same purpose of assessing the level of impact the resettlement programme has had on the living standards of the resettlees.

1.6.3 Community level

The study here focused on how the implementing agency assisted the resettlees to be fully integrated with the host population. Again, the interest here is how the social capital as manifested in the informal social networks that are part of daily sustenance systems, provided mutual help in child care, food security, revenue transfer - short-term credit, local organisations including formal and informal associations - traditional authority systems and other culturally symbolic markers were given due consideration within the resettlement programme. This was particularly necessary because these are the intangible aspects of involuntary resettlement, which are usually lost through social disarticulation caused by dismantled social networks, and which once mobilised, encourage people to work towards common interests to meet their needs. This social disarticulation tends to be more prevalent in cases where project-affected people are moved as individual families rather than as a community. The results emanating from this are: severed kinship ties, growing alienation, reduced interaction between relatives and lower cohesion in the family (Cernea, 1997). Issues of cultural beliefs including meanings attached to the non-human environment, which have been significantly affected through involuntary resettlement and

are key for the resettlees' adaptive mechanisms in the new environment[18], are also captured in this study.

1.6.4 Socio-economic level

More often than not, displacements usually result in loss of wage employment to *inter alia* landless labourers, artisans or service workers (Cernea, 1997), the consequences thereof being a high prevalence of unemployment and underemployment among the resettlees, which perpetuate beyond physical relocation. As a result, the resettlees are exposed to the risk of pauperisation and impoverishment. Therefore, there was a need to understand how the implementing agency counterbalanced losses in:

- employment
- household incomes (e.g. proportion of households below the minimum threshold as determined by the implementing agency-LHDA)
- housing.

There was a need therefore to understand articulation of the LHWP resettlement policy in terms of whether it met the needs of those resettled in respect of appropriateness and adequacy as part of the mitigation plan. Once again, the interest was on how the policy was translated into clear strategies/action plans that enabled the resettled people to restore their income-generating capacity.

1.6.5 Land use

The resettlees lost land to the project, which they used prior to resettlement to sustain their daily needs. There was thus a need to establish:

- Issues of access to land as a valuable input in terms of productive activities for sustenance of livelihoods within the resettlement programme.
- Whether resettlees have access to common property in the new locality.

[18] This is further discussed in Chapter Six.

1.7 Selection of study site

The decision to select Makhoakhoeng as a study site was motivated by three factors: firstly, there was much controversy around the communities resettled at Makhoakhoeng. There was a belief that the host community had claimed that they had never been consulted about the coming of the resettlees, whilst they had actually not wanted these people to be resettled in their area. This situation became so tense that another second alternative area of resettlement was at some stage under consideration. Secondly, the host community is an extended family of the same clan of Makhoakhoa. They have lived in this area for decades without being infiltrated by other clans or people. Therefore, moving a substantial number of people into an area that had remained occupied by a community of one particular identity was bound to be met with some resistance.

1.8 Sample selection and size

The total number of households resettled at Makhoakhoeng was 23 households. Of the total, six households had rented out their houses and the owners lived elsewhere and were therefore not included in the sample. This is because some of them inherited the houses from their late parents or from their grandparents.

1.9 Data collection

Data collection was conducted in two distinct phases: i) desktop research; and ii) empirical research in the field. Both methods of data collection are explained below.

1.9.1 Desktop study

This aspect of research commenced right at the outset of the research, as information gathered here informed not only the background to the problem statement, but also the problem statement itself. It also assisted in the design of the research methodology.

In the literature review, the researcher interrogated the existing literature on the impacts of large dams internationally, regionally and specifically on the implementation of the LHWP resettlement programme at Makhokhoeng in Lesotho, in order to understand the research problem from a global perspective as well as to allow for comparison with other case studies. A review was also undertaken of relevant theories, international conventions, policies and legislation that dealt with the issues of interconnections between social theory and the environment, the impacts of large dams on the environment and people, and the

international response to these issues. Therefore various data bases were consulted to source relevant literature. This included Lesotho's UN library, the LHDA library, LHDA compensation register, the University of the Free State Library, sourcing material from the LHDA's Panel of Experts reports, internet searches, and from the media through newspapers and radio stations.

1.9.2 Primary data collection

Primary data collection comprised four components: i) key informants, ii) a questionnaire survey, iii) focus group discussions, and iv) participant observation. The details on each of the just mentioned data collection techniques are provided below.

i) Key Informant interviews

As indicated in Appendix A, interview schedules were developed for conducting face-to-face interviews with individual key informants. The key informants were people representing institutions involved in the planning and implementation of the resettlement programme at Makhoakhoeng. Table 1.2 below provides a list of the key informants who were reached during the course of this study.

Table 1.2: List of key informants

Name of respondent	Organisation	Respondent's position within the organisation
Mr S. Phakisi	LHDA	Ex-Manager responsible for the overall planning and implementation of the LHWP - Phase IB resettlement programme
Mr K. Sefeane	LHDA	Ex-Mohale Field Operations Manager
Mr T. Makhetha	LHDA	Ex-Phase IB Resettlement Officer
Mr B. Mateka	LHDA	EX-Physical Planner - Rural Development Officer
Ms T. Pholo	Lesotho Housing and Land Development Corporation	Deputy Director – Operations
Mr M. Theko[19]	Ministry of Gender and Youth Affairs	Principal Secretary
Mr I. Sello	LHDA	Ex-Manager Infrastructure Division
Mr R. Ramoeletsi	LHDA	Manager Field Operations – Mohale
Mr S. Mafisa	Ombudsman	Ombudsman

Interviews were conducted with key informants to enlist their perceptions on the roles they played in the whole resettlement programme and their general view of the programme.

[19] Mr Theko used to be the Commissioner of Lands.

j) Questionnaire survey

A questionnaire survey was conducted amongst all the 17 households of the resettled population still living at Makhoakhoeng. A questionnaire was developed to guide face-to-face interviews. The unit of observation was the household where the questionnaire (Appendix B) was administered to the head of the household. In cases where the head of the household was however not available, the eldest person found at the time of the interview then became a respondent. The questions that were asked were of both the close-ended and open-ended type.

After the questionnaire was finalised, it was piloted at Ha Makhalanyane where other people from Molika-Liko had been resettled. The pilot was carried by the two research assitants who were trained on the questionnaire. The piloting was conducted on 10 households. The outcome of the pilot necessitated amendments to be made on the questionnaire, which were effected. Thereafter, the questionnaire was replicated and used to collect data at Makhoakhoeng by the two research assistants who were trained, under the supervision of the researcher. Data collection lasted for four days from the 5th to the 8th October, 2006. The filled forms were checked on daily basis by the researcher to ensure that all questions had been responded to adequately. However, in some cases there was a need for more than one visit because the heads of households were not available on the day of the appointment.

k) Focus group discussions

Focus group discussions were held with the six heads of households resettled at Makhoakhoeng who were willing to participate. There were four men and two women. A developed guide (Appendix C) was used to guide the discussions. The female participants were asked specific questions pertaining to their views on their participation in the established community liaison committees (CLCs).

The focus group discussions were faciliated by the researcher. The researcher had an assistant who assisted with recording of the discussions.

l) Participant observation

During the field visits, the researcher made some notes on relevant issues that were observed during household interviews. For example, whether a household had a television set, a vegetable garden, standpipe for water or a VIP toilet.

1.10 Data processing

The responses from the questionnaire survey were analysed using Microsoft Excel, while data collected by means of interviews with key informants and focus group discussions were written into descriptive reports or direct citations using Microsoft Word. Regarding the quantitative data in Chapter Six, some of the figures have been rounded to the nearest whole number. Therefore in some cases the totals do not add up to 100%, but sometimes 101% or 99%.

1.11 Constraints

The following constraints were experienced during the study:

i) Time that was allocated for collecting data from the key informants was limited because those who had been working for the implementing agency during the implementation of the resettlement programme at Makhoakhoeng, with the exception of one, were no longer working for the LHDA. It therefore took time to find them.

ii) Because Makhoakhoeng is within an urban area, finding heads of households proved to be problematic in that they were not always found at home for various reasons. When visits were made early in the morning (before 6:00am), household heads would still be sleeping despite prior appointments made.

iii) Lack of cordial relationship between the LHDA and the resettlees at Makhoakhoeng has resulted in the latter being suspicious of anyone who wants to work with them. This is apprerently caused by the fact that the resettlees feel that LHDA has not honoured all of the promises they made to them, and that until all has been ressolved they do not want to cooperate with LHDA. So in the case of this research they were suspcious that maybe the research work was being done on behalf of the LHDA. So there was a need on the part of the

researcher to convince them that the research conducted had nothing to do with the LHDA and that this is a completely independent work from the LHDA.

iv) The problem just outlined above (iii) also resulted in lack of cooperation from the resettlees where during the first two appointments, the resettlees refused to participate and walked out. But even when they (resettlees) eventually participated, they were still supicious that the research was being done on behalf of the LHDA.

1.12 Definition of operational concepts

The concepts defined below are some of those commonly used throughout the study. They are:

Implementing agency in this study refers to the Lesotho Highlands Development Authority (LHDA).

Host community refers to Makhoakhoeng community which received the resettled community.

Resettled population / resettlees refers to people who originated from the Mohale catchment area and who were resettled at Makhoakhoeng so as to make way for the construction of the LHWP Phase IB.

The project means the Lesotho Highlands Water Project (LHWP).

Large dam is defined as a dam with a height of 15m or more from the foundation; or/and a dam is between 5m and 15m high and has a reservoir volume of more than 3 million m^3 (WCD, 2000).

Involuntary resettlement and relocation in this document are used synonymously to mean people who are compelled to vacate their places of abode as a result of external factors (beyond their households), such as the construction of large dams.

The treaty refers to an agreement signed between the government of Lesotho and that of the Republic of South Africa on the construction of LHWP.

Household(s) in this context is defined as a unit consisting of two or more persons who occupy the whole or part of one housing unit and make provisions for food and other essentials of living (BOS, 2002b). Therefore, a **household** in this study has been defined as a nuclear family plus those members who have lived in the family for more than five years, eating from the same pot and sleeping under the same roof.

Transboundary water system is here used to refer to a water system that crosses national boundaries and provides resources to more than one nation or country (Guerquin *et al.*, 2003).

Risk is "the potential realisation of unwanted consequence of an event…" (Rowe, 1981:61).

Reparation is an action or process that repairs, makes, amends, or compensates for damages (Scudder, 2005).

1.13 The value of the study

The research contributes to the understanding of problems associated with forced resettlement. Therefore this research can be regarded as having made a positive contribution to the body of knowledge in terms of the impact of large dams on resettled communities, particularly those in Africa.

The study will benefit the LHDA, specifically the unit responsible for the implementation of the resettlement programme, by revealing the extent of the programme's successes and failures. Such findings would also assist in respect of planning future resettlement programmes. Furthermore, the study could also, to a large extent, ensure that issues of subgroups can be adequately core-streamed in future resettlement projects.

It is also most probable that the design and implementation of the second phase of the LHWP could lead to similar displacement of other Basotho from their original place of abode. Knowledge of the issues raised in this study is crucial through evaluation of the resettlement programme in the first phase of the project. Therefore the study outcome could also assist in informing the planning and implementation of the subsequent phases of the LHWP or any other future projects with a resettlement component.

1.14 Study Overview

The report comprises seven chapters of which the first introduces the problem statement and methodological design. The second chapter reviews the role of social theory in the changes occurring in the non-human environment. This was necessary because the construction of large dams, which result in involuntary resettlement, is a result of human activity in altering the non-human world to meet their needs. In the same chapter, the impacts of large dams are also brought to the fore. The third chapter deals with worldwide experience regarding involuntary resettlement programmes. The fourth chapter is a review of international responses to some of the atrocities resulting from the construction of large dams. It is in this chapter where various international conventions on the protection of the environment and people are discussed. The fifth chapter introduces Lesotho's experience with resettlement resulting from the construction of large dams. The sixth chapter deals with the empirical data analysis; and lastly, the seventh chapter provides the conclusions and the recommendations of the study.

CHAPTER TWO

CONSTRUCTION OF LARGE DAMS: THEORIES, JUSTIFICATIONS AND IMPACTS

"... the perceived injustices in the distribution of the benefits and costs, and the increased concern about the environmental implications indicate that the debates, controversies and conflicts surrounding large dams are not about dams alone. They are part of a wider debate about development, a debate where diverging views on the use of natural resources and public financial resources confront each other"

(WCD, 2000: 21).

This chapter starts first by highlighting the role of social theory within the context of changes that occur in the bio-physical environment due to the construction of large dams. Thereafter, socio-economic and political factors that are used to justify the construction of large dams are then discussed. The chapter concludes with the discussion of both the positive and negative impact that emanate from the construction of large dams.

2.1 Sociology and the study of the environment

The environment has a number of key functional benefits for human beings:

i) it provides resources that sustain livelihoods such as water;

ii) it provides a living space for all kinds of life forms, be they aquatic or terrestrial; and

iii) it is a sink for waste (Dunlap, Michelson & Stalker, 2002).

Environmental sociology as a discipline therefore attempts to make rational linkages of the interplay between environmental elements and social facts; for instance, the human ecologists, in applying ecological principles to the understanding of human societies, recognise the importance of how the existing biophysical factors such as climatic conditions can have a direct influence in determining developmental patterns. Biophysical factors, on the other hand, also provide contexts within which social activities, such as construction of large dams and their environmental impacts, do take place (York, Rosa & Dietz, 2003). Various views have been presented on the linkages between sociology and the environment. These are outlined below.

2.1.1 Landscape framework

In elaborating on the linkages between environment and social facts, Greider & Garkovich (1994), through their work on the landscape framework, bring to the fore a long history between environment and culture in the social sciences. The landscape framework basically provides a better understanding of the definitions ascribed to individuals, their relationship with each other and the environment, through symbols and concepts. Greider & Garkovich (1994), go on to say that the natural phenomena are socio-cultural phenomena in the sense that they are constructed through social interactions among members of a culture as they negotiate meanings of nature and environment based on their cultural myth. The different cultures thus ascribe different meanings to nature, and in the process construct their own reality, which is then socialised, reorganised and made into material manifestation. A good example is the case of the Hindus regarding the alterating of the Narmada River. This was unthinkable to them because their definition of themselves was manifested in the way in which the river was perceived as being very holy. Yet, on the other hand, some people from the western culture saw the river as a reliable source of water that could be harnessed to generate hydroelectric power for much - needed economic development (O'Brien, Dyck, Caron & Mortenson, 2002). Therefore, in order to fully comprehend the impacts emanating from the construction of large dams and accordingly to mitigate their adverse impacts, it is vital to understand these relationships, the definition of symbols and the meanings that have been socially constructed on the affected landscape.

2.1.2 Social constructionism

Similarly, O'Brien *et al.* (2002), state that the sociological approach and social geography are social constructs in that they are based on cultural norms. As a result, social constructs tend to vary from place to place and over time, but with those having the greatest influence ultimately determining what is the norm. Similarly, although it

highlights the need to explore the symbolic creation of landscape and cultural meaning ascribed to changes in the biophysical environment, the interpretive framework focuses on the social construction of reality. The constructionist perspective of phenomenology and symbolic interactionism, on the other hand, construes changes in the environment as being caused by people through conferring meaning on nature, and they therefore view the environment from a particular angle of vision based on a special filter and values. As a result, people's understanding of nature and their relationship with the environment can then be seen as cultural expressions employed to define themselves *vis a vis* others in both their present and future physical space. Environmental and social problems are thus seen as consequences of competing symbolic meanings, emanating from lack of consensus in the symbolic meaning of the landscape, leading to the need for renegotiation of the symbolic meaning (O'Brien *et al.,* 2002). This is because the debates around alterations to the physical environment through construction of large dams, leads to questions such as whose landscape is being altered, exploited or protected. In the process this elevates the issue of symbolic politics when responses to economic needs find their way into the alteration of the biophysical environment. It therefore becomes important to understand groups with vested interests in a particular environment in order to include their landscape in the process of identification of mitigation measures.

2.1.3 Traditional neoclassicals

The traditional neoclassicals, on the issue of sociology and the environment, recognise that economic development[20] has generated insurmountable environmental problems. However, they view economic development as a necessity for achieving a higher level of affluence, which would in turn result in more sensitivity to the issues of environmental preservation. This is because they assert that, as the level of affluence increases, there will be an exponential increase regarding concerns for environmental protection (York *et al.,* 2003). This line of thought is premised on the notion that environmental quality is a luxury good, affordable and of interest only to the affluent segment of society. Similar views are also shared by the ecological modernisation theorists.

[20] The economic thinking in this study is that economics is a form of social theory (Barry, 2002). Barry further shows that the different schools of economic thought are based on particular analyses of a society and its social arrangements, as well as on the different moral principles and perceptions of human nature and the non-human environment. This is attributable to the dominant position that economic thought has had in political and economic institutions, shaping either the actual material relationship between society and environment or the social and the biophysical environments. Thus, the economic thought in this study can be understood to mean how the economic problem, which is basically about meeting human wants, is eventually solved. This is because the natural resources provide the primary resources upon which livelihoods are based (Shen, 2003).

2.1.4 Ecological modernisation

Ecological modernisation theorists also opine that in modern industrial societies, more modernisation is necessary for reducing environmental impacts. The proponents of this theory suggest that as industries mature, ecological impacts will be reduced because the production systems will become more sensitive to the ecology, thus calling for the restructuring of the systems (York *et al., 2003*). In the same document, they state that the restructuring of the production systems on the basis of democratic governance is anchored on the promotion of political freedoms and civil liberties as these are seen as vital in influencing the environmental change. This is because democratic governance creates and often expands a political space for the social movements and non-governmental organisations (NGOs)[21] concerned with issues of political rights and civil liberties, as well as for those concerned with environmental rights.

Unless there is propagation of protection of both human rights and environmental rights - these being more or less two sides of the same coin - then there will not be a future for anybody. Humanistic ethics and bioethics therefore recognise the inherent relationship between 'natural history' and 'social history', though the latter has always taken precedence over the former. Nevertheless, environmental sociology provides a framework within which changes occurring within the natural environment - for example as a result of the construction of large dams - affect social organisations and subgroups within populations (Blanco, 2001).

O'Brien *et al.* (2002), in their environmental analysis, draw a distinction between the physical environment as being composed of natural and built surroundings, whilst the social environment includes relationships between people and their social groupings; culture; social institutions - comprising ethnic, racial, ceremonial and routine practices based on the ethos and value systems of social groups - legal, and political components. In highlighting the interrelationship between the built and the natural environment, Dunlap, Michelson & Stalker (2002) contend that built environments consist of tangible settings designed and constructed on the natural environment with clear objectives for human use. For instance, the large dams on the riverine systems are conceived as being constructed for various human needs, such as to store water for drinking, for irrigation and for hydroenergy generation, or even to sell water to earn royalties as has been the case with a number of schemes, including the LHWP.

[21] Created political space for NGOs in influencing policies specifically in respect of the construction of large dams is discussed in detail in Chapter Four.

Ascher & Healy (1990) point to the intricate relationship between the natural resources, the environment and development, which need to be understood holistically, and which therefore become relevant for this study. Rubin & Warren (1968) further mention that the construction of large dams is part of development strategies that aim to lift the standard of living by improving on agricultural production through irrigation schemes, providing access to cleaner energy sources through hydroelectric schemes, and by improving access to clean water through water supply projects. Therefore the existence of the links that knead together natural resource use, environmental quality and economic development are real and need to be thoroughly recognised as such (Ascher & Healy, 1990). However, there are opposing views as the one advanced by theorists like Durkheim that, '*social facts must be explained by social facts*', with not much consideration being given to the ecological aspects (Michelson & Van Vliet, 2002:75).

2.1.5 Political economy perspective

In contrast, the political economy perspective - in recognising the interconnection between the human and the non-human environment - points to the uneven distribution of power which is inversely manifested in the unequal spread of risks and benefits associated with high capital-intensive technologies among individuals, groups, communities, regions and societies. Furthermore, in China for instance, the construction of large dams has contributed towards the growing gap between the rich and the poor (Busgen, 2006). This view propagates that how people relate to their social structures, predetermines their ability to deal with the negative consequences emanating from changes occurring in the non-human environment, owing to man's action of altering the natural environment.

The above, in highlighting the links between the social and the natural environment, makes it evident that in the development paradigm, the natural environment and sociology are so intertwined that trying to separate the two is almost impossible (Kilmartin, 2002). Therefore, the exploitation of natural resources in the name of development, as in the construction of dams, is justified by theories as discussed below.

2.2 Theoretical justifications for the construction of large dams

The construction of large dams brings to the fore diverse views in the form of theories on the effect of human activity on the non-human environment in the name of development. These views, as shall be seen in the ensuing paragraphs, have had a direct influence on the

approaches to development[22] agendas. According to WCD (2000), from the 1930s to 1970s, the construction of large dams to many became synonymous with development and economic advancement. Hughes (1994) states that, since the non-human environment was viewed as chaotic during the Mesopotamian era, order could only be achieved through constant labour input as evidenced in the developments on the river-basins (Adams, 2001). Similar views were also shared by Judeo-Christianity, which had enormous influence on the values, practices and setting of the development path in Western societies (Barry, 1999).

2.2.1 Judeo-Christianity, industrialisation, modernity and capitalism

Construction of large dams was for instance viewed by people like President Kwame Nkrumah of Ghana as symbolising modernisation and human ability to control and use natural resources for the benefit of humankind (Scudder, 2005). This view was premised on the theoretical analysis of Judeo-Christianity, which is extremely anthropocentric[23] in that the non-human environment was simply regarded as instrumental in meeting the needs of human beings. In the Bible, in Genesis, it is stated that people were created in the image of God who ordered Adam and Eve to have dominion over the non-human environment. This bears testimony to the fact that the non-human environment such as rivers flowing can be used by human beings to meet their own needs (Barlow & Clarke, 2002). Furthermore, Barry (2002) mentions that Great Britain, in terms of development ideology and practice, served as a cradle for the Industrial Revolution premised on Christianity, which relegated the non-human environment to a store of raw materials for economic development. This is illustrated in Figure 2.1 below.

Although the inter-linkages between the economy and the environment are manifold and complex in the multidimensional approach towards the pursuit of development agenda, Figure2.1 below depicts that, in ignoring the environment, the economy appears to be a linear system. The production process **(P)** is aimed at producing consumer goods **(C)** to be consumed by individuals to create "utility" **(U)** or welfare.

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[22] Development in this context means improvement of the standard of living, which covers improved access to basic services and goods such as food, water and electricity. Therefore, development in the Third World is not merely about increased productivity and welfare, although these things are important, but development is also about meeting the needs of those who are most in need, and about increased participation and equality. Development is therefore also concerned with enabling people to take charge of their own lives, and escape from the poverty which arises not only from a lack of productivity but also from oppression and exploitation (Carter & O'Meara, 1979).

[23] Anthropocentric means human centred (Barry, 2002).

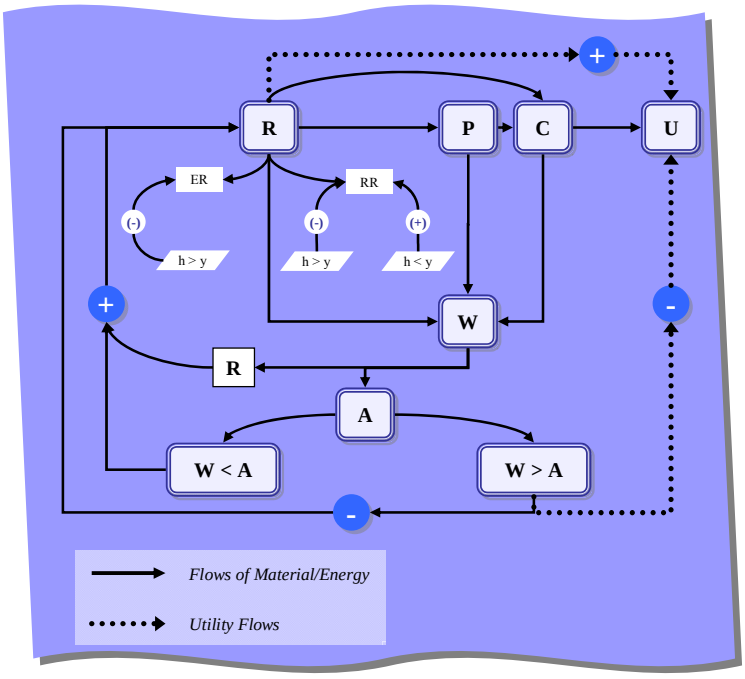

Figure 2.1: A circular flow of environment-economy interactions[24]

Source: Pearce & Turner, 1990

However, production requires inputs such as labour, capital and natural resources (raw materials, water, solar energy, oxygen, etc). So a flow of resource inputs **(R)** must be added to give a more complete picture of economic development. The result is still a linear system because it captures only the first function of natural resources, namely to provide resource inputs to the productive process. Furthermore, it means that gifts of nature can also be plugged from the environment for direct consumption. These include resources such as air and water, which can be consumed, those with life-supporting functions such as the ozone layer, and those providing aesthetic and recreational uses, such as water. The description of the circular flows between an economy and the environment can be improved by adding the flow of goods and services that the environment provides directly for social consumption. Negative interactions are marked with a "-" and positive interactions with a "+". Environmental feedbacks on human utility are also noted. It is also important not to lose sight of the fact that this model becomes relevant to industrialised economies as was

[24] Notice that if waste (W) is disposed of in excess of the assimilative capacity (A) of the environment, both the first and the third functions of the environment will be damaged. For instance, agro-chemical run-off contaminating a lake may eventually reduce the availability of commercially valuable fish. Similarly, hazardous waste disposal in a scenic area can detract from the enjoyment of the natural landscape. An example of positive feedbacks where (W) is less than assimilative capacity (A) is where animal wastes enhance vegetation and improve the scenic characteristics of an area. The resources box, R, in Figure 2.1 has been expanded to account for two types of natural resources. Exhaustible resources (ER) cannot renew themselves, for example coal, oil, and minerals. For exhaustible resources, any exploitation (h) results in a decrease in the resource stock as yield (y) is zero, i.e. (h > y). Renewable resources (RR) have the capacity to renew themselves, e.g. a forestry and fish. A forest produces a "sustainable yield" so that if we cut X cubic metres of timber in any year, the stock of trees will remain the same as long as the trees have grown by X cubic metres. If we harvest (h) a renewable resource at a rate faster than the rate at which it grows or the yield (y), i.e. (h > y), the stock will be reduced (the minus sign). If we harvest the renewable resource at a rate lower than it grows, i.e. (h < y), then the resource stock of the resource grows (the plus sign).

the case with the Great Britain, which was to set the development path for other nations of the world to follow, including developing countries.

As Western countries particularly Great Britain, went through transformation of the social order from feudalistic or agrarian systems to being modern states, industrialisation of the economy based on manufacturing, technological innovations and the use of machinery emerged. Industrialisation further entrenched human dominance on the non-human environment through its ingenuity of engineering, which altered the natural environment to create large infrastructure such as dams. According to Barlow & Clarke (2002), Hoover Dam is a true reflection of modern domination of nature by humans, in that it resembled the hierarchical structure with highly concentrated power, bureaucracy and capitalism. Similarly, Scudder (2005) motivates that decisions to go ahead with construction of large dams are influenced by the Utopian character of large projects, with science and technology ordering nature and society, which he refers to as high-modernist ideology.

The proponents of industrialisation view the untouched non-human and virgin environment as worthless in that it lacks input of human labour. Since Great Britain through industrialisation was regarded as a cradle of development, which other countries were to follow in terms of development, meant that developments in the West had enormous influence on the rest of the world. This is because of the importance that was attached to becoming more like the West, particularly by the developing countries. This is seen in the case of Ghana where the late President Nkrumah promised his people that the Volta Dam would rescue the Ghanaians from being hewers of wood and drawers of water and lead them into a new industrial age where economic modernisation would relieve the working man of some of the less necessary forms of drudgery (Scudder, 2005). Another example is the Mahaweli Dam in Sri Lanka, where the then president's vision was to transform the people of Sri Lanka within a period of less than a decade from being traditional farmers to Western-style of farming. As societies progressed from being agrarian to industrialisation, ideological principles that were prevalent had enormous influence in terms of determining the direction that the development path would follow particularly in those nations that were part of the United Nations. This was so because the United Nations has a development arm that is very much influenced by Western and modernisation ideologies as shall be seen below.

a) United Nations Development Decade of the 1960s-1970s

As echoed by the first United Nations Development Decade of the 1960s, development thinking at the time prioritised economic growth and the application of modern scientific and technical knowledge as the route to prosperity in the underdeveloped world. It was a period characterised by optimism and global co-operation, within which it was assumed that many development problems of the underdeveloped world would be solved quickly through the transfer of finance, technology and experience from the developed countries, as exemplified in the construction of large dams, which required importation of high technological advances and capital investments from the North. Insights from neo-classical economics were very influential in the development thinking of the time (Rostow, 1978). Rostow's model of the linear stages of economic development showed the economy as growing in five phases:

- Traditional society
- Pre-conditions to take-off
- Take-off
- Growth to maturity, and
- Mass consumption.

On the basis largely of the experience of the more developed societies, it was suggested that, through assistance in reaching a critical 'take-off' stage in the levels of savings and investment, the benefits of development characterised by 'modernisation' would inevitably and spontaneously flow from the core to less-developed regions. It was during this era that a boom in the construction of large dams was observed globally (WCD, 2000). In this period, development was modelled in such a way that it was crucial to become 'more like the West'[25] through processes of spatial diffusion, thinking which has been referred to as 'modernisation theory'. Yet, during the same era, there were emerging views counteracting the theory of modernisation such as those expressed by Ehrlich & Ehrlich (1970), referring to the never-to-be-developed countries of the Third World with no prospects of change.

Through a process of spatial diffusion the benefits of development were to flow from developed to developing countries, but conversely during this industrialisation epoch in

[25] Westernisation and modernity are in this report regarded as synonymous.

Europe and North America, more raw materials needed to be sourced from other parts of the world as those available within the confines of their geographical boundaries were not sufficient. Through colonisation and imperialism, substantial raw materials and labour were sourced from other parts of the world in pursuit of the industrial development agenda of particularly Great Britain, North America and France. Westerners found indigenous people living in developing countries, but for their convenience and the exploitation of resources from these countries, the indigenous people were regarded as part of the natural environment and not as part of the civilised human race. Therefore, the available local resources were extracted and shipped to Western Europe and America without much consideration for the needs of the local people in the South because they regarded these lands as being unoccupied. These local resources were used to construct highways, dams and other such infrastructure in the Northern Hemisphere without ploughing back the benefits to the nations in the Southern Hemisphere (Barry, 2002). During this era of capitalism, which is also referred to as an era of enlightenment, it was believed that people could improve themselves by improving nature through science and technology (Pottier, 1994).

b) United Nations Development Decade of the 1970s-1980s

In the subsequent decades, the development thinking was influenced strongly by the writings of scholars within the developing world itself, such as the work of Father Joseph Wresinski on his concept of the Fourth World (Ochoa, 2001). Significantly, their ideas related to the conditions of those countries rather than to conditions in Europe. Their work became known as the radical or 'dependency' school of thought. Fundamentally, their assertion was that underdevelopment was the direct outcome of development elsewhere; and that development and under-development are two sides of the same coin.

Peripheral or satellite regions and countries are integrated into the world system through processes of unequal exchange and dependent relations with the metropolitan core[26]. In consequence, the further entrenched the developing nations become in such processes, the more they are held back in development, rather than enabled to progress (York *et al.*, 2003).

[26] This relationship is observed between Lesotho and South Africa, where the former peripheral country has been a source of material to develop the core, which is its neighbour - South Africa, in terms of its industrial development. Lesotho has for a long time been a labour reserve for the mining industry in South Africa, ever since the discovery of diamonds in Kimberley. Therefore, construction of the LHWP is perceived by the opponents of large dams as perpetuating the role that Lesotho has been playing in the South African economy. What has however changed is the product. The dilemma here is that Lesotho has up to now not been able to get out the poverty cycle but continues to rely on South Africa and other donors when addressing access to the basic needs of its nationals.

Barriers to development, therefore, as modelled by dependency theorists, lie in the international division of labour rather than in lack of capital or entrepreneurial skills as propagated by modernisation thinking. This epoch was characterised by inequalities between and within countries which had in fact worsened, as observed in Peru, that poverty can only be understood by the injustices caused by prevailing economic, political and social systems that enable others to be more privileged and have wealth to the exclusion of others who in some cases are the majority (Ochoa, 2001). Although many developing countries had achieved economic growth as measured by Gross National Product (GNP), this 'development' was not shared equally amongst the populations of these nations. For example, in Brazil in 1970, the poorest 40% of the population received only 6.5% of the total national income, in contrast to the 66.7% of the total national income received by the richest 20% of the population (Wallerstein, 1984). Optimism in respect of a speedy end to underdevelopment soon faded.

c) United Nations Development Decade of the 1980s-1990s

In the third UN Development Decade in the 1980s, distributional issues such as improving the income levels of target populations became the focus through propagating for growth with equity or 'redistribution with growth', which emerged in the 1970s. It encapsulated the recognition that economic growth remains a fundamental ingredient within development thinking and action. Therefore, the nature of growth was critical to ensuring that the benefits did not fall solely to a minority of the population. This was because, through industrialisation, which was characteristic of the modern society, those who benefited were those who owned the means of production or were the state managers. It was thus easy to justify development projects on the basis of economic analysis, as the decision makers who were the state managers needed to protect their interests while at the same time being seen as pursuing the broader development agenda for the common good. Ascher & Healy (1990) support the view that income distribution within the development process is not only an effect but it is also a determinant of both levels and patterns of development.

The decade of the 1980s therefore marked an era of multidimensional concepts of economic growth, encapsulating widespread improvements in the social as well as the material well-being of all in society. In addition, it was recognised that there was no single model for achieving development and that investment in all sectors was required, including both Agriculture and Industry. Decisions to construct large dams are influenced by a wide range of issues including economic, political and environmental considerations. Obviously

these influences can be conflicting and therefore it depends on how much weighting is given to each one of them at a given time whilst simultaneously pursuing improvement of livelihoods[27]. This was particularly so in the developing countries where the majority of people depended directly on the productivity of natural resources or ecosystems for their livelihoods (Adams, 2001).

The decade of the 1990s was an era of growth and development where development was seen as improvement of the quality of life of the populations. The catchphrase was qualitative growth. There was an overreliance on some of the economic indicators like the GNP, balance of payments, employment and index of inflation, which obviously failed unambiguously to show whether the living standards of people were improving or not. Furthermore, there were those who felt that indicators like GNP did not guarantee the easing of social and human problems, nor of improving livelihoods (Tortajada, 2003). Hence the failure of many development projects to yield expected returns. Although this is discussed in detail in paragraph 2.3.2, some of the development projects like large dams were subjected to assessment of cost-benefit analysis, but the technocrats involved were not always objective in their analyses, as they also had to ensure that engineers continued to construct dams.

d) United Nations Development Decade of the 1990s-New Millennium Era

During the era between the 1990s and the 21st century, much emphasis was on putting people at the centre of development rather than seeing development in the context of an increase in the gross domestic product (GDP) or gross national income (GNI). This of course implied a paradigm shift from macro-theories of modernisation and dependency to a micro focus that places people at the centre of development[28], which has been referred to as 'the humanist paradigm' (Davids, Theron & Maphunye, 2005:17). This therefore meant development initiatives that were responsive to people's needs. Essentially this meant that public participation became a necessary ingredient in the development agenda through the application of grassroots approaches. This alternative development dispensation has been captured in a number of international instruments like the Millennium Development Goals (MDGs) adopted by the UN in 2000. Some of the MDGs do justiy the construction of large dams in that when one talks of eradication of extreme poverty and hunger, contruction of

[27] Livelihood is here defined as people's capacity to generate and maintain their means of living, enhance their well-being and that of the future generations. These capacities are contingent upon the availability and accessibility of options which are ecological, economic and political, and which are predicated on equity, ownership of resources and participatory decision making (De Satgé, 2002).

[28] People - centred development is defined as a process by which the members of a society increase their personal and institutional capacities to mobilise and manage resources to produce sustainable and justly distributed improvement in their quality of life consistent with their own aspirations (Davids *et al*., 2005:17).

large dams does create jobs for the unemployed skilled and unskilled labour. Furthemore, if cthe connstruction of large dams is done to meet irrigation water requirements, then here the issue of food production can go a long way towrds eradication of extreme hunger. Some of the MDGS that have direct bearing on the construction of large dams include:

i. eradication of extreme poverty and hunger through irrigated farming;
ii. combating HIV/AIDS, *malaria* and other diseases by providing clean and safe drinking water; and
iii. ensuring environmental sustainability.

Some of the related specific MDGs include:

i. To have, by 2015, begun to reduce the incidence of *malaria* and other major diseases; and

ii. Halve, by 2015, the proportion of people without sustainable access to safe drinking water and basic sanitation (UNDP, 2000).

The Millennium Development Goals have poverty at their core. The measurement used is an economic one where the poverty line is used as a measurement with people living on less than one (1) US dollar per day being classified as extremely poor (Willis, 2005). It is nevertheless recognised that economic measurements of poverty are limited. As a result there has been the introduction of the Human Poverty Index (HPI), which has two components: HPI-2 for 17 countries in the Northern Hemisphere and HPI-1 for 88 countries in the Southern Hemisphere, all of which encompass indicators of health, education and standard of living. All of these however seem to exclude the qualitative measurement of poverty (Willis, 2005). Addressing the same issues is the Johannesburg Plan of Implementation, which is an output of the World Summit on Sustainable Development held in Johannesburg in 2002. Other theoretical justifications for the construction of large dams are set out below.

2.2.2 Thomas Malthus (1766-1834)

Thomas Malthus, a population theorist, argued that prospects of progress were for example, continually threatened by population growth and the fact that the current food production will not satisfy the demands of the exploding population. These views are covered in the limits to growth debate[29] (Barry, 2002). The challenge confronting many

[29] The limits to growth debate originated in the 1970s. Its main concerns are that if the present growth trends in population, industrialisation, pollution and resource depletion continue unchecked, the limits to growth on this planet

governments, therefore, included identifying ways of satisfying people's basic needs such as food security, access to safe drinking water and cleaner energy sources, particularly in the developing countries. This concern of population explosion emanated from the countries in the Northern Hemisphere about those in the Southern Hemisphere; and it had a lot of influence in terms of the subsequent policies that addressed basic needs for the daily survival of people. The construction of large dams for irrigation or for consumption purposes was therefore seen as a viable option in meeting these basic needs (De Satgé, 2002).

2.2.3 Charles Darwin (1809-1882)

Darwin's theory justifies construction of large dams on the basis of his principle of natural selection, where biological organisms are adapted to their environment by a process of struggle for survival. The theory suggests that those organisms best adapted to their environment will survive. This theory regards human beings as part of a wider biosphere. Thus, because of their own advantageous biological characteristics, they are able, through a process of natural selection, to harness water to their own advantage and not because people are a superior species. This is in line with the inherent duality of human existence that recognises human beings as part of the web of life for the larger biosphere (Dunlap, Michelson & Stalker, 2002).

2.2.4 Karl Marx (1818-1883) & Friedrick Engels (1820-1895)

Marxist theory is a materialistic theory of human society, its dynamics and historical evolution. The theory states that material conditions and relations within societies, not their ideologies, determine their character. Since the construction of large dams is closely associated with industrialisation, Marx recognised that the achievements of industrial capitalism required the non-human environment to be dominated for accumulation of material wealth (Mandel, 1978).

According to the Marxist view, to be modern and progressive meant that nature (including rivers that are dammed to meet human water needs be it for consumption or industrial needs) had to be subjected to man (Mandel, 1978). Proponents of Marxism regard those opposing man's domination over nature as either simple-minded sentimentalists or reactionaries who just want to protect the feudal system of pre-industrial social order. Marxists purport that within the capitalist system, which is a pre-condition for

will be reached sometime in the next hundred years. The most probable result will be sudden and uncontrollable decline in both population and industrial capacity. It is apparently possible to alter these growth trends and to establish a condition of ecological and economic stability that is sustainable (De Satgé, 2002).

a Utopian state, there is intensive use of science and technology that is seen in the case of the construction of large dams, division of labour and extensive exploitation of nature and of the working class by the owners of the means of production. The system thus calls for human beings to use their labour power, skills and creativity to transform the non-human world into goods and services required for living. These goods and services include water supply, energy supply and food which can be attained through the construction of large dams, and all of which are necessary in order to reach the post-capitalist era of Utopia, (which is the highest level of wealth and affluence). Marx & Engels are critical of the capitalist system of production in relation to private property because they assert that it holds back the forces of production to produce even more wealth, thereby not exploiting the non-human environment efficiently and to its fullest potential in order to redistribute material needs to people efficiently. While they recognised that capitalism had elevated the status of human beings, it had also not been able to eradicate poverty ((Mandel, 1978). Below are some of the socio-economic justifications used to justify the construction of large dams.

2.3 Socio-economic and political justifications for construction of large dams

Besides the social theories outlined above, there are other factors that are used to justify the construction of large dams as shall be seen below. The discussion below only uses the three examples of poverty, cost benefit analysis and political interests as by way of illustration.

2.3.1 Poverty

Poverty is a multidimensional phenomenon determined by a number of factors, including income level(s) and access to basic needs such as food, water and energy. Many people of the world today still lack access to these basic needs. This issue was further highlighted by the WHO (2000) in reporting that, an estimated 826 million people suffering from chronic hunger; whilst more than one billion lack access to safe drinking water, 2.5 billion do not have adequate sanitary facilities; and, more than half of all deaths are from natural catastrophes caused by floods. Furthermore, it is anticipated that by the year 2050, there will be an additional 1.3 to 4.7 billion people requiring food, water and energy (Barlow & Clarke, 2002; Guerquin *et al.*, 2003). According to WCD (2000), experts propose, on average, 50 litres of water per person per day to meet the consumption, bathing, cooking and sanitary needs. Therefore, national governments thus saw development projects like

the construction of large dams as being able to provide solutions to some of these challenges (McCully, 2001; Rockström, 2003).

Yet, Rivers for Life (2003) presents a contrary view which suggests that development projects such as the construction of large dams are advocated and supported by a few players with vested interests. Among these are the big private companies, the World Water Council, the Global Water Partnership, aid agencies and the national bureaucrats. The aim of these few players, in advocating for the construction of these large dams, is to make a profit and not necessarily to eradicate poverty. Since these players are powerful, they are referred to as *'Mafia'*, or the 'Water Lords' and they would readily invest US$180 billion annually in water infrastructure under the pretext of meeting the water demands in the developing countries, whilst in actual fact they have failed to meet the needs of 1.1 billion people who still lack access to adequate water supplies (Barlow & Clarke, 2002). In the same connection, Busgen (2006) mentions that the construction of large dams is primarily pushed by a diffuse mix of interests that include local political elite whose interest is mainly to earn a living, and large corporations seeking investment opportunities with large economic returns. Busgen further states that this coalition is unlikely to take on board the national agenda of social equity and environmental sustainability but has the potential of becoming a threat to sustainable development.

Involvement of the private companies within the water sector is apparently a direct consequence of the era guided by the 'Washington Consensus', which is an economic model rooted in the liberal market economies that support privatisation and commodification of "the commons" as part of capitalist expansion. The results thereof, have in some of the cases, led to the removal of social safety nets for the poor, thereby further exacerbating poverty, inequalities within the social groups, and increasing the vulnerability of the already disadvantaged segments of societies (Barlow & Clarke, 2002). Thus, poverty continues to be high on the global agenda despite the enormous investments made particularly in the developing countries by the multilateral and bilateral institutions in concert with the national governments to redress issues of poverty.

The World Summit for Social Development (1995) repositioned the Global Poverty Agenda which led to the declaring of 1997-2007 as the decade for poverty eradication. The issues of poverty eradication and the halving of the numbers of those people without safe and reliable drinking water are issues that were regarded as key to development in the World Summit on Sustainable Development (WSSD) and the Millennium Development Goals (UNDP, 2000). Many governments are thus faced with a challenge of sustainablly

meeting these basic needs like water for the growing population not only to meet consumptive needs but also socio-cultural needs, economic demand and maintenance of natural environment ecosystems (Figuẽres *et al.*, 2003; Guerquin *et al.,* 2003). Therefore, an increase in the construction of large dams, particularly in the developing world, is seen as a strategy for providing solutions to some of these challenges. Associated with the provision of water through the construction of dams, is the debate on whether water is a commodity that can be sold in the open market or is a human right where each person has right of access and where governments have the responsibility of ensuring that each citizen has access (Faruqui, 2003).

Anti-globalisation proponents see poverty or any other social injustices, such as lack of access to basic needs, as being caused primarily by the unification of the world through global politics and economic systems. Therefore, poverty has to be understood within the context of North and South relations, where the former is more affluent and thus better positioned to manage its socio-economic challenges (Gray, 1998). According to Gray, poverty and socio-economic inequalities, as well as environmental destruction, require the dismantling of the global economy as a single free market because it promotes instability. Nevertheless, development initiatives such as the construction of large dams are justified on the basis of cost benefit analysis as discussed below.

2.3.2 Cost benefit analysis (CBA)[30]

Most projects, including those on large dams, are justified on the basis of cost benefit analysis. Prior to the 1980s, project appraisals mostly considered economic issues with hardly any concerns for the environmental and social costs. In the same connection Barry, (2002), states that in the development of the standard manuals for projects like the construction of large dams implemented in the Third World, issues of environmental sustainability were not considered in the CBAs. As a result, the CBAs were criticised for overly emphasising the monetary value of projects' costs and benefits; while to others costs and benefits cannot be understood in monetary dimensions only. This was because economics had managed to refine its scientific character and therefore became an objective in its own right in that, it can explain, predict and measure its subject matter in mathematical terms. It was also regarded as a single discipline equipped to deal with tough developmental choices, and to inform decision making on the mutually exclusive outcomes of projects (Barry, 2002).

[30] CBA is an attempt to weigh the total costs against the benefits of a development activity and this is usually expressed in monetary terms. These costs usually include not only direct pecuniary costs and benefits but also those that relate to environmental aspects. Therefore, if the total costs exceed the total benefits, this then forms the basis for the justification to prevent projects from proceeding (Black, 2002).

It is however important to note that even when the CBAs were conducted to determine the economic internal rate of return (EIRR)[31] of a project, the outcome did not necessarily influence decisions on whether a dam should be constructed or not. An example is provided by McCully (2001) where he mentioned that, based on the investigation conducted by the World Commission on Dams (WCD), only nine out of twenty constructed dams had EIRR performed. In all of them (nine), it was found that they had an EIRR below 10%, which was below the minimum acceptable standard of between 10-12% for developing countries. But the construction of such dams nevertheless continued despite the fact that CBA had to prove that the project would result in the maximisation of benefits while there would be minimisation of the costs, which would then render such a project `good` in that the benefits associated with it, far outweighed the cost (Finsterbusch & Freudenburg, 2002). Thus, the notion that factoring the full costs (including environmental and social costs) into the economic evaluations of projects would have resulted in many projects not having gone ahead is disputable when one considers the just mentioned issues and the findings of the WCD (2000).

A typical example of dam projects implemented without conducting proper CBAs was the Quebec Giant James Bay Scheme, which comprised the construction of the world's 10 largest dams and 11 or more electrical generating stations[32], where approval was given before any environmental and cost-benefit studies were conducted. As such, little was known of the James Bay Scheme's impacts on the ecology of an area estimated at 144 000 square miles, which was to be covered by this huge development project. Another example is the Kindaruma and Kamburu dams in Kenya where it was difficult to determine the impacts the dams would have on the ecology of the Tana River where, because of the delays in collecting the baseline data, 2 000 migrant workers had already moved onto the construction site. At that time, the impacts associated with the presence of the workforce in the area were already being experienced. The Idaho Teton Dam in the United States of America was also constructed before finalisation of the feasibility study. The end result was that the dam collapsed, causing damage worth more than US$1 billion. This was despite the fact that the construction of large dams is a very expensive business in which, in most cases, the expectation was that the investment would yield returns on the investment. Yet, this had not been the case in some of the constructed large dams. For example, the cost of constructing the Itaipu Dam on the Parama River between Paraguay

[31] EIRR is a tool that it used to measure whether a project is worth investing in. For instance, a project is worth the investment if its EIRR is greater than the rate of interest including the appropriate risk premium (Black, 2002).

[32] The James Bay Scheme had many other components such as those involving the construction of two airports. There has only been a mention of those components that are relevant to this study.

and Brazil was US$16 billion, but unfortunately it has to date not been able to yield the expected economic returns estimated by those who motivated for its construction (Goldsmith & Hildyard, 1984).

The importance of informing the decision making process through presenting the real facts reflecting the actual costs and benefits of constructing large dams cannot be overemphasised. However, because of the inherent bias by some of the professionals who wanted to pursue their own agendas, not all the facts were in some cases provided - particularly those on the costs because this would not go down well with their professional peers, nor with those who employed them. Consequently there is the tendency to play up the benefits of such schemes and downplay their associated costs, the net consequences being a lack of objectivity in the expert advice, resulting in projects being either justified on inadequate facts or on false grounds. For instance, the James Bay Project was justified *inter alia* on the basis of its creating about 125 000 new jobs whilst in actual fact it only created 22 000 new jobs at the peak period of construction. The bulk of the unskilled labour required was sourced locally for a specific period, after which the economic benefits derived from the project evaporated. This resulted in most of the unskilled labourers returning home unemployed and some having incurred losses of property, such as land and other natural resources which sustained their livelihoods (Williams, 1986).

Similarly, Scudder (2005) points out that, in pursuit of their vested interest in designing or constructing dams, engineers and financiers want to increase their area of influence and prestige by ensuring that more dams are built. This has been done through justifying the dams on censored information that is usually not subjected to public scrutiny; and this is tantamount to what Scudder calls professional or financial corruption, as was the case with the Tennessee Valley Authority where the CBA was juggled to justify the dam's construction. The study conducted by the General Accounting Office in the USA on the 'Corps of Engineers' projects revealed that typical factors in motivating for the construction of large dams were low interest rates, exaggeration of the benefits associated with such projects, and environmental costs concealed by distortion of the facts emphasising the financial gains to be derived from such water schemes.

Similar observations were also made regarding the Missouri's Pattonsburg Lake Project, which was estimated to bring 1.1 million dollars a year in agricultural benefits that could not be substantiated factually. Yet, the Department of Agriculture had estimated that the project would result in losses due to disturbance of existing agricultural land and a loss of business to the local agro-industries. Moreso, the Manitoba Environment Council prepared

a report conceding that the Missouri Scheme would actually result in the loss of 8,148 acres. But, because of interest on the part of the financial institutions whose sole interest was to ensure that projects were approved for funding, the tendency was to overstate the returns to be realised through flood control schemes, irrigation or the generation of hydroelectric power, while also down playing the cost of such projects (Goldsmith & Hildyard, 1986). As a result of the misrepresentation of facts, a poor country like Honduras for instance, ended up allocating a considerable chunk of its Public Works budget to the construction of a hydroelectric dam with hardly much left to pursue other development alternatives that would have been more sustainable. This is because the construction of large dams seems to be a viable alternative for meeting the basic needs in that they tend to be more spectacular and visible and that they therefore make more political sense and ultimately symbolise national prestige for many developing nations (Kemper, 2003).

2.3.3 Political interests

The construction of large dams is sometimes justified on political grounds. This is because politicians tend to equate their political worth with the amount of money spent on capital investments. The tendency as a result, is for the politicians to mobilise funds to support projects that are closest to their voting booth as a means of guaranteeing a 'Barrel of Pork' in the form of an economic bonanza (Rivers for Life, 2003). Sharing the same view, Bridger & Winpenny (1987) express the view that, because the politicians desire a rapid and visible progress that will earn them a favour from the electorate, the construction of large dams definitely serves to meet such a desire. Therefore, political decisions usually take precedence over other factors in the sanctioning of constructing dams, as the interest of politicians is mainly to nurture their political base.

The Aswan High Dam presents a typical scheme which augured well politically because of its gigantic and daring character. Added to this was the fact that no regime previously in power had ever contemplated such a venture. This positioned Egypt in the vanguard of modern hydraulic engineering. The dam also symbolised Egypt's will to resist imperialistic endeavours to destroy the revolution (Scudder, 2005). The Hoover Dam is another example that symbolised the infinite power of Man over Nature and this would be what many politicians want to portray. Hence, the enormous support for the construction of large dams by the 'powers that be' (Barlow & Clarke, 2002).

Moreover, the construction of large dams provides a platform for political campaigns in the sense that, the rich farmers or owners of big industries want to have unlimited access to water use; therefore they require political decisions that provide solutions to their felt

needs. A politician who can provide these solutions is then reassured of being re-elected into public office as the water needs of the national business elites, construction companies, financial institutions and the highly influential corporations would have been met through the construction of these large dams (Barlow & Clarke, 2002).

The Cahora Bassa Dam[33] in Mozambique, which was constructed in the 1970s, portrays another dimension of political interests. Mozambique during this era was still a Portuguese colony. Therefore, the then state managers were largely protecting outside political interests. Apparently, a major justification for constructing the project was that flooding of the 250 km-long Lake Cahora Bassa would provide a physical barrier against Frelimo guerrillas seeking independence. Furthermore, the expectation that the 1 million resettled white farmers in the region would fight to protect their new lands, resulting in the control of the Portuguese being further entrenched in the region. Another example is the Akosombo Dam in Ghana, which was completed in 1965. The project was to benefit the government and their foreign allies through providing the foreign company (the Volta Aluminium Company) with cheaper electricity. The Volta Aluminium Company, which was a consortium of two USA-owned companies, produced aluminium from imported alumina, despite the fact that Ghana had considerable reserves of alumina of her own (McCully, 2001).

Irrespective of the justifications to construct large dams, many are characterised by a spatial mismatch between costs and benefits because the economic benefits emanating from these tend to be limited on a local scale, increase somewhat at a national level, and can be substantial on a global level. On the other hand, costs in terms of foregone development tend to be locally significant and nationally and globally only moderate. Discussion on the impacts of large dams is provided below.

2.4 The impacts of large dams construction

Assessing the impacts of large dams is complicated and a challenging issue in that it involves the balancing of adverse environmental and social impacts weighed against immediate human development needs. This is exemplified by the dams constructed in the highlands of Bio Bio in Latin America, where those who were in support of constructing the dams saw them as a means of generating the much needed developments, which would mitigate poverty in the area. Yet, on the other hand, those who opposed their construction

[33] Most of the electricity from Cahora Bassa Dam in Mozambique was sold to South African industries.

did so, on the grounds of violation of the human rights of the indigenous groups (González-Parra, 2001; Johnston & Garcia-Downing, 2004).

The school of thought that supports the construction of large dams sees them as bringing developments, alleviating poverty and addressing issues of inequity between the Southern and the Northern Hemispheres. Yet, those belonging to the school of thought that opposes the construction of large dams view them as actually increasing the much unwanted inequality between the two hemispheres - southern and northern; and between the rich and the poor (Rivers for Life, 2003). Nevertheless, the degree to which large dams have delivered services and net benefits as planned varies substantially from one project to the next, with a considerable portion actually falling short of physical and economic targets (WCD, 2000). Since the construction of large dams uses high capital-intensive technologies suited to the capitalistic system, their construction has in most cases resulted in environmental and social ills (Dickens, 1992).

In the same connection, Bustelo (2001) also echoes the opinion that capitalism brews inequalities and violation of civil rights. Beck (1992), in his analysis of a society at risk, states that with capitalism, costs far outweigh the benefits; and the results thereof have been elevation of the debates on the costs *versus* benefits associated with the construction of large dams against other options of providing reliable water supply. The participants in the debates include but are not limited to the anti-dam campaigners, the international funding institutions and the World Water Council, the details of which are discussed in Chapter Four. Some of these participants, like the anti-dam campaigners, view capitalism and industrialisation as creating havoc in terms of environmental degradation in that the modern world calls for what Barry (2002) termed 'a wholesale transformation of nature' that causes imbalances in the ecosystems.

Similarly, Beck (1992) sees technological advancement used in the construction of large dams as increasingly causing modern environmental risks. This is why, despite the economic successes achieved through some of these dams, they have, on the other hand, created significant changes in the pre-existing environment, which has been detrimental to both the biophysical and also the social environments. In sharing the same view, Ascher & Healy (1990) argue that manipulation of river systems on the global scale can result in irreversible consequences, yet funding for construction of these super dams continues at our own peril.

Some of these irreversible consequences, according to York *et al.,* (2003), have been observed in the following areas: i) land cover, ii) the number and distribution of species, iii) the chemical composition of the atmosphere, and iv) population movement and changes of settlement. Similarly, Williams (1986) states that construction of large dams has had enormous impacts through flooding of valleys upstream, thereby altering the riparian productive means downstream, as well as transforming the social life of a country and indigenous and traditional cultures. An example is whereby, through involuntary resettlement, agrarian communities are suddenly thrust into a cash economy and city lifestyle that is unfamiliar, as has been the case with the resettlees at Makhoakhoeng. It is therefore important to note that impacts emanating from the construction of large dams can be either positive or negative. While this is so, Scudder (2005) observes that the construction of large dams has been flawed for many reasons. The benefits which were to be derived from constructing these have been overestimated, whilst the adverse impacts were underestimated.

Furthermore, the impacts of constructing large dams can be short-term and are therefore immediately experienced through changes occurring in the vicinity by damming the rivers. On the other hand, there are those that can be longterm in terms of being experienced well beyond project completion. Barry (2002) therefore suggests that, for one to have a full appreciation of the impacts emanating from the construction of large dams, it is important to understand fully the types and the meanings attached to the ways in which the community views, values, treats and uses the natural resources. This is necessary as it provides insights on the importance attached to a particular natural resource within the context of social relations, moral codes, cultural values and practices, economic arrangements, agricultural practices, property relations, forms of scientific and technological capacities and so on (Barry, 2002). This understanding becomes even more relevant particularly because human beings are part of the larger order of things and that a sense of self is partly tied to one's sense of place. This aspect becomes critical in the process of involuntary resettlement, particularly if there is a strong sense of attachment to a place of birth, it helps to point to the type of stress[34] that could be experienced as an impact and what mitigation measures would be suitable. Therefore the natural environment is an essential part of understanding human beings and their material status, which then forms the basis for impact analysis.

[34] In Chapter One of this thesis, Scudder (2005) has outlined different types of stress that are caused by involuntary resettlement.

Figure 2.2 below demonstrates that the impacts of constructing large dams can be experienced within the four different phases of the project, namely: upstream, dam or reservoir, downstream and the associated infrastructure like roads and powerline corridors.

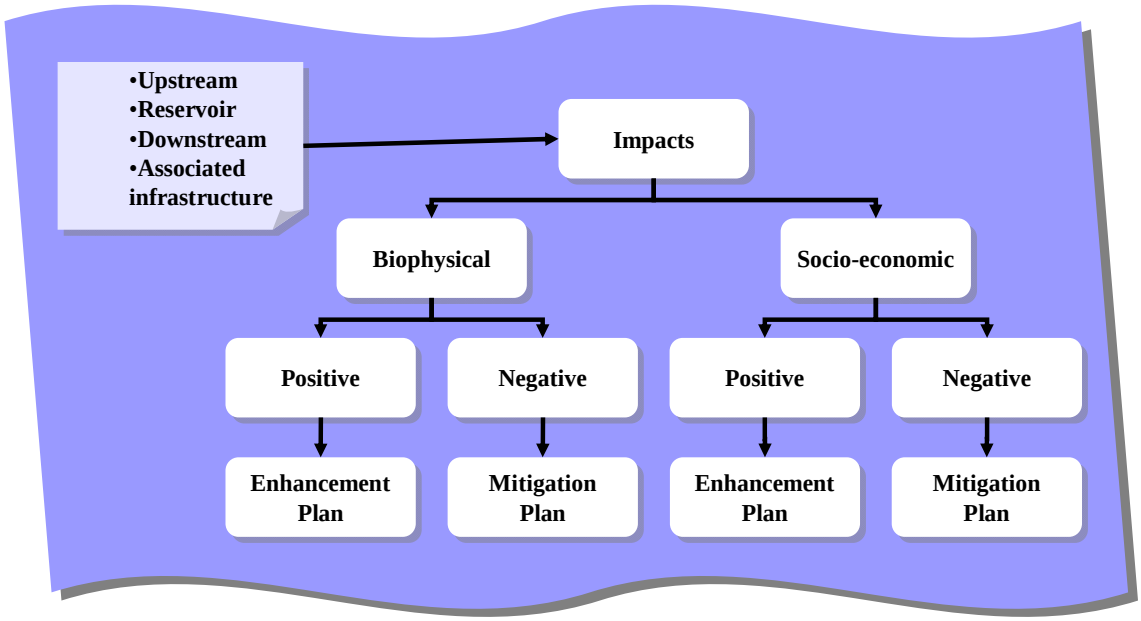

Figure 2.2: Large dams and their impacts

Source: Ntlafalang Consultants, 2005.

Through his longitudinal studies conducted in Africa, Asia, and North America, Scudder (2005) has concluded that some impacts have global trends irrespective of geographical, cultural and political differences, whilst other are project specific. Detailed discussions on the impacts are provided in the ensuing paragraphs.

2.4.1 Positive impacts associated with the construction of large dams

The construction of large dams is seen as an attractive alternative in that other options of water supply such as the desalination of seawater have proven to be expensive, whilst rain harvesting is extremely unpredictable (Guerquin *et al.*, 2003). Goldsmith & Hildyard (1984) state that by means of large dams, water can be stored during peak rainy seasons for use during the drought periods. Although the details are provided below, some of the noteworthy benefits associated with the construction of large dams include: i) regulation and augmentation of low flows in the rivers, ii) prevention of floods, iii) provision of water in drought-stricken areas to boost agricultural production, and iv) to supply cleaner energy sources for economic development (Guerquin *et al.*, 2003). The details of the positive impacts are provided below.

a) Cleaner energy

Hydroelectric schemes are believed to produce cleaner sources of energy when compared with the fossil fuel that increases air pollution through increased carbon dioxide emissions, thereby contributing to a number of diseases such as acute respiratory infections, chronic respiratory diseases, cardiovascular diseases and cancer (WRI *et al.*, 1998; Ahmad, 2003). However, this view is being increasingly contested. Revalent literature is now revealing that damming of rivers does impact adversely on the atmosphere[35] (Rivers for Life, 2003).

The type of energy consumed is often used as an index to determine a country's level of development and standard of living. For instance, the degree in which hydroenergy is used reflects the standard of living for a particular country[36] (Ahmad, 2003).

b) Industrial development

Central to economic development is industrialisation, by means of which there is production of goods ranging from consumer items to information technology (WRI *et al.*, 1998). Water as mentioned earlier, is an important ingredient in the production process in the sense that it is a direct input into the production process in that some of the world's growing industries require enormous quantities of water. In the same connection, Barlow & Clarke (2002) mention that it takes approximately 400 000 litres of water to make one car; and in this era of information technology, computer manufacturers require huge amounts of de-ionised fresh water for production. Furthermore, through water, generation of hydroelectric power can be a good source of energy for the industries.

Development of the fish industry has been emphasised as one of the major benefits of constructing large dams. This is because the aquatic environment is expanded through damming of the rivers, which also increases the levels of nutrients from the vegetation and soil submerged. Therefore the likelihood of the fish population increasing substantially is a reality to be reckoned with, although in some cases this has been short-lived. For instance, in the case of the Volta Dam, there were as many as 20 000 fishermen with 20 000 canoes catching 60 000 metric tonnes of fish per year. But as the submerged vegetation went through a process of decay, there was a rapid drop in the fish population as there was a reduction in the nutrient content. In the case of Kariba, about 2 000 fishermen were landing some 3 628 metric tonnes of fish immediately after inundation of the Zambezi River. But after some time, the numbers dropped (Scudder, 2005).

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[35] This is discussed in more detail in paragraph 2.4.2 of this chapter.

[36] It is important to remember that in determining the standard of living for each country the type of energy consumed is not the only indicator. There are other indicators like the literacy rate, employment rate, etc.

c) Creation of employment opportunities

One of the direct positive impacts associated with the construction of large dams is the creation of job opportunities for both the skilled and the unskilled labour markets. During the planning and design phase, the consulting firm(s) would benefit greatly by employing mostly qualified staff with high levels of competency to undertake the tasks of the planning and designing of the large dams. During the construction phase, the appointed contractors would also employ highly qualified staff, earning big salaries, plus unskilled labour to do menial work. Regarding the operations and maintenance phase, qualified staff is still required to ensure that the constructed large dam(s) will operate as expected.

It is also worth noting that there are spin-offs associated with the construction of large dams in the sectors of Trade, Industry and Tourism, which can create employment for thousands of people.

d) Improved infrastructure

Some of the components of the advanced infrastructure include the construction of roads, construction powerlines, clinics and schools, all of which remain and have long-lasting benefits to the local communities (Goldsmith & Hildyard, 1984). This is particularly so because dam projects are usually sited in areas which were previously inaccessible and isolated but become accessible and integrated with the national economy through a web of roads connected to facilitate the construction of dams. An example is the Lesotho Highlands Water Project[37].

e) Cheaper energy and improvement of well-being

Another benefit resulting from constructing large dams is that, after the initial massive capital required for investing in the construction of such infrastructure, the hydroenergy is usually cheaper to operate and therefore becomes financially accessible to many people. However, as observed by Williams (1986), electricity prices in certain instances are kept low to subsidise industries, as was the case with Tucurui in Brazil. Aswan Dam in Egypt is also a typical example of providing cheaper hydroelectricity when compared with the purchasing of fossil fuels from abroad.

Goldsmith & Hildyard (1984) however state that the blocking of a river's course through either landfill or the construction of a concrete structure - involving heavy use of fuel for earth-moving equipment and the use of dynamite during blasting - requires use of fossil

[37] The details of Lesotho Highlands Water Project are discussed in Chapter Five.

fuel which is expensive. Goldsmith & Hildyard (1984) thus caution people that before talking of cheaper sources of energy, it is important to determine the proposed energy gains through establishing the energy costs used during the construction of a dam and then substract such costs from the power to be generated in order to determine the net gains. For instance, in the case of New Melons Dam, it was found that there was a net loss of 39 million kiloWatt-hour (kWh) per year. Nonetheless, the WCD (2000) mention that energy services provided by dams have benefited urban populations, particularly those connected to power distribution systems. Typically, in countries with low levels of energy services, even small energy inputs bring significant welfare improvements as was the case with the informal settlements (favelas) in Sao Paulo, Brazil, which illustrated the social and environmental benefits of electricity services to local communities in terms of improving people's livelihoods (see Box 1).

Box 1: Bringing electricity to the favelas in Sao Paulo, Brazil

Between 1973 and 1993, Sao Paulo favelas swelled from about 700 000 inhabitants to over 2 million. Initially, the squatters' shacks had only sporadic and illegal electrical connections, partly because the electric utility had no procedure for electrification of such structures and partly because municipal authorities thought that improvement of the favelas would condone illegal occupation of the land.

By 1979, the city and the electric utility, Electropaulo, came to an agreement and connected some favelas to the grid using simplified installation kits and no meters. Consumers were billed a flat rate, which was subsidized, for a minimal monthly consumption of 50 kW/h - enough to run a couple of loads like a radio or other domestic appliance. The cost of metering was considered too high for such low usage levels.

By 1993, some 100 000 shacks were connected, and the quality of life improved. Better lighting simplified the tasks of cleaning and maintaining the shack and caring for children and sick people. Without smoke from candles and kerosene lamps, health improved. People started to use Television (TV) sets, irons and refrigerators. Where water services were provided, electric showers also became more common. For the squatters, an important benefit was receiving bills with their name and address, which gave them a certain social recognition as well as access to credit.

A decade later, electricity consumption per shack had increased to 175kW/h. Many of the dwellings had been greatly improved, and services were more reliable. Some demographers attribute the strong decline in Brazil's population growth rate - from 3.8% per year in 1970 to 1.4% today - to the adoption of new cultural values that spread partly through television, which electricity made available.

Source: WCD, 2000.

f) Improvement of women's economic efficiency

In many developing regions, particularly in sub-Saharan Africa, gender roles are culturally constructed, resulting in the stereotyping of gender roles (De Satgé, 2002). Women in the developing countries, for instance, bear a heavy burden of domestic labour by having to fetch water, fuel wood and performing childcare. Therefore provision of electricity through hydroenergy or water supply through water reservoirs is found to reduce the burden on women who would otherwise have to walk long distances to fetch fuel wood or water to meet domestic needs (Ntlafalang Consultants, 2002a).

g) Regulation of river flows

Regulation of river basins is one of the benefits derived through the construction of large dams. This is because flood problems have become a serious concern in the world, causing losses of about 3 000 million dollars per annum (Shen, 2003). In Asia alone, floods destroy 4 million tonnes of crops yearly and the lives of an estimated 17 million people have been affected. This problem of flooding is further compounded by deforestation in that when catchment areas around the rivers are heavily forested, the roots act as a sponge by absorbing rain water and releasing it slowly to the river below. In a reverse scenario, massive volumes of water end up in the river systems unimpeded. In 1978, India experienced some worst floods, which resulted in thousands of villages being flooded, crops covering millions of acres damaged, hundreds of people drowned, millions of people left homeless and damage to properties and livestock running into millions of dollars. In China in 1981, 53 cities, 580 towns, 2 600 factories and a vast area of agricultural land were submerged; houses were destroyed; 1 000 people were killed and about 30 000 were injured; and, damage to property was estimated at over a billion dollars. In the United States of America, by 1976, the annual damage caused by the floods was estimated at 3.5 billion dollars and a projection of bills to be incurred due to floods was approximated at 12 billion dollars by the year 2000 (Goldsmith & Hildyard, 1984). Therefore, the reservoirs serve to store water, which impounds the flood waters into the storage before it is released at a slower rate - depending on the height of the embankment(s), thereby preventing destruction downstream (s).

h) Reliable water supply

Another positive impact of constructing large dams is the storage of water in the associated reservoirs for areas that are prone to drought or heavy seasonal variations. A case in point is Egypt, where rainfall is unreliable and, as a result, food security at the household level is threatened. Therefore, the construction of the Aswan Dam as a means to

regulate the water flow in the Nile River was then justifiable. This is because the Nile River was prone to seasonal variations, with about 80 % of the water being received during the flood season in August to October, depending upon climatic conditions in the main catchment area of the Ethiopian highlands. The Aswan Dam allowed for the management of the flow of the Nile's discharge, evening out the annual flow below the dam and protecting it against floods and droughts. The regulation of the river therefore enabled extended periods in which plants could be grown because of the availability of a reliable water supply. The ultimate reason for irrigation to redress the problems of food insecurity is thus achieved (Egré & Senécal, 2003). In Senegal, around the River Senegal, drought was being experienced due to scant rainfall, which affected agricultural production negatively as there was a decline in the crop yield. So, through the construction the multipurpose Manantali and Diama dams, the aim was to improve the agricultural production by providing irrigation water (Adams, 2000).

i) Improved food production through irrigation

Irrigation for crop production claims about 70 % of all water used by humans. It is thus one of the major acclaimed benefits to be derived from constructing large dams (Barlow & Clarke, 2002). This is so despite what actually happens in practice where, in some cases, only a few farmers actually benefit from such schemes. Nonetheless, irrigated land is much more productive than rain-fed land (Scott, 2003; WRI *et al.,* 1998). Therefore, the importance of irrigation schemes in food production cannot be overemphasised, in that, irrigated land will continue to contribute towards meeting future food requirements in the world in general, despite the exorbitant capital investment associated with the construction of these irrigation schemes. Although concerns were raised regarding the ability of large dams to yield returns in the agricultural sector, the large dams have indeed contributed to the improvements in food security at the household level, thereby improving on the nutritional status (Figuẽres *et al.,* 2003). This has been observed in the case of India and China, where an increase in food production of 14% was noted. In India, for instance, there was a decrease in the share of the rural population below the poverty line. In the case of Grand Coulee, a boom was noted in agro-business due to multiplier factors generated by irrigation scheme(s). Also, the Aslantas Dam yielded spin-off projects, which resulted in the tripling of agricultural production in the area. Furthermore, through irrigation schemes, more indirect and unanticipated social benefits are enjoyed: water used by livestock, fish production and horticulture (WCD, 2000).

Although the benefits of irrigation are usually at the forefront in justifying the construction of large dams, their downside is usually not adequately brought to the surface. For instance, large irrigation projects use big machinery to till the soil, which can result in soil erosion in that soil is broken down into fine particles that can easily be blown away to leave the land parched. Again, since water contains certain amounts of salt, if the water used for irrigation is not properly drained, it can leave salt residue that can build up and make the soil unusable (Barlow & Clarke, 2002). The following paragraphs provide further details on the negative impacts of large dams.

2.4.2 Negative impacts of large dams on the biophysical environment

Environmental concerns, particularly the negative effects of constructing large dams, became more evident in the 1960s when there was a boom in large dam construction (Rubin & Warren, 1968). Yet, it is worth noting that the impacts of human activity on the ecosystems in the name of development predate the modern era (York *et al.*, 2003). This is because the construction of dams usually entails the impoundment of rivers to form reservoirs, with the result that the bio-physical impacts can extend well beyond the confines of a river channel - an aspect of which many planners tend to be oblivious during the appraisal and impacts identification phases. This lack of foresight on the part of the planners has resulted in 'myopic planning', which seems to be evident in the planning and design of many dam projects (Adams, 2001). The lack of appreciation of a wider perspective that encompasses the biophysical or socio-economic elements of dam projects seems to be more evident in the Third World, where relegation or total exclusion of environmental factors is the major factor contributing to disasters associated with the construction of many large dams (Scudder, 2005).

Most decision makers and planners are not convinced that human survival rests with other species and maintenance of the ecology. The results thereof are usually deleterious to the ecosystems and lead to human suffering. In the same vein, Barrow (1997) says that systematic monitoring of downstream environmental degradation, particularly in the Third World countries, has proven to be inconsistent. As a result, there is usually a serious knock-on-effect on the aquatic and floodplain ecosystems. For instance, when hydroelectric dams are constructed to provide power during the peak periods, variation in the discharge of substantial amounts of water over a short period creates freshets/ floods downstream, which can impact negatively on the sustainability of riparian cultivation, as was the case with the Tucurui Dam in Brazil. Therefore, since the impacts of large dams

are generally appreciated at the economic level, the importance of preserving the biophysical environment, particularly the wildlife, is usually relegated to only benefiting the tourists. This approach to the planning of large dams contributes to negative impacts on both the biophysical environment and on people as is outlined below.

a) Impacts on the aquatic ecology

Alterations in the river flow regime caused by the construction of large dams result in the modification of ecosystems in that the ecology of the running waters - lotic is replaced by still waters ecology - lentic (Adams, 2001). Thus, fish species that thrived in the river would be adversely affected as their migration patterns are disrupted because they are prevented from reaching their spawning grounds on time. If the dam is very high, it becomes more difficult for the fish, even where ladders are provided, to enable them to swim over the dam to reach their spawning grounds on time. This delays their process of migration, resulting in their population decreasing and their eventual disappearance. New ones that are more adaptable to the new environment (deep and stagnant water) emerge. For example, the damming of the Theodosia River resulted in the reduction of salmon and steel head populations (Rivers for Life, 2003). Numerous weirs constructed along the River Thames also impacted negatively on the migratory pattern of Atlantic salmon as well as of the sea trout that could not reach their spawning grounds upstream (Mann *et al.* 1989). In the case of the Manantali and Diama dams on the Senegal River, the physical barrier of the Diama Dam adversely affected fisheries in the lower valley, the delta and the coastal waters. Prior to the construction of these two dams, sedimentation caused by flooding provided an important source of nutrients for the fish, and the flood plains in the upper delta were spawning grounds and feeding grounds for saltwater and freshwater species (WRI *et al.*, 1998). Impoundment prevented silt from reaching the rivers that were usually rich in minerals such as feldspar, clay and organic matter, and which were necessary for certain types of fish (Mounier, 1986).

Changes in the aquatic ecology can favour certain types of vegetation different from the ones before the dam was filled. For example, hyacinth is a water weed known for increasing the rate of transpiration. In the Congo, within three years of damming the Congo River, aquatic weeds had spread over an area of 1 600 kms of the river, whilst in Surinam, soon after the filling of Brokopondo Reservoir, 50% of the reservoir surface was infested with aquatic weeds. Large dams and their associated reservoirs, when attacked by aquatic weeds, can seriously reduce fish yields owing to increased water losses resulting from evapotranspiration, which reduces the quantity of water needed to sustain certain types of

fish. Invasion by aquatic weeds reduces the suitability of the fish habitat. Also, the decay process of the weeds uses up valuable oxygen, thus resulting in increased fish mortality. Weeds can also reduce sunlight, both at the surface of the reservoir and in the waters below, resulting in reduced biological productivity of a number of micro-organisms on which fish feed. Other types of weeds can produce toxins, causing fish to die (Goldsmith & Hildyard, 1984).

The process of ecosystems modification is very much influenced by the limnology[38] of the reservoir, as it has varying impacts on the freshwater habitats of river systems, some of which are static water bodies whilst others are flowing water environments as already mentioned earlier. For instance, flood plain environments are ecotonal, ranging from dryland environments to low-lying wetland areas. Aquatic floodplain ecosystems are influenced greatly by the flow patterns of the river in terms of both annual discharge regime, the size and longevity of short-term flood events, and the ground water regime is subject to the distribution of the ground water in space and time that these rivers support (Adams, 2000).

According to Adams (2000), the construction of the Manantali and Diama dams on the River Senegal negatively impacted on the fragile ecosystems of the river basin. Goldsmith & Hildyard (1986) mention that the creation of large storage of water through reservoirs for whatever purpose, be it irrigation, industrial or domestic, affects other water bodies that are fed by the dammed rivers. The damming of rivers that feed other water bodies thus affects the levels of other rivers adversely, which are then unable to provide adequate water for the fish, and wildlife that depend on them for survival. Furthermore, Goldsmith & Hildyard (1984) mention that the building of dams and their associated reservoirs increases the salinity of many rivers. This, in some instance is caused by reduced flow of the rivers. Consequently, increased water abstraction upstream does not only reduce water quantities to dissolve the salts coming downstream, but also makes the water too salty for the riverine fish species to survive.

The construction of large dams can exacerbate the problem of rising groundwater through seepage of water from the reservoir even up to 20kms away from the surface, which then can increase the problem of waterlogging and, in turn, stirs up the problem of salination. This was observed in Lake Powell behind the Glen Canyon Dam, where there

[38] According to Bloomsbury Reference Book (1999) *limnology* is the scientific study of lakes and other bodies of fresh water. It takes into consideration the temperature, chemistry, turbidity of inflowing water and the nature of the land flooded.

was increased salinity in the Colorado River by 100 milligrams per litre due to the high levels of evaporation. In the case of the Aswan Dam, evaporation occurring in the reservoir increased the salinity, in that the water entering the reservoir had about 200 ppm but when it left, it had 220 ppm (Goldsmith & Hildyard, 1984). This was partly attributable to the fact that agricultural activities around the Nile greatly, increased the salinity in the Nile (Lavergne, 1986). There has been a resultant loss of fisheries off the Nile Delta, which has been compensated for by a new fishing industry on Lake Masser, which provides employment to 7000 fishermen. In the case of Cahora Bassa Dam, in Mozambique, downstream changes also threatened mangrove forests at the mouth of the Zambezi. These mangroves, according to Gammelsrod (1992), provide breeding grounds for prawns and shrimps, which are supposed to be a major source of foreign currency; strategic water release from the dam can therefore be used to equalise the possible adverse effects on shrimp and prawn catches.

b) Impacts on the terrestrial ecology

The man-made lakes through construction of large dams and the damming of rivers, transform terrestrial ecology into aquatic ecology. For example, flooding of the Balbin Dam in Brazil, resulted in plant endemism being destroyed. The Nam Choan Dam in Thailand, threatened Thung Yai Wildlife Sanctuary, which is one of the remaining relatively undisturbed forests in Thailand providing a habitat to all six endangered mammal species. The project was shelved for this very reason (Rahman, 1986). In India, there was a loss of 530 ha of species-rich rainforest in the Silent Valley Forest (Dogra, 1986), whilst in the case of Narmada Dam, 150 000 acres of forest was to be affected by the project. Loss of these forests does not only translates into denial of economic benefits to populations, and ecology - such as not providing habitat to certain species, but also it contributes to cleaner atmosphere in that they use up carbon dioxide and release oxygen (Kalpavriksh & Hindu College Nature Club, 1986). On the same issue, Ascher & Healy (1990) state that loss of forest cover reduces wood supply, diminishes wildlife numbers and diversity, and eventually impacts on microclimate.

In most cases, plans are usually not in place to rescue or conserve threatened biodiversity. This was the case with the Nam Choan on the Kwae Yai River in Thailand. Here, by flooding the river, approximately 4% of the Thung Yai Sanctuary, which is one of the two most valuable remaining wildlife parks in Thailand, threatened the survival of the Asian elephant and other species like the tapir, the gaur and the rare green pea fowl to the point of extinction (Tuntawiroon & Samootsakorn, 1986). In Northern Malaysia,

impoundment of the Temenggor Dam, adversely affected the survival of 100 species of mammals and of 300 birds species, most of which faced extinction (Dogra, 1986). In Sri Lanka, the Mahaweli Dam, caused the logging of Somawathie Wildlife Sanctuary, which covered an area of 22 275 hectares. This logging affected the valuable wetland habitats along the banks of Mahaweli, thereby affecting the villus, which are extremely productive and whose vegetation provides an important source of grazing for the wildlife.

In cases where attempts were made to rescue wildlife - as in the case of Kariba Dam - by what was known as "Operation Noah", there were limited successes because the animals were extremely territorial and therefore thrived better in their familiar environments, thus making relocation difficult because they tended mostly to cling tenaciously to home grounds (Scudder, 2005).

Inundation of forested areas can have devastating effects downstream. Particularly during the high floods, when soil is washed away, the problem of siltation arises (Barlow & Clarke, 2002).

c) Impacts on the atmosphere

There is a global concern over the loss of vegetation and forests to inundation of rivers, forming human-made lakes, whereby the role vegetation plays in the atmospheric carbon balancing is nullified - hence global warming. By the same token, Rudd *et al.* (1993) state that flooded vegetation results in releases of methane and carbon dioxide, which are greenhouse gases. An example is the Akosombo Dam which filled slowly over a period of more than seven years without clearing of the vegetation. This resulted in deoxygenation as the vegetation decayed (Barlow & Clarke, 2002). Anaerobic decomposition of submerged forests produces hydrogen sulphide, which is toxic to fish. This anaerobic decomposition is caused by corroded metal that comes into contact with water. Exposure to high levels of metals has been linked to developmental retardation, which can result in cancerous illnesses, kidney damage and death (WRI *et al.*, 1998).

d) Reduction of water storage and lifespan capacity of dams due to siltation[39]

Siltation is a major concern in the construction of large dams in that, it reduces the lifespan of a dam by silting. In some cases, siltation occurs three times faster than the initial estimates. In exceptional cases, like the Nizamgara Dam, siltation occurred seventeen times faster than expected. Siltation does not only reduce the lifespan of dams,

[39] Siltation in this report is used synonymously with sedimentation.

but it can also reduce their storage capacity, as was the case with the Archicaya Dam in Pakistan (McCully, 1996).

Sedimentation rates are highly variable, depending on a number of influencing factors such as the weather and the dam type. The rate of sedimentation is very slow in temperate areas when compared with the tropics where deforestation has further compounded its acceleration. Deforested areas are characterised by loose soil particles not woven by networks of roots and therefore, such areas become vulnerable and susceptible to wind or rain erosion. Goldsmith & Hildyard (1984) mention that in the results of studies that were conducted on 19 reservoirs, the locations of those dams were in temperate climates where the average rate of sedimentation was 0.51 % per annum. The rate at which the reservoirs silt up also depends on the amount of silt carried by the river which feeds it, as well as the rate of soil erosion in the river's catchment area.

As lakes dry up because the rivers feeding them are diverted to other purposes, the result is usually a dry bed of lacustrine sediments, which then become sources of frequent dust storms. Goldsmith & Hildyard (1984) cites the example of Owen Lake in California, where the aim had been to export water. It dried up because of off-takes for irrigated agriculture that resulted in the decline of water levels. The lake was 7.6 m deep in 1912, but by 1930 it had completely disappeared. Another example is where deforestation in the watershed above the Ambukloo Dam in the Philippines resulted in the sedimentation of the reservoir, which reduced its useful life from 60 to 32 years (UNEP, 2000).

Sometimes soil particles in the river downstream may seem to have been reduced because of being trapped behind dams. A typical example is where the construction of the Danjiankou Dam on the Han River, a tributary of the Yangtze, resulted in a highly erosive flow, with degradation of bed and banks being observed at 480 km below the Xiantao Dam. Lavergne (1986) made similar observations on the River Nile, where trapping of silt had some adverse effects downstream of the Aswan High Dam, resulting in coastal erosion, salinisation through marine interruptions, and a decline in the eastern Mediterranean sardine catch, which, prior to the building of the dam, had yielded 18 000 tonnes a year. But deprivation of nutrients from the silt resulted in the dramatic decline of the sardine population by 1969. In the same vein, Goldsmith & Hildyard (1984) observed that the decline in the fish population coincided with water schemes to regulate a large number of major rivers, thereby depriving the coast of minerals which would otherwise have flowed downstream. These water schemes have resulted in the disappearance of the

black sea mackerel, the large horse mackerel, the palamida and the blue fish that once made up 70-80 % of the yield, when compared with the current 7-8 % yield.

e) Storms and seismicity[40]

Geomorphological processes can result from the size of reservoirs. Storms from the large artificial lakes can produce ocean-like waves that can erode wind-blown soils lining the shores. A vast mass of water impounded on fragile geological structures can also result in earthquakes (Appendix D). This was the case with the first occurrence of reservoir-induced seismicity in Lake Mead, California, which was impounded by the Boulder Dam in 1935 (Goldsmith & Hildyard, 1984).

The problem with these earthquakes is that, in certain instances, they can cause death and injuries to humans, as well as damage to houses and other properties. In the case of the Boulder Dam, 6 000 shocks were experienced over an area of 8 000 square kilometres within a period of 10 years after the filling of the reservoir had started. The Kariba Dam experienced a number of shocks immediately after completion of its impoundment in 1963, thus despite the fact that the Zambezi Valley[41] had been reported to be aseismic (Scudder, 2005). The Vajont Dam in Italy is 261 metres high and has a reservoir of 150 million m^3. The second filling of the dam in 1962, after being emptied in 1961, resulted in a number of shocks and earth movement that started along the slope of Mont Toc above the lake. The result was landslide that destroyed several villages and killed their inhabitants (Barlow & Clarke, 2002).

f) Impacts on the climate

Local climate is affected by the creation of water bodies with large surface areas. For instance, Graham (1986) suggests that Lake Volta in central Ghana shifted the rainfall season from October to July/August. In Moscow, the Rybinsk Reservoir is believed to have caused changes in the local temperature by extending the frost-free period by 5-15 days per year on average (Micklin, 1986). Regarding the downstream impacts of reservoirs, it is a fact that when the hydrological regime of a river is transformed, the following aspects are affected in the process: i) discharge, ii) velocity, iii) water quality, and iv) thermal characteristics. These changes lead to alterations in the geomorphology, the flora and the fuana of the rivers.

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[40] Refer to Appendix D for global experiences regarding incidents of seismicity.

[41] The Zambezi Valley is the one that has been impounded to create the Kariba Lake.

In arid or semi-arid countries, usually referred to as water deficient countries, loss of stored water in the reservoirs through evaporation can be so acute that the capital investment used to construct these large dams ceases to have meaning. For instance, in the case of the Lake Nasser in Egypt, there was a loss of 15 billion m^3 of water a year through evaporation. This means that the construction of large dams can have an effect on the microclimate in that the moisture levels in the climate ultimately increase, resulting in dry ecosystems being converted into areas with seasonal rains as was the case in Egypt. These changes in the weather can result in the introduction of new species that thrive better in a moist climate, while those that cannot adapt in the new environments eventually disappear. A typical example was the case of the Aswan Dam where a number of agriculturally harmful insect pests such as the great moth (*polychrsis botrana*) and the cotton leaf worm became a common sight in an environment where they had previously not been known to exist (Goldsmith & Hildyard, 1984).

The construction of large dams is perhaps unique in that it can have widespread and far-ranging ecosystem impacts resulting from simply blocking of a river, which again results in a series of terrestrial, aquatic and riparian impacts that do not only affect ecosystems and biodiversity, but also have serious consequences for people who live both near and further afield. This is because a large dam uses a multifunctional resource like a river and its surroundings characterised by a complex web of diverse, interconnected, implicit and explicit functional roles, dependencies and interactions. Consequently the social and cultural implications of putting a dam into such a landscape are spatially significant, locally disruptive, lasting, and often irreversible. Below is an outline of some of the negative socio-economic impacts resulting from the contruction of large dams (WCD, 2000).

2.4.3 Negative impacts of large dams on the socio-economic environment

Since the construction of large dams involves alterations to the pre-existing environments, the results have been social transformation that creates both winners and losers. This social transformation is therefore dualistic or dichotomous in that, on the one hand, there are those who lose property in order to make way for a dam, whilst, on the other hand, there are those who benefit through being employed by the project and earn high wages. As a result, impacts emanating from the construction of large dams are not experienced in the same way by all sectors of the society. For instance, large dams have disproportionately impacted on indigenous people through loss of their: i) land,

ii) livelihoods, iii) homes, and iv) cultural identity. Their political institutions have been fragmented and their human rights abused through increased militarisation to deter those resisting the building of large dams (Rivers for Life, 2003). Moreover, the indigenous people sometimes lose access to common property that sustains livelihoods for supporting livestock, thus losing access to medicinal plants and wild vegetables that grow in the wilderness. These wild plants usually have a high nutrient content, which unfortunately is rarely considered, and consequently, these are not often incorporated in the preparation of the compensation package. Some of these adverse social impacts are discussed in the ensuing paragraphs.

a) Involuntary resettlement

The creation of reservoirs has, in most cases, resulted in involuntary resettlement. Involuntary resettlement compels people as individual families, or as communities, to move from their places of abode in order to make way for the construction of dams (Appendix E). Some of the examples of involuntary resettlement owing to the construction of large dams are: i) the Volta Dam in Ghana, where 80 000 people had to be moved, ii) the Sanmenxia Project in China, where 410 000 people were to be moved; and iii) the Three Gorges Dam in China is expected to displace 1 300 000 people (McCully, 2001).

The timing of the social impacts varies depending on the proximate cause. For instance, in the case of losing a home and or livelihood due to the filling of a reservoir, the social impacts are quite immediate in that the inhabitants of the area to be inundated have to be moved. The magnitude of involuntary resettlement varies from one dam project to another as shown in Table 2.1 below.

Table 2.1: Examples of people displaced by large dam projects

Dam Project	Country	Displaced people	Profile of displaced people	Others adversely affected
Grand Coulee 1934-75	USA	5 000 to 6 500 people	1 300 to 2 000 from Colville and Spokane tribes not compensated until 1990s; rest are settlers	Several thousand members of First Nation groups (Colville, Spokane, Nez Perce and Canadian tribes) located throughout the upstream basin due to flooding of fishing falls and blockage of salmon
Kariba 1955-59	Kariba	57 000 people	Tonga subsistence farmers; ethnic minority in Zimbabwe; most were resettled in resource-depleted areas	Thousands of downstream people lost floodplain livelihoods and lakeside inhabitants experienced an increased prevalence of schistosomiasis
Tarbela 1968-76	Pakistan	96 000 people	Composed of 93% farmers; 5% artisans or semi-skilled workers; and 2% boatmen	Pastoralists, landless people, low caste groups of fisherfolk, boatmen, basket makers, and weavers suffered from loss of wetlands, forests, and grazing
Gariep and Vanderkloof 1963 to late 1970s	South Africa	1 380 people: families of 40 white farmers and 180 black farm workers	Most white farmers felt they were fairly compensated. Black farm-workers were not eligible for compensation and eventually moved to other farms and urban areas	Farmers living along the river where 1 million sheep suffered from proliferation of biting blackfly leading to livestock losses
Aslantas 1975-85	Turkey	1 000 families	Mostly former immigrants from Eastern European countries; composed of small and medium size landowners and landless families	None documented in the case study, although it is claimed that customary users of forests that were not recognised were the most adversely affected
Tucurui 1975-85	Brazil	25-35 000 people plus indigenous peoples	Subsistence farmers, fisherfolk, pastoralists, and riverbank cultivators (126 of 2 247 disputes are not yet settled)	100 000 people (subsistence farmers, pastoralists, fisherfolk, and other natural resources-dependent communities) affected by reduced water quality, loss of riverbed cultivation, and decreased downstream fish populations
Pak Mun 1991-94	Thailand	1 700 families	Rural families dependent on rice farming and fisheries income; cash compensation failed to provide livelihood regeneration.	More than 6 000 families of subsistence farmers and fisherfolk suffered loss of livelihood from fisheries reduction.

Source: WCD, 2000.

b) Disequilibrium[42] in the human ecology

Evidently social changes resulting from the construction of large dams can result in deleterious consequences. This is because their construction requires use of high capital-intensive technologies, which more often than not causes disequilibrium in the human ecology and, in the process, creating shocks to those affected. However, communities

[42] The state of disequilibrium is a result of human-made disasters emanating from the construction of large dams, which often produces prolonged periods of threat and mental stress (Buttel & Humphrey, 2002).

experiencing a certain level of shock(s), resolve their plight through collective approaches which allow them to rebound with some degree of resilience (Nigg & Mileti, 2002).

Colson (1971) hypothesised that resettlees, in their effort to adjust in the new environment, generally use their old behavioural patterns and strategies to cope in the new resettlement area in order to reach some level of equilibrium in the human ecology. She mentions that where change does occur in the behavioural patterns, it is because it is a prerequisite for adaptation under new conditions. A typical example was Kariba where she (Colson) observed that the pre-existing[43] behavioural patterns were used by a number of the Tonga people relocated below the dam to establish institutionalised relationships with the host population. This social capital was used by the relocated households to draw upon the established social networks in pursuit of their livelihood objectives (De Satgé, 2002). Once these relationships had been established, they were used by the more influential and innovative relocatees to gain at least temporary access to some of the better land belonging to the host population. Although relationships were supposedly based on reciprocity (the relocatees helping the hosts with ploughing, food, and occasionally cash), in the long run, this mechanism served the dominant relocatees effectively as a means of claiming more land in an area where land shortage was already a major constraint for agricultural development.

Nevertheless, it is important to remember that in the majority of cases of dam- induced involuntary resettlement - even after mitigation measures - full equilibrium in the human ecology is never fully restored (Barlow & Clarke, 2002). Cernea provides a model of reconstruction, for those affected by resettlement, which accounts for the process of readjusting in the new environment (Scudder, 2005). As Box 2 illustrates, certainly not all communities are able to reach a stage at which their livelihoods are fully reinstated or equilibrium in the human ecology is fully restored.

[43] Pre-existing in this instance refers to a period prior to relocation.

Box 2: Cernea's Impoverishment Risks and Reconstruction Model

Resettlement programmes have predominantly focused on the process of physical relocation rather than the economic and social development of the displaced and other negatively affected people. The result has been the impoverishment of a majority of resettlees from most dam projects throughout the world.

According to Cernea's impoverishment Risks and Reconstruction model, displacement epitomises social exclusion of certain groups of people. It culminates in physical exclusion from a geographic territory and economic and social exclusion from a set of functioning social networks. Thus, affected people face a broad range of impoverishment risks that include landlessness, joblessness, homelessness, marginalisation, food insecurity, increased morbidity, loss of common resources, and community disarticulation that result in a loss of socio-cultural resilience.

The key economic risks to affected people are from the loss of livelihood and income sources such as arable land, common property resources (forests, grazing land, ground and surface water fisheries, and so on), and changed access and control of productive resources. The loss of economic power with the breakdown of complex livelihoods and disruption of agricultural activity can adversely affect household food security, and nutritional status. Higher incidence of diseases associated with deteriorating water quality can result in increased morbidity and mortality. High mortality rates immediately following involuntary resettlement from the reservoir areas of the Kariba and Aswan High dams are cases in point. Forced displacement tears apart the existing social fabric, leading to socio-cultural disarticulation.

Residential patterns reflect the desire of kinsmen to be together immediately after the move. However, close proximity then gives rise to tension and ultimately to quarrels once people feel some insecurity in their new homes, and the latter portion of the period is likely to be marked by numerous disputes and a scattering of kin. In the general insecurity, people will be willing to experiment with new technical possibilities on a minimal basis that will not commit their resources to untried innovations. The first years will be marked by many small experiments as people test the potential of the new environment. They expand from this stage only when there is clear advantage to them in the next step. They will be equally unwilling to experiment with large-scale social innovation; and since the success of new forms of social organisation is less easily demonstrated than the success of crops or new productive techniques, such small-scale experimenting with social organisation as takes place is not likely to be followed by a massive reordering of social life. Instead they will consciously maintain the formal structure of their society, substituting actors without altering roles, providing symbolic actions when customary transactions cannot be carried out. Ultimately, when the crisis is seen as over, the need to organise action with reference to the new physical and social environment may lead people to develop new formal structures as rationales and limiting definitions for expected behavior.

The immediate result is a period of upheaval in economic and social routines which can be expected to last for approximately five years, before people are sufficiently re-established in their new areas to see themselves as settled communities. The period is one of hostility towards Government and its officials, who are represented as disregarding local interests to advance some other section. Local leaders associated with resettlement lose legitimacy. Officials rule more openly by force and less by consent. All this is a result of non-consultation and participation of communities in project planning and implementation. It is therefore important to adopt a participatory approach to development.

Source: WCD, 2000.

c) Violation of human rights

Rubin & Warren (1968) observed that the impacts of large dams leave behind, in most cases, bitter experiences and violation of human rights. This is because massive technological development such as the construction of large dams hurts, which is an issue to which many economic planners, engineers and political leaders are oblivious. These

social costs are hardly considered at the conceptualisation, planning and design stages of dam projects. Unfortunately, during the design stages, much attention is paid to the technical feasibility of projects with less emphasis on the social costs that normally are dealt with in the aftermath. The final outcome is disastrous and, has in the process, violated the human rights of those affected by involuntary resettlement (Scudder, 2005). WCD (2000) points out that forced resettlement is not voluntary because it is externally imposed. In some cases coercive measures have been used to move people in order to make way for the construction of large dams.

The human rights of those people affected are thus violated. Even when there are plans in place to try and minimise the likely atrocities, such plans are either lacking in design, or the main challenge is the actual implementation of the resettlement programme, which poses a serious challenge to many institutions charged with the implementation of resettlement programmes. Brokensha & Scudder (1968) moreover observed that whenever resettlement programmes are being initiated, views of the affected people are hardly sought since they rarely participate in the decisions regarding the construction of large dams being planned in their area. In the process, their right to participate in the developments that affects them is violated. Other factors that have been identified as contributing to the violation of the basic human rights of people affected by involuntary resettlement are:

- Lack of foresight on the part of the development agents in terms of predicting and quantifying all of the possible social impacts

- Lack of / inadequate institutional capacity to manage resettlement programmes

- Lack of / inadequate policies that in essence should support or protect human rights, and the result of the inadequacies at the policy level usually exposes the victims to worse risks, which in most cases are irreversible

- A fragmented approach by the different role players in the resettlement programme has in most cases exacerbated the vulnerability of the victims of displacement

- No single institution is mandated to oversee the protection of the basic human rights of the displaced people in terms of protecting their human dignity and ability to lead a decent life

- The burden placed on the indigenous peoples and ethnic minorities, and the degree of recognition of their distinctive status

- The impact on the gender and basic human rights

- The loss of livelihood

- Health impacts in the rural area (WCD, 2000).

d) Loss of familiar means of livelihoods

Sadly, the construction of large dams has resulted in the inundation of lands that previously supported livelihoods, particularly of the indigenous people, and their socio-cultural and economic aspects as earlier mentioned. An example is the hydroelectric project in Brazil, where 91 000 to 351 000 hectares of Indian lands were flooded, thereby threatening the livelihoods of some 34 indigenous tribes. This is because the flooding of rich and fertile agricultural land around the dam and the reservoir results in reduced food production.

As already mentioned, those resettled owing to dam construction or filling of the reservoir often lose not only their homes but also their means of livelihoods because dams affect their critical, life-sustaining resource base such as land, fisheries and the quality and allocation of freshwater. In the Volta River Project, for instance, 848 200 hectares of land were submerged; whilst 510 000 and 380 000 hectares respectively were lost to Kariba Dam and Cabora Bassa Dam. Apparently in India, Srisailam Hydroelectric scheme flooded about 107 000 acres of land, which had previously provided livelihoods to about 100 000 people (WCD, 2000). Therefore, the magnitude, causes and types of impacts experienced vary depending on the extent to which the river system supports the local economy and the socio-cultural life of the diverse population in a given geographical area (Goldsmith & Hildyard, 1984).

The WCD (2000) further observed that inundation of land and alteration of riverine ecosystems, have adverse impacts on the economic activities of the local communities. The impacts particularly in relation to the land include loss of access to traditional means of livelihood such as: agricultural production, fishing, livestock grazing, fuel-wood gathering and collection of forest products. Not only does the construction of large dams disrupt the local economies, but it also painfully affects people's means of livelihoods through loss of substantial natural capital required to sustain livelihoods. The Diama Dam on the Senegal

River provides a typical example in that the nutritional status of the local communities inhabiting the valley was adversely affected because the type of fish found in the River Senegal prior to its impoundment provided them with a good source of protein. After the impoundment there was a gradual disappearance of these fish as they could not survive in deep lakes because they thrived better in shallow waters. As a result, consumption levels of fish greatly decreased; and this was further compounded by a lack of equipment and skills to fish in deep lakes (WRI *et al.*, 1998).

The work of Balon (1974) also shows that the nutritional value of the fish caught in the river before dam building, the crops on farmlands which are now flooded, the wild game inhabiting the often extensive croplands and rangelands, and the forests drowned by reservoirs that once provided good sources of nutrition to the local communities. Balon thus believes that, if such losses were properly taken into account, many dam projects would have been found to cause net losses particularly in as far as protein intake is concerned. Balon gives the example of Kariba Dam, where wild animals endemic to the area alone provided a high protein content which was lost when the Zambezi River was impounded.

e) Increase in the stress levels of the affected communities

Those affected by the construction of large dams tend to feel a sense of: i) loss of control, ii) helplessness, and iii) powerlessness. In this connection, the closer one lives to a place which is perceived to be risky, the greater is the level of stress among the local communities. An increase in stress levels is detected through anxiety, disturbance of sleep and a general inability to carry on with the usual business. An increase in stress levels is further exacerbated (particularly in the case of involuntary resettlement) by resettlees being separated from members of the extended family (Scudder, 2005).

Therefore, involuntary resettlement resulting from the construction of large dams has been described as a completely totalising experience, where the affected persons feel completely helpless, and have a sense of lack of control over their physical space. Furthermore, those affected are exposed to a risky process of impoverishment in that compulsory relocation takes away economic power, social power, political power, the power to make decisions and cultural resources - all at the same time - thereby putting enormous stress on those affected (Scudder, 2005).

Scudder (2005) refers to what he calls multidimensional stress experienced as a result of involuntary resettlement. In his analysis of the multidimensional stress of dam-induced

resettlement, he mentions the following categories of stress: i) physiological stress, ii) psychological stress, and iii) socio-cultural stress, which are experienced at the different stages of resettlement as discussed in Chapter One. The example of the Tonga people is provided to illustrate one of the stress categories. The Tonga people suffered from socio-economic stress in that they were resettled in an unfamiliar environment where their kinship ties were adversely affected. This state of affairs was exacerbated by the conflict that broke out between the Tongas and the host community over land-tenure issues. Apparently the Tongas were resettled in an area that was much drier than their previous land. Consequently, this resulted in their being deprived of fish and riverbank rodents, which traditionally supplemented their cultivated diet. As a result, the Tongas faced severe food shortages. Even when the government sent food aid to relieve their suffering, the food distribution centres eventually became transmission sites for *trypanosomiasis* thus making matters even worse (WCD, 2000).

f) Health impacts

Construction of large dams intended to meet the increasing industrial needs entails the transformation of raw material into metals and chemicals. Their byproducts are usually hazardous and toxic waste, which can end up in a water system used by either people or animals. The results are adverse impacts on the health of the people and animals. This problem becomes a greater concern in instances where industrial growth is big as was in the case of China, where growth was estimated at 18.1% between 1990 to1995 (WRI *et al.*, 1998).

Therefore in meeting the developmental needs through the construction of large dams, changes do occur in the ecosystems. These changes compel forms of life which existed in the previous riverine system to disappear and new ones to emerge. These changes occur not only in the animal or the bird species but also in fungi, bacteria and other micro-organisms that play a critical role in the transmission of infectious diseases. In the majority of cases, existing settlements at the construction sites have found themselves subjected to increased health problems (including *malaria*, sexually transmitted diseases, and HIV/AIDS) and a loss of social cohesion through large influxes of outsiders moving into the construction site either as workforce or jobseekers (WCD, 2000).

Furthermore, as alluded to earlier in this chapter, the construction of large dams and the damming of rivers change the ecological systems in that the ecology of the running waters is replaced by still - water ecology. As a result, diseases that thrived better under the running - water ecology will slowly be reduced and be replaced by those suited to the

stagnant water. A typical example is *onchocerciasis* or river blindness which is a disease caused by a parasitic worm of the filarial group, *Onchocerus volvulus*, carried by the black fly *Simuliidae* vector. It tends to breed in well-oxygenated, fast-running water. But with the reservoirs, the prevalence can be substantially reduced. In the Volta River Basin for instance, 70 000 people became blind because of being infected by the black fly (Barlow & Clarke, 2002). Similar observations were also made regarding the Diama Dam on the Sengal River in Mauritania, where after the completion of the dam, there was an outbreak of Rift Valley Fever, which is also a mosquito-borne viral disease also able to cause blindness in humans (Adams, 2000).

River impoundments can increase the transmission of *malaria*[44], since the mosquitoes transmitting the disease breed in stagnant water. The parasites causing *malaria* reproduce only within the mosquitoes of *genus anopheles*, which then must pass an asexual phase within humans. Therefore, when an infected mosquito bites a person, thousands of plasmodium parasites are released into the blood and establish themselves near the human liver where they incubate and release their offspring into the bloodstream and then invade the red corpuscles. Therefore, when a mosquito bites a human being after the incubation period, it feeds on infected blood, reproducing the parasites and then the cycle is repeated. It is important to note that many different species of plasmodium parasites are favoured by different environmental factors. Generally, most of the lethal *malaria* requires warm weather of above 19^0 centigrade and very humid weather for the plasmodium parasites to develop within themselves (Goldsmith & Hildyard, 1984). Therefore, the construction of large dams provides habitats for these vectors to thrive. A compounding factor is the influx to the project site of people whose lifestyles and diet are usually not adapted to local conditions. Also, their biological systems have not developed resistance to the diseases that are prevalent locally, the end result being an increase in their susceptibility to *malaria*. This situation was observed around Tucurui, Brazil, where the incidence of *malaria* actually increased tremendously due to the presence of the dam (WCD, 2000).

Another disease that is usually caused by the impoundment of rivers is the *Schistosomiasis*, also known as *bilharzia*. It is caused by flatworms known as *schistosomes* (Barlow & Clarke, 2002). This disease is common in the Third World and is rarely known to cause any fatality. It is transmitted through parasitic larvae - the *miracidium* - which develop within the bodies of fresh-water snails, the intermediate host, where *miracidium*

[44] The word *malaria* is apparently derived from the Latin word for 'bad air' *(Mal aria)*, as the Romans associated the disease with swamps, marshlands and stagnant pools. This linkage is accurate because these areas are the breeding ground for *malaria*'s mosquitoes (Goldsmith & Hildyard, 1984).

are transformed into a second larval form, which in turn produces thousands of larvae of a third type, the *cercaria*. Thus, when people come into contact with water contaminated by the infected snails, the *cercaria* larvae bore through the human skin and enter the bloodstream and move to the liver, where they mature in a few weeks' time and mate. The female adult settles in the vasical vein where it spends about eight weeks laying eggs in quantities that damage the neighbouring tissues which leave the body through urine and faeces, and once back in water, the cycle is repeated. Large dams therefore provide an ideal habitat for both the fresh-water snails and the *schistosomes* parasite in that the reservoirs create a longer breeding period. This extended period of breeding due to the presence of reservoirs, is a result of the changes in the ecology where for instance, food production which previously mainly relied on rain water, is now fed water through irrigation schemes requiring the storage of large quantities of water to ensure its availability even during dry seasons. Around the Akosombo Dam, for instance, there was an increase of *schistosomiasis* among 5 to 19-year-old children from 15% to 90% within 4 years of the dam's completion (Goldsmith & Hildyard, 1984). In the case of Manantali Dam on the Senegal River, the snail hosts, *S. haematobium,* extended their range and increased their number downstream of the dam by 69% - 95%. Similar observations were also made along the Diama Dam in the lower valley along the southern branch of the Senegal River. This resulted in the increased rates of human infection when they came into contact with the larvae that penetrated their skin and migrated to the circulatory system and lungs in the process of developing into mature female or male worms, and eventually migrated to near the bladder, causing urinary *schistosomiasis* (WRI *et al.*, 1998). Furthermore, Adams (2000) mentions that, since salty water was prevented from entering the delta, this resulted in the proliferation of the endemic carriers of diseases such as *bilharziasis*. In the case of the Gizera Scheme in Sudan, the scheme covered an area of 900 000 hectares during which there was the spread of *schistosomiasis* in the operation phase of the scheme. The disease was named Blue Nile because this was the area where the scheme was located (Goldsmith & Hildyard, 1984).

Some of the diseases that are not waterborne but are also resulting from large dams include sleeping sickness in areas infested by the *tsetse* fly. This was the case with the Tonga people displaced by the Kariba Dam and then resettled in an area infested with *tsetse* fly. This resulted in an increase in the incidence of sleeping sickness among the Tonga people (Colson, 1971). Inadequate provision of water supply and sanitary facilities for people resettled owing to the construction of large dams tends to accelerate transmission of roundworms and hookworms because of water supply being contaminated

by faeces, thereby contributing to an increase in the prevalence of dysentery, *gastroenteritis*, *diarrhoea, hepatitis, cholera* and *guinea* worm (Goldsmith & Hildyard, 1984). These authors, further state that, in seeking to address the issue of inadequate water supply, by building large dams, the very same solution also exacerbates spread of diseases in the Third World. This is so because the same water contributes to 80% of the diseases and sicknesses prevalent there.

g) Impacts on human migration patterns

The construction of large dams can also act as a pull factor for migrants, bringing associated problems of pressure on the local resources. A typical example was the influx of migrants to the Aswan area, which led to an increase in population from 280 000 in 1960 to more than 1 million by the late 1980s, as people wanted to take advantage of the job opportunities brought by the construction of the dam (McCully, 2001). This resulted in the competition for the scarce resources to meet the needs of the local communities.

The job opportunities associated with the construction of large dams are experienced at different stages of the project. For instance, the period from the design to the implementation of the project demands skilled labour in terms of actually carrying out the designs for the dam and associated infrastructure. Once this phase is completed, and contracts are awarded, it is the mobilisation phase which is intended to facilitate the implementation. This mobilisation phase entails the identification of land on which to set up construction camps and for sourcing quarrying material. It is at this stage that the indigenous and vulnerable groups find their lands and livelihoods being threatened by forces beyond their expectation or control. It is thus during this phase where there is an inflow of job seekers of both skilled and unskilled labour to take advantage of new job opportunities created by the project. The WCD Case Studies (2000) reported that in Kariba and Grand Couleee there was employment of 10 000 and 15 000 workers respectively. In Tarbela, during the peak construction period, a labour force of about 15 000 people was employed as part of capacity building at the local level, which could be used for the subsequent national development projects. Generally, the skilled labour required is typically drawn from the national labour market, and international contractors are often also involved at this stage. This means that migration is not only experienced internally within the national borders, but it is also experienced internationally when the multinational companies move to the project sites with their equipment and technical expertise, thereby creating enormous pressure on the local resources.

h) Impacts on the social infrastructure

As already discussed, construction of large dams usually attracts the influx of people to the project site. This attraction creates pressure on the existing services and hence competition for utilisation of the social infrastructure also begins to surface. Therefore, as part of the broader mitigation measures, construction of large infrastructure services such as roads, electricity and water supply are usually justified on the basis of facilitating the construction of large dams and to reduce pressure on the already existing services.

i) Loss of cultural property

Cultural property can be negatively impacted on by the construction of large dams through either having to be removed or being covered by water. This issue is illustrated by the case of Hasankeyf City where its residents raised concerns regarding the fact that their only city was going to be flooded as a result of the construction of the Ilisu Project on the Tigris River in Turkey. This is because the city had historical significance in that it had been the capital of a small kingdom during the Middle Ages. The flooding of the Hasankeyf meant that the cultural heritage of the area would be lost. This concern was real among the local leadership (Égré & Senécal, 2003). Another, similar example is the 24 archaeological sites dating from 70-1000 AD inundated by the Tucurui Dam reservoir in Brazil despite the fact that such property was deemed important enough to be preserved. In the case of Lake Nasser, some of the ancient Egyptian monuments were submerged, yet the major ones, which included the temples of Abu Simbel, Kalabsha and Philae, were moved to higher ground prior to the flooding (WCD, 2000).

Displacement of people, owing to the construction of large dams affects the cultural values of those affected, particularly in respect of the significance attached to ancestral ties. These ties provided the affected people with a sense of security that is usually lost as a result of the construction of large dams, thereby denying the affected their cultural expression. Goldsmith & Hildyard (1984) observe that affection for a birthplace can be ever so strong, irrespective of how outsiders regard the area. This is exemplified in the following words by the Crees from Canada:

> "My people identify themselves with the land as hunters, as fishermen and as trappers. I am talking about my father, who never went to school, I am talking about my grandfather, who is 103 years old and is still out on that land. … Our people and their way of life are still thriving…".
>
> (Come, 2004: 153)

Evidently identification with land is very important in some cultures. Nevertheless, Goldsmith & Hildyard (1984) bring in the dynamic of cultural differences in pointing out that, in the Western/developed nations, land is perceived as just another commodity which can be bought or sold in the market. In tribal societies, however, it has a completely different meaning with special cultural sentiments attached to it in that it represents spiritual power and provides a special connection with the ancestors, as was the case with the Crees from Canada.

j) Impacts of the undercounting of people

The World Bank (1994) observes that most of the development projects are weakened by amongst other things, a weak data base. In planning for any development projects - including the construction of large dams - the issue of numbers is very critical for the preparation of compensation and resettlement programmes. Numbers can be used to justify or stop the project from proceeding. Therefore, project planners may either feel that, if a project is found to affect many people adversely, the project financiers will not be enthusiastic to finance such a project. Underestimation of numbers is thus done deliberately (Scudder, 2005). Or from the outset, the magnitude of the social impacts is so enormous that it would not make sense to proceed with such a scheme. Therefore, again the only option left to the planners is to undercount particularly those aspects relating to the social costs of the project. In one instance, the WCD (2000) found that, in respect of projects funded by the World Bank, the actual number of people to be relocated was 47% higher than the estimate made at the time of project appraisal. In the case of Ilisu Project in Turkey, Égré & Senécal (2003) observed that in the process of identifying key social issues, different lists of affected settlements were drawn up reflecting settlements and the estimates of the total population to be affected, all of which had different budgetary implications, the end result being that those affected by dam construction were either not compensated or inadequately compensated.

Another dimension regarding the numbers is a lack of full comprehension of the issues surrounding a particular project in terms of the social impacts. Normally impacts that are obvious to many planners are those upstream of the reservoir sites. Not much attention is paid to the impacts downstream and the intricacies around inflow streams. How those changes in the river flows actually impact on the livelihoods is an issue that is usually not determined. Therefore, people living downstream are usually not included in the list of those who have to receive compensation for income[45] lost. Other categories of people who

[45] Income in this instance refers to both financial and non-financial sources of livelihoods.

are usually not regarded as PAP are those without land or legal title, and those affected by the project infrastructure (WCD, 2000). This issue is supported by WCD cross-check surveys that show the trend of under estimation to be to the tune of 35% or more of people who qualify for relocation, than was initially anticipated. According to WCD case studies, the preliminary assessments of particular projects failed to account for all the affected people, the figure ranging from 2 000 to 40 000.

In Africa, the estimate of people affected (when comparing the initial estimates against the actual numbers) by these large dam projects was between 1 000 to 15 000, the examples being drawn from large dam projects in Africa including the tri-national Ruzizi Hydroelectric Project in Zaire, Rwanda, and Burundi, the Funtua Dam in Nigeria, and the Kiambere Reservoir on the Tana River in Kenya. The issue of numbers is further elaborated in Box 3.

Box 3: Missing numbers of affected people: Sardar Sarovar Project, India, and Pak Mun Dam, Thailand

For the Sardar Sarovar Project, the 1979 Narmada Water Disputes Tribunal gave the number of displaced as 6147 families, or about 39 700 people. The World Bank's 1987 mission placed the total at 12 000 families (60 000 people). In 1991, the project authorities provided an estimate of 27 000 families. According to three state governments, the current estimate of displaced families stands at 41 000 (205 000 people). This number will probably increase, since 13 years after full-scale dam construction began, resettlement surveys have still not been completed. The current estimate does not include at least 157 000 people displaced by canals. Nor does it include those moved to make space for the creation of a wildlife sanctuary and for the resettlement of people displaced by the dam, or the 900 families displaced in the early 1960s to make room for construction site infrastructure. The nature and extent of the dam's impact on downstream livelihoods were not assessed. Serious efforts to survey the affected villages and people began several years after the start of dam construction work in response to intense struggles by the affected people since 1985.

In 1991, when construction started on the Pak Mum Dam, 241 families were counted as displaced. By the time construction was completed it was clear that another 1 459 households had to be relocated. The true extent of the social impact only became evident when the impact of the dam on fisheries livelihoods was admitted in response to prolonged agitation by the affected people. By March 2000, the Thai government had paid interim compensation - pending a final solution to the permanent loss of fisheries livelihoods - to 6 204 households for livelihood loss during construction.

Source: WDC, 2000

Figure 2.3 provides a summary of some of the social impacts usually experienced during the different stages of constructing large dams.

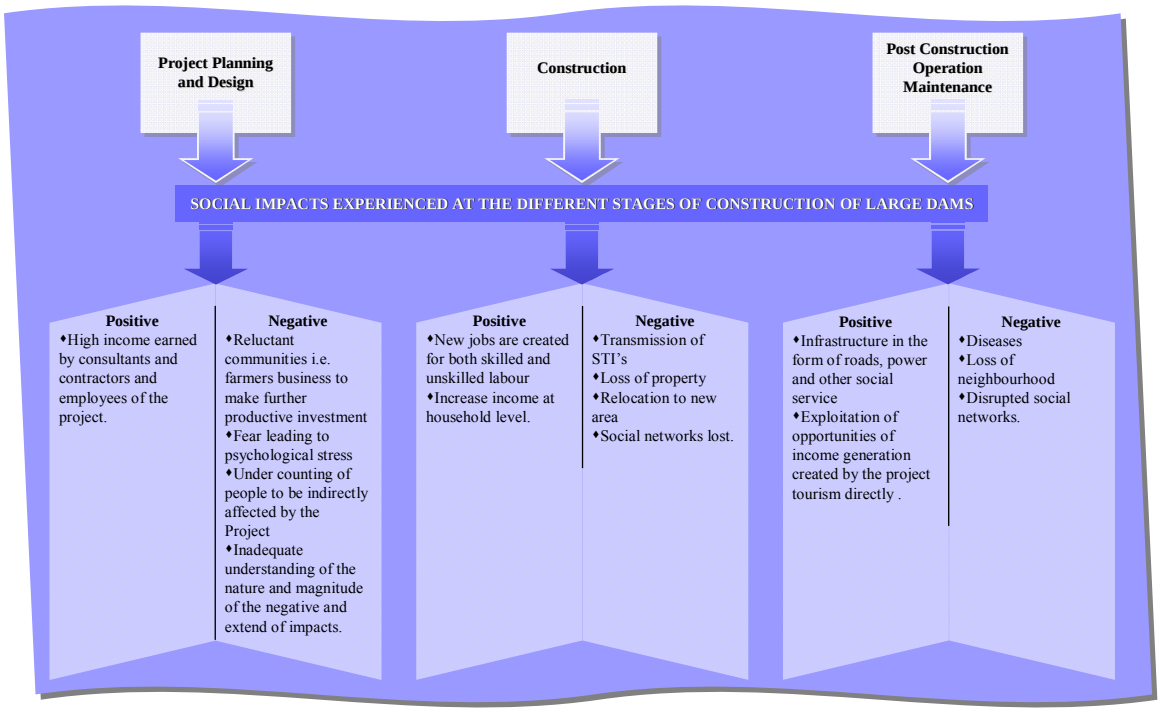


Figure 2.3: Social impacts usually experienced during the different stages of constructing large dams

Own construction

2.5 Summary

The construction of large dams like all other development initiatives has both positive and negative aspects as discussed above. Some of the benefits and costs of constructing large dams are summarised below in Table 2.2:

Table 2.2: A summary of the benefits and costs of constructing large dams

Benefits	Costs
• Expansion of social and physical infrastructure and economic opportunities in the resettlement area • Expansion in the availability of immediate temporary jobs that will employ local people • Expansion of opportunities for long-term employment for local people • Expansion in markets for local people • Expansion in land availability so refugees can engage in more intensive agricultural activities • Diversification of society and the economy • Reduction in severity of problems facing refugees, including density-dependent stress, health, and sanitation problems • Reduction in land use and other kinds of conflicts with local commercial farmers • Increase in the availability of non-local goods brought in by the refugee camp administrators, support staff, and the refugees themselves, as well as the businesses that will expand in the vicinity of the camp itself and in nearby communities • Improvement of the security situation for refugees and the people in general • Laying the basis for a more complex economic system in the region • Serving to integrate a remote area more effectively into the larger political economy of a country, the region, and the world as a whole	• Reduction of income due to increased competition for access to natural resources • Reduction of varieties and types of natural resources (dietary, income-generating, medical, and ritual) • Nutritional stress due to reduced variety of resources available • Reduction of agricultural productivity since the agro-ecological conditions are not as good in the resettlement area as in the original place • Greater stress on more vulnerable members of the population (elderly, disabled, women & children) • Increased workload for men, women, and children • Lowered access to fuel and thus increased household costs for fuel acquisition • Disruption of social networks • Increase in social pathologies, including crime, family violence, and drug and alcohol abuse • Increase in social and psychological stress • Increase in labour time and investment requirements • Loss of spiritually and ritually significant places including graves of ancestors (sacred sites) • Increased dropout rate of children from school due to other demands (e.g. for household labour) • Loss of power and status of traditional authorities • Increased number of disputes and conflicts for traditional authorities to resolve, thus increasing pressure on them • Loss of adherents to individual traditional authorities • Loss of traditional authority due to replacement by government and project officials as sources of information and assistance (greater distance created between traditional authorities and people • Reduction of investment in the domestic, business, agriculture, and community facilities (deferred investment) • Deterioration of local roads due to increased travel • Greater pressure on local social services such as schools and health facilities • Increased population density in local town where workers are to be housed and related increase in demand for services (e.g. schools, health facilities, markets, transport) • Disturbance of local people and their animals due to noise and pollution (e.g. from trucks) • Reduction of security of people's livestock (increased cattle theft and accidents) • Increased poaching (illegal taking of wildlife) • Increase in socio-economic stratification, with some people benefiting, and a larger portion bearing added costs • Fragmentation of social networks and community structures • The health situation in the resettlement area could deteriorate, with a notable increase in STDs, HIV/AIDS, acute respiratory infections (ARIs), and trauma (e.g. from car accidents) • Costs to traditional healers will increase because of loss of access to resources and increased time and travel (and these will be passed on to the customers) (meaning greater costs for health care) • The capacity of government to implement the compensation and resettlement programme for the resettlement programme will expand, thus adding stress to an already overstretched civil service and NGO community

Although the construction of large dams has been justified on the basis of improving people's standard of living in terms of meeting their basic needs - such as provision of clean potable and reliable water supply particularly for those residing in the regions of water scarcity like in the Middle East - they have on the other hand, had daunting and irreversible impacts such as loss of terrestrial ecology, loss of species-rich rainforests,

changes in the aquatic ecology, displacement of people and loss of social capital that people draw upon for their daily sustenance. The construction of the Narmada Dam, for example, raised an impassioned outcry - echoed in the following:

> "The process we have embarked on is not only ecologically non-sustainable, it is socio-culturally destructive - it has increased inequalities, concentrated power in the hands of a few, swamped valuable traditional cultures and knowledge systems, destroyed the spiritual part in us, broken integrative social relationships and isolated individuals from each other and from nature. Most damagingly, …Western model has meant the neglect of all alternative forms of change including the possibility of developing on traditional time-tested, ecologically sound practices like organic farming…"
>
> (Williams, 1986:p14).

Details on international experiences regarding involuntary resettlement are discussed in Chapter Three.

CHAPTER THREE

THE RESETTLEMENT PROCESS: FRAMEWORKS, POLICY AND ISSUES

"Humanity is conducting ... globally pervasive experiments whose ultimate consequences could be second to a global nuclear war ..."

(De Satgé, 2002:139).

3.1 Introduction

Large dam projects have caused suffering to many people, particularly to those directly affected by displacement. The suffering endured includes having to be involuntarily relocated to an unfamiliar environment and in the process means of livelihoods are lost, resulting in emotional devastation and loss of links with ancestral homes, as discussed in Chapter Two. Although Chapter Two focused on both the positive and the negative impacts emanating from the construction of large dams, Chapter Three specifically brings out experiences regarding involuntary resettlement. The chapter first examines both the policy and legal frameworks pertaining to resettlement programmes and whether their existence or non-existence does in any way impact on the final outcome of resettlement programme(s) in terms of restoring livelihoods. The chapter subsequently explores experiences regarding the extent to which socio-economic, cultural and vulnerable groups' issues have been incorporated within the resettlement programmes.

Because development in human society is an on-going process, resettlement of people is not a new phenomenon. Sometimes, in the course of physical and social development, the old has to give way to the new. Developments in the non-human environment sometimes affect the population so significantly that the need often arises to move them to a more conducive environment. As mentioned earlier, relocation or resettlement is not new, and for years there has been a need for various human settlements to give way in order to accommodate large projects such as large dams, roads, parks, and so on. In such

relocations, certain parallels have been observed in relation to the problems concerned with planning and execution of the project. This pertains to the fact that even when resettlement has been carefully planned and implemented, it affects the lives of the people involved in very definite ways. Hence the effects of constructing large dams are enormous on the local communities.

The negative effects of constructing large dams cannot be overemphasised, particularly the displacement of people in order to make way for dams. This displacement of people, in the majority of cases, results in painful experiences which do not affect the family members alone, but also the total support system existing at the local level. On the other hand, if handled well, the resettlement programme has a potential of improving the standard of living of those affected (World Bank, 1994). In the same vein, Scudder (2005) asserts that resettlement can bring improvements in the living standards of those affected by displacement through improving access to social services like health facilities. This, according to Scudder, can be achieved through the careful selection of relocation area; and by introducing new production techniques with the aim of increasing per capita income without depleting the natural stock available locally.

All the same, worldwide experience has shown that whenever relocation occurs, more often than not the lives of the very ordinary people are adversely affected. This is so because, in the majority of cases, new projects are usually brought to the most underdeveloped and the poorest areas that are often inhabited by indigenous people, ethnic minorities, or pastoral groups where infrastructure is largely lacking and where land and political costs are lowest. This explains why issues pertaining to tribal and cultural differences are so prominent in resettlement. Thus, the importance of having a resettlement policy in place to guide the relocation process cannot be overemphasised (Scudder, 2005).

3.2 Resettlement policies

The problems associated with involuntary resettlement are many, varied, and by far the most tragic. This is particularly so in Africa where policies on involuntary resettlement either do not exist or are poorly articulated, resulting in the inability of governments or implementing agencies to translate such policies into concrete and real resettlement activities. An example is the Aswan Dam in Egypt where the first relocation of the Egyptian Nubians occurred in 1902. Since no resettlement policy had been in place, the homes of the Nubians were submerged by the rising water. As a result, some of the affected Nubians migrated to Egyptian towns, while others simply scrambled up the banks

to establish new settlements. But more grievous was the fact that the wall of the Aswan Dam was raised twice, thus enlarging the reservoir and flooding the settlements of the Nubians each time they seemed to have recovered from the initial impoundment. The government resettlement scheme came only after the second raising of the dam wall, which was too little too late, with devastating consequences for the Nubians. Little (1965: 133) explains:

> "In the late summer, autumn and winter, from the rising of the river to its decline, they lived in a barren world, for all their land vanished and they clung to their villages on the edge of the desert, with the foliage of the palm trees waving in the air just above the level of the river and all else gone".

Thus, after repeated suffering due to the flooding of their villages, the Nubians were finally resettled in an environment where they could never achieve a standard of living comparable to what they had attained in their original settlements. As already mentioned, their plight was compounded by lack of a resettlement policy.

3.2.1 Background, rationale and principles of resettlement policies

Resettlement itself is sensitive in that it deals with moving people, and therefore it requires adequate time to plan and to execute. A guiding principle in the form of a policy is therefore a prerequisite. This policy should be well thought out and looks at in-depth consideration of various aspects of the present way of life of the affected population. This requires accumulation of data on the population numbers and structures, the resources that may need to be compensated, availability of land and water resources in the potential relocation areas and so forth. Adequate study of and contact with the affected people in the course of developing such a policy is vital to ensure its congruity with the needs of the displaced people.

Resettlement of the affected people calls for administrative set-up, government policy, expectations from government and government expectation from the people, provision of social amenities and so forth. But, based on some of the previous experiences discussed in this study, issues such as the ones just mentioned have met with many limitations. For instance, in the case of the Kariba Dam, there was no policy in place to guide relocation of the displaced people, which resulted in resettlement being done before the new replacement sites were made ready and available. Another example is the Kiambere Hydroelectric Project in Kenya that typifies some of the poorly articulated resettlement

policies. Kenyan government policy on resettlement has always been to give cash compensation to people for all immovable assets on the land acquired. Government also assumed the responsibility of providing basic social services such as schools, health centres, roads, water, and so on, at the place of resettlement. However, in this case, no special replacement land was identified, acquired or demarcated for resettlement purposes. Instead, the government assumed that people would use the money accruing to them as compensation to acquire land and resettle in the surrounding area (Mbuguru, 1994).

Mbuguru (1994) observed that the Kenyan policy made three major assumptions that were not based on facts. Firstly, the policy assumed that land of equivalent agro-ecological potential would always be available in areas that were socially and culturally acceptable to the resettlees. Secondly, it assumed that cash compensation for land acquired by government represented the existing market value of the land at the time of payment. However, this has rarely been the case, as the market value for land in Kenya was considerably higher than the cash compensations paid for land taken by government, especially in the rural areas. Thirdly, it assumed that resettlees would act wisely and use their cash compensation to buy new land. Displaced people rarely use cash compensation to invest in new land. In the case of Kiambere, only 14% of those compensated used the money to buy replacement land.

Akosombo Dam resettlement scheme in Ghana, where construction started in 1962, shows a lack of foresight in the articulation of the resettlement policy. Although the resettlement policy made provision for each household to have a “nuclear” or “core” house with a concrete floor and aluminum roofing over two rooms and two porches, only one room was built by the project. Additions and alterations to this one room were to be made by each household according to its own taste and needs, using its own labour and the materials offered by the project. This policy however, disregarded the size and complexity of different households and this had very grave consequences such as overcrowding, not only in physical terms but also in terms of role density. For example, in some societies in the Volta Basin, wives of a polygamist take turns at using one room, so that one wife may sleep outdoors while it is the turn of the other wife to sleep with the husband. Again, a menstruating woman must not enter a room containing a fetish or medicine; thus a woman in this state has to find a sleeping place elsewhere. These were some of the issues that were never considered in the resettlement policy (Graham, 1986).

Another major policy flaw in the resettlement scheme(s) of most projects has been the regrouping of villages. Project planners have found it expedient to regroup resettlees into

small villages, and settlements into larger ones in the resettlement area. While this makes sense in terms of cost containment, it has been found to result in social problems that far outweigh the financial cost of separating them. A study of the Volta Lake Resettlement Scheme reveals that the regrouping of villages in some cases affected social cohesion. In Mpamu, for instance, there were problems of conflict with the authority, allegiance, and inter-ethnic relationships. The problems of integration and cooperative decision making still persisted (Tamakloe, 1994). This stands out in contrast to the Kainji Lake experience in Nigeria where Ayeni, Roder & Ayanda (1994) observed that the resettlement programme had been a success because it aimed at replacing lost villages and left the people undisturbed in their social, economic and cultural life.

But, as already mentioned, even where an adequate resettlement policy existed, there have been problems in translating these policies into concrete activities. A case in point is the relocation of Nubians from the Nile Valley. Little (1965) reports that transport was not always available on the appointed day and even for several days afterwards. So, the villagers with their homes dismantled, their lives disorganised, and the supply of food cut from the village, were temporarily homeless and left with nothing to eat. Those who had thought that they would be moved at the correct time only found that there were no amenities in the new area and they were without water, food, or shelter.

It is important therefore to recognise that a well-articulated resettlement policy incorporating the aspirations of the stakeholders through a public participation process is a precursor to a successful resettlement programme. However, it is always important to note that a well articulated policy does not necessarily guarantee a successful resettlement programme. A deliberate effort has to be made to translate such a policy into concrete actions.

3.2.2 Types of resettlement policies

There are different types of resettlement policies, but Scudder (1997) identifies two broad types, the first of which is used in the United States, where relocation authorities generally consider **an individual household or a farm as a unit for consideration**. Though towns are moved as physical units, only rarely do the responsible agencies attempt to ascertain which rural residents would prefer to move as a community. The emphasis is on the household as opposed to the community. Under this type of policy, community interests are not taken into account, but each household (nuclear family) is regarded as a resettlement unit and treated as such. This policy is based on the assumption that each resettlee is young, socially and occupationally mobile, cosmopolitan and of at least modest

means of livelihood. But as usual, large dams are usually constructed in areas occupied by marginal people whose survival depends on intricate social networks that have been established over the years. Even in the United States, those households affected by dam construction are neither Wall Street Bankers nor the ebullient politicians of the Capitol but rather the rural poor who merely eke out a living beyond the fringes of cosmopolitan society.

Although this type of policy on resettlement may be suitable for American society with its high levels of education, job skills and high individual and family mobility, it still had severe adverse effects on the elderly, community-oriented minorities like the American Indians and the rural poor. An example is the Grand Coulee Dam and the Columbia Basin Project in the USA. Ortolano & Kao Cushing (2000) report that the reclamation agency paid for all acquired land, but provided no resettlement assistance to the displaced. Communities did not receive government assistance in finding new replacement sites. The same policy was applied in the resettlement programme of the Aslantas Dam in Turkey where resettlement focused on the core family because it was the dominant type of social organisation in Turkey. In implementing the policy, emphasis was laid on resettling the core family. Married children and grandchildren were regarded as separate families. Korsching *et al.,* (1980) in offering a critique of this policy, observed that the agency responsible for relocation did not consider or even try to understand the importance of intangible aspects such as formal and informal networks of social relationships that surrounded a family's place of residence. Thus, despite the unique nature of American society and its alleged suitability for this type of policy, there are reasons to believe that this policy may not be nearly as adequate as it is sometimes alleged to be.

The second type of policy identified by Scudder (1997) looks upon resettlement as a type of settlement scheme in which government planners try to relocate communities as groups, primarily because most lake-basin residents prefer to be resettled with kinsmen and neighbours. He (Scudder) observed that this policy is suitable for communities with strong kinship ties and is usually common in African states where resettlement is often seen as an opportunity for a planned change that is expected to contribute towards national development. An example of such a resettlement programme is the Kossou Dam in Ivory Coast, where efforts were made to resettle the affected people as communities with their social networks unaffected by the relocation. This policy has also been applied in the Kainji Resettlement Scheme, the Volta Dam and the Aswan Dam with varying rates of success. In the case of the Papaloapan Dam Project in Brazil, the resettlement policy was

drawn up by a renowned anthropologist, Villa Rojas, who made provisions for each community to be resettled as a unit so as to ensure social and political cohesion. This had however not been completed by the time the reservoir began to fill in March 1952. By March 1952, the funds available were sufficient for resettlement of only one community. These funds had been appropriated for constructing seventy-nine houses with one school, clinic, clean drinking water, electricity and so on. Regarding the other communities which were eligible for relocation, only a fraction of the necessary land had been secured (Partridge *et al.*, 1982). The result of this was that the commission charged with the relocation of people was unable to put in place the necessary infrastructure for the affected populations even as the water level rose. Of this lapse, Partridge *et al.* (1982) observed that the failure of the commission to provide infrastructure, housing and community health and educational resources seriously undermined the efforts of the anthropologist and delayed the mobilisation of the Mazatec relocatees. This resulted in last-minute haste, confusion and resentment. Equally serious was the failure of the commission to pay indemnification for lost property quickly; in some cases, people were not paid for six years. This resulted in some members of the affected population rejecting the offer of resettlement, and they moved out on their own accord.

The relative merits of these two policies are usually and often erroneously measured by their contribution to the restoration of the incomes of the affected persons, without much attention being paid to the level of satisfaction of the resettlees with the resettlement scheme. The tendency thus is to juxtapose the incomes of the affected people prior to relocation and after relocation, with the intention of determining whether relocation has made them worse or better off than before. Indeed, most of the complaints associated with relocation usually centre around the inability of the relocated population to attain the level of income that they had prior to disturbance. Issues such as income, happiness, satisfaction and other indices discussed in this study have, at the end of the day, to inform resettlement policy.

For resettlement policy to be effective, legislation has to be in place that addresses specific legal matters associated with resettlement. This includes issues of eligibility in terms of spelling out legally who has the right to compensation entitlements. When issues of eligibility are not adequately addressed through a legal instrument, the results thereof are usually not pleasant and involve much controversy. A case in point is the Three Gorges Project on the Yangtze River in China, where squatters (non-registered residents) who had lived most of their lives in the area to be flooded by the project, and who constituted a

significant percentage of the population, were regarded by the Chinese authorities as not deserving to receive any resettlement entitlement because they had illegally occupied the land in question. On the other hand, the Canadian International Development Agency (CIDA), in a joint venture with Government utilities Yangtze Joint Venture (CYJV), held an opposite view that the squatters should be eligible for some compensation entitlements when considering the length of time they had lived in the area to be affected by dam construction (Égré & Senécal, 2003). It is in cases like this that legal instrument(s) for addressing issues specifically of resettlement can assist in resolving disputes.

3.3 The importance of a legal framework within resettlement programmes

The need for legislation in the planning of resettlement programmes is vital. Not only does such legislation provide guidelines for the planning of resettlement programmes; it also provides a background that is independent of the project for the assessment of such scheme(s). Various resettlement schemes have been planned and executed, sometimes with and at other times without the guidance of regulatory legislation. One example is the Aslantas Dam Project in Turkey, where the resettlement scheme was regulated by the Expropriation and Resettlement Law, which was legalised as far back as in 1934 (WCD, 2000). Thus, at the initiation of the project in the mid-1960s, the country had already had some experience with resettlement and compensation and the efficacy of the regulatory legislation had been tested over a period of 30 years. But, regarding the case of the Tarbela Dam in Pakistan, the operating legislation for resettlement and compensation was the Land Acquisition Act of 1874. Here, although the act could be said to have stood the test of time, it was observed that the Act, while suitable at the time of its conception, perhaps had its shortcomings for resettlement, rehabilitation and development activities in the 1960s and 1970s (Asianics Agro-Dev International, 2000). In other cases such as the Pak Mun Dam in Thailand, there was no regulatory legislation. The Electricity Generating Authority of Thailand (EGAT), which also owned the project, regulated the resettlement process. A consequence of this was such that Pak Mun was clouded with a history of struggle between the affected people and EGAT over the right to livelihood and the right to the environment upon which the affected people depended for their living (Amornsakchai *et al.,* 2000).

Somewhere between these two extremes is the example of the Grand Coulee Dam in the United States where there was no legislation for resettlement. The property was simply acquired and paid for by mutual agreement. Here, the absence of legislation meant that the project related to the people affected by buying off the land, buildings, improvements and

other facilities such as telephone lines, telegraph lines, roads, bridges and railroad tracks (Ortolano & Kao Cushing, 2000).

Regarding the resettlement associated with Tucurui Hydropower Complex in Brazil there was no regulatory legislation and the government had to put one together specifically for this purpose. Thus,

> "the Tucurui Hydropower Complex Decree No. 78659 dated November 11, 1976 declared an area to be of public utility for the purpose of expropriation, …established the compensation payable for the lands and improvements to be affected by the formation of the Tucurui reservoir as well as provisions for settling local communities"
>
> (La Rovere & Mendes, 2000:90).

As just discussed above, the experiences of those affected by involuntary resettlement have to a large extent, been greatly affected by the existence or otherwise of a regulatory legislation. For instance, in the case of the Ceyhans Aslantas Project in Turkey, the expropriation law stipulated that expropriation payments be made in cash and in advance. The law on resettlement, on the other hand, provided for state-assisted resettlement in both the rural and the urban areas. According to this law, resettlement entailed provision of a home or a plot of land to a family sufficient to meet its needs, given the household size. The state also had to provide credits to artisans and traders to re-establish their workshops; as well as making available sufficient land, livestock, staple goods, farm equipment, seeds and storage units to farmers (WCD, 2000).

An elaboration of the law in Turkey stipulates the conditions for resettlement eligibility to include ownership and non-ownership of immovable assets. The law also gave the affected people the option to request either rural or urban resettlement. This law notwithstanding, out of the 1000 families displaced in the reservoir area, only 47 were found eligible for resettlement. The rest were given cash compensation under the expropriation law and were thereafter left to fend for themselves. Despite all those eligible for resettlement demanding rural resettlements, only 35 were resettled in rural areas. Twelve (12) families were resettled in urban centres against their will. Delays in providing housing for the resettlees were experienced and no temporary resettlement aid was offered to them as stipulated by the resettlement law. The Ceyhan Aslantas example shows that, even where there is elaborate legislation on resettlement and where the same government

that enacted those regulations is the one undertaking the project, legislation can be sidelined and the affected population made to suffer (WCD, 2000).

In situations where the regulatory legislation is neither as elaborate nor as detailed as in the case of Turkey, then this could present some special problems. In the case of the Tarbela Dam in Pakistan, for instance, the regulatory legislation was the Land Acquisition Act which only made provision for the compensation of persons whose land was being acquired for public good. What this meant was that it was only landowners who were protected by law. Other aspects of resettlement, including the resettlement of the landless, followed the rule of thumb resulting in unpleasant experiences for the displaced people. Under the provisions of the Act, only those who had a minimum of 0.2 hectares of irrigated land and/or 0.8 hectares of non-irrigated land were eligible for alternative land. Those with landholdings less than the stipulated size were given financial compensation, which in the end was inadequate for the acquisition of land of similar size in a similar location. Those with houses and other properties that were not covered by the Land Acquisition Act received financial compensation. For those who actually received compensation in one form or another, the general complaint was that properties were valued and paid for at a rate that was far less than the market price being obtainable at the time. Thus, the displaced people found their compensation inadequate to replace their properties which had been affected by the construction of the dam. There were, however, a large number of people who did not receive any compensation despite their properties being affected by the project. In the end, more of the affected population failed to obtain assistance for resettlement and many years after the project had been completed, there were still many people pursuing their resettlement claims (Asianics Agro-Dev International, 2000).

Absence of resettlement legislation in regulating the Grand Coulee Dam Project in the USA did not affect the residents of the reservoir communities as adversely as would have been expected, given the Pakistan example. This is because the agency charged with the responsibility of acquiring land had approached each individual property owner and made an offer on the property based on land values in the immediate vicinity. If the owners felt that the government's offer was too low, they rejected it; the government would again pursue gaining title to the land. If the owner was not yet satisfied with the compensation received, he or she could file a lawsuit against the government. This however, was not the end of the matter. If businesses in the area and all other improvements on the land such as houses and other structures had to be acquired by the project, necessary negotiations on the property would be pursued in order to effect compensation acceptable to all the parties

involved. But despite an adequate compensation scheme, the absence of a resettlement regulation mechanism had some residual effects on the displaced communities. A town like Peach was never re-established, while others, like Marcus and Lincoln, lost a substantial part of their population to other towns in the process of relocation (Ortolano, & Kao Cushing, 2000).

In the case of the Tucurui Hydropower Complex in Brazil, where an ad hoc regulation was made, problems arose because the affected communities were forced to accept compulsory relocation and arbitrary compensation. The most important consideration for the agency handling the resettlement programme was adhering to the set legal procedures within the time frame imposed by the construction period of the Hydropower Complex. Thus every attempt was made to meet the deadline for the filling of the dam and, in the process, a lot of the valuations were done incorrectly and the affected population not given the attention they deserved. The result of this was that the procedure for assessing assets for compensation purposes took only material criteria into consideration, neglecting to include the value of work invested in the land and also the emotional and symbolic values attached to the acquired assets. The inadequacy of the decree meant that only those who owned land and property were considered for resettlement. Others, who depended on the area for their livelihood and had been in the area for a long time without owning any property, were left out of the resettlement scheme. The inadequacies of the resettlement scheme resulted in the formation of a new lobby group - the dam affected people association (DAPA), whose sole aim was to redress the wrongs done to people in the process of resettlement (La Rovere *et al.,* 2000).

As the foregoing analysis indicates, there is no one definite way in which the absence or presence of legislation will somehow impact on a resettlement process. It is evident that the presence of well articulated and time tested legislation can ensure fairness, or at least set the standard on the basis of which the process can be evaluated. What this means is that, even with an adequate regulatory legislation for resettlement, many things could still go wrong and do in fact go wrong during the implementation of resettlement programmes.

3.4 The importance of a well articulated resettlement programme

Perhaps the best scenario in dealing with the consequences of constructing large dams is a situation where no resettlement of people is required. However, this situation rarely occurs. In most cases a large number of people have to be resettled either in groups or as individuals in order to make way for the construction of large dams. But what becomes critical is to have in place a well articulated and detailed resettlement programme with

clear activities and time schedules. Problems usually arise where such a programme is non-existing or is very scanty and does not, due to a number of factors, address details. For example, the resettlement programme of the Cahora Bassa Project was very shoddy owing to the political pressure created by the war between the Portuguese (Colonialists) and Frelimo (freedom fighters) at that time, which resulted in the resettlement programme being hurried. Those eligible for resettlement because of being affected by the project were relocated in what was referred to as protected or strategic villages to provide maximum protection against the guerilla forces of Frelimo. Since the planning and implementation of the resettlement programme was hurried as a result of the pressure exerted by the war that was being waged, in some instances coercive measures were used to move people. This pressure also resulted in the selection of the replacement sites being in unsuitable areas that were inadequately prepared. For instance, in Tete Province, there were reports that it took only a month to do land preparations for the incoming resettlees (Bolton, 1986). This was partly due to the fact that the military took charge of the planning and implementation of the resettlement programme, yet they had inadequate technical capacity to undertake work of this nature, which further exacerbated the problems encountered.

A review conducted by the World Bank (1998) revealed that 50% of the dam projects financed by the bank were approved without any resettlement programme, which was contrary to the bank's policy. In cases where such programmes existed, the review revealed that about 70% of the resettlement programmes were based on cash compensation without any regard for the replacement of land or for any other productive assets. Only 15% of the projects under review complied with the resettlement policy of the Bank (1998).

Therefore, those projects that were approved without a resettlement programme resulted in the violation of human rights and the use of coercive measures to move people. The case of the Tongas who were affected by the Kariba Dam, clearly demonstrates that the non-existence of a resettlement programme can result in coercive measures being applied to move people out of the dam site. The Tongas resisted and 8 people were killed in the fighting. In 1981, relocations in India also occurred, involving coercion of people affected by the Sri Sailam Project. Similar incidents were observed in Guatemala, which led to the expulsion of people from the Chixoy Dam site; and those who resisted were left in the flooded area to die (WCD, 2000). When the Miguel Aleman Dam in Mexico was put into operation, 21 000 houses of Mazatech Indians were set on fire by the employees from the Papaloapan River Commission because the former had refused to move from the dam area

(Partridge *et al*., 1982). The authorities opted to expel the affected people by filling up the reservoirs before they removed them. Similarly in India, 162 villages were flooded when the Bargi Dam was filled up (WCD, 2000). Therefore, with a well articulated resettlement programme, incidents like the ones outlined above can be avoided.

On the other hand, the basin of the Glomma and Laagen rivers, in Norway presents a scenario where there was no need for a resettlement programme because no one was affected by the construction of the network of dams. The basin consisted of 40 regulation reservoirs with a combined storage capacity of 3 500 million m^3 responsible for an increase of approximately 46.6 km^2 in total of the basin lake area and its network of 51 power stations with a capacity of 2 165 MW. This notwithstanding, the project was planned in such a way that there was no need for any resettlement of towns or households because most of the inundated areas were located in high altitude forest and mountain areas. Thus, the most significant social effects of the hydropower development in the Glomma and Laagen rivers were connected to beneficial changes in local and regional economies (Norwegian Institute for Nature Research *et al*., 2000).

This Norwegian example has however, not been copied in the planning of many other large dams. On the contrary, the building of large dams always seems to involve relocation of people and such relocations range from a few households, to several major towns and villages. Where such relocations have taken place, success ranges from 'poor' to 'very good', with hardly any relocation achieving the enviable peak score of 'excellent'. Studies that have been done on them show that the success or failure of resettlement programme begins at the planning stage where the method of resettlement is articulated and the problems envisaged clearly identified. Where a resettlement programme is well articulated, there is a likelihood that the implementation of the programme will follow successfully, but where the planning of resettlement is done in a shoddy manner, the implementation will most assuredly run into problems. This is especially so in a situation where the planning agency does not have access to correct and relevant data on the number of persons to be affected by the project, or where changes in the location and height of the dam occur time and again, and where these have negative effects on the resettlement programme.

3.4.1 The rationale behind Resettlement Programme(s)

The basic objective of resettlement programme(s) is to assist the displaced persons in their effort to improve, or at the very least, restore their standard of living. According to Rubin & Warren (1968), population relocation presents an exceptional opportunity to

improve the standard of living of those affected, as well as to contribute to national development. What this entails is that there should be reinstatement of a person's income-generating capacity and access to valued resources. Also, access to social benefits such as health, education and so on, should improve. Resettlement planners should therefore have in mind to make the new environment of the displaced persons better than, or at least similar to the one they had prior to relocation by even considering the use of drawdown[46] areas as a benefit when the dam is operating at minimum level. Hence the importance of the adequacy and appropriateness of a resettlement package cannot be overemphasised.

a) Restoration of livelihoods

The planning and implementation of resettlement programme still poses many challenges. In some cases, efforts expended seem incongruent with reality in terms of ensuring that the livelihoods of those affected by relocation are restored. For instance, in the case of the Upper Mazaruni Dam in Guyana, the Akawaio Indians who had inhabited the forests for generations were resettled on barren land, on the Rocky Mountains. This type of environment was unfamiliar to them especially in terms of how to survive; as a result, restoration of their livelihoods was threatened (Goldsmith & Hildyard, 1984).

The Cahora Bassa resettlement scheme in Mozambique presents a scenario where issues pertaining to sustenance of livelihoods were not taken into account as the programme was hurried owing to the political turmoil at the time. The result was the adoption of blanket compensation where each individually affected household was allocated only one hectare of land for cultivation, while there was a total neglect of other aspects of resettlement components, such as ensuring access to social services like water, clinics, schools and the availability of pastures for the cattle farmers (Bolton, 1986). Obviously, the consequences emanating from such a resettlement programme adversely affected the standard of living of those affected. This is why in the World Bank policy document, the bank insists on avoiding resettlement of people. But where this is not possible, the bank says:

> "Where displacement is unavoidable, resettlement plans should be developed. All involuntary resettlement should be conceived and executed as development programs, with resettlees being provided with sufficient investment resources and opportunities to share in project benefits. Displaced persons should be (i) compensated for their losses at full replacement cost prior to the actual move; (ii) assisted with the move and

[46] This is an area between low operating level and the full supply level, which is sometimes available and can be used by the local communities.

> supported during the transition period to the resettlement site; and (iii) assisted in their efforts to improve their former living standards, income-earning capacity and production levels, or at least to restore them. Particular attention should be paid to the needs of the poorest groups that are resettled"
>
> (World Bank, OD 4.30:1).

As already mentioned, this has, however, not been the case in most resettlement programmes. In the majority of cases, incomes are lost, populations are alienated, individuals are impoverished and sometimes exposed to health - threatening conditions. In Ethiopia, for instance, a review conducted on the state-sponsored involuntary resettlement programme identified the following three major areas of concern: (i) the prevalence of a range of diseases which were absent in the resettlees' area of origin but to which they were now exposed in the new replacement location, (ii) the increasing pressure on natural resources in the host community, resulting from the increase in population through resettlement, and (iii) the potential for ethnic conflict (Baker, 1995).

It is vital to ensure that resettlement programmes provide an opportunity to address the needs and developmental aspirations of those affected by involuntary evacuations. These aspirations can be made known through a dialogue between all the relevant stakeholders. In the same vein, Mejia (1997) states that people increasingly need to be given a choice of the development option as was the case with Urra 1 on the Sinú River in Colombia, where the resettlement programme was regarded as successful in restoring and even improving the living standards of those affected. This success was attributed mainly to: (i) the fact that mitigation measures were developed together with the stakeholders; (ii) there were sufficient resources to implement the resettlement programme; and (iii) also that there was timely implementation of the plan (Égré & Senécal, 2003).

Resettlement programme(s) should therefore provide people affected by relocation an option of moving to new forms of occupation, to new places and to different kinds of relationships with kinsmen or neighbours. The driving factor behind presenting relocatees with these options is to enable them to become more productive citizens than they had been in the past. If a resettlement programme does not achieve these objectives, it would have failed to perform its most basic functions.

Another failure of resettlement programmes is that they tend to focus mainly on the process of physical resettlement, rather than on the economic and social improvement of

the affected people. These, in most cases, have been fraught with poor and unfinished implementation. Postponement of the resettlement and rehabilitation programmes has resulted in psychological and social anxiety, as well as the risk of impoverishment for those people waiting to be resettled. It is therefore not surprising that, in some cases, the livelihoods of those relocated have not been restored. For example, in China, roughly 46% of the 10 million people resettled in China were enormously poor. In India, 75% of the affected people have not yet been rehabilitated, and were, as a result, impoverished. This was also the case in Indonesia, whereby 72% of the 32 000 relocated people were critically deprived after having been resettled (WCD, 2000). The same situation applies to the 800 minority Nya Heun families resettled owing to the construction of Houau Ho dam.

b) The importance of data within resettlement programmes

Resettlement programmes sometimes fail to restore the standard of living of those affected, because of inadequate assessments on the best strategies for resettlement, where adequate assessment would involve assessments of more than one option. A typical example is the resettlement of the Tonga people affected by the Kariba Dam, where no ecological surveys were conducted to enable the best site selection for resettlement purposes. This assessment might have enabled reinstatement of livelihoods, particularly because the Tonga people were agriculturists, and, if identification of an appropriate site was done during the assessments, this would have enabled them to continue with their agricultural production (Scudder, 1968). Scudder mentions that even when decisions pertaining to resettlement were indeed taken, it was too late to undertake baseline studies. In the case of the Volta Dam in Ghana, for instance, studies pertaining to resettlement were carried out long after work had commenced on the dam. Consequently collection of baseline data would no longer serve any purpose. Collection of baseline data facilitates subsequent conducting of impact assessment(s) on the reinstatement of livelihoods of those affected by resettlement. This is absolutely necessary because resettlement goes beyond just the physical relocation, but also takes into account issues pertaining to the reinstatement of the income-generating capacities of those affected. This issue can only be established through conducting monitoring and evaluation surveys on the resettlement programmes. For example, it became easy to establish that only 20% of the people who had had to be relocated owing to Sarder Sarovar Project had actually been resettled since 1984.

It is therefore vital to thoroughly identify, quantify and assess the impacts emanating from dam projects during the preplanning stage. This would enable the project agents to

prepare a comprehensive mitigation plan addressing all issues identified. In so doing, the criteria for eligibility can be developed together with all the stakeholders concerned, unlike in the case of Aslantas where the criteria used to determine eligibility were not understood by all concerned, and, out of 1000 displaced people, only 49% were found to be eligible for resettlement and subsequently received new housing. Those who did not receive any compensation became resentful.

However, even when consensual agreement has been reached on the numbers of the PAPs, not all of them receive what is due to them as compensation or assistance to resettle (WCD, 2000). An example was the case of Bargi Dam, where only fewer than 10% of those who had to be relocated were physically resettled. In respect of Tarbela Dam in Pakistan, of the 96 000 people identified as displaced, only two-thirds qualified for replacement agricultural land as compensation, but about 2000 families did not receive land as promised (Asianics Agro-Dev International, 2000). In Argentina, it took 20 years to resettle about 30% of displaced people affected by the Yacyreta Project; and the rest of the PAPs were to be resettled within the remaining two years prior to impoundment of the reservoir, which was certainly not practical.

Nevertheless, the foregoing experiences in no way undermine the importance of data that is critical in assisting with determining the magnitude of resettlement programme(s). Once the magnitude of resettlement is known through data collection, it becomes easier to plan for resources required to implement such a resettlement programme. For example, the Danjiagkou Project in China, which commenced in 1958, had a resettlement programme that covered four countries and 345 villages, which was a major challenge. Apparently the Chinese government attempted to advance improvement on the standard of living of the resettlees. Even so, unsolved problems continued. For instance, it was noted that roughly 35 000 relocated people around the city of Shiyan had incomes that were below the official poverty line, despite the attempts made by the Chinese government.

This only goes to show that if the actual figures are known in terms of the magnitude of resettlement, it then becomes much easier to plan for the resources required for implementation, although unfortunately resources are never adequate for the full implementation of such programmes. Insufficient resources allocated for resettlement usually have far reaching implications on the standard of living of those affected by dam projects. Goldsmith & Hildyard (1984) further point out that the financial implications are usually grossly underestimated for compensating the physical moving of people, the cost

of forming new communities and new systems of production, and the actual time required for essential assistance with resettlement.

c) The rationale behind direct compensation

The rationale behind the direct compensation is to recompense for direct quantifiable losses, at least at the going market value. This includes productive assets, houses, and other such items. Yet, experience has shown that, when such payments are effected, they do not, in the majority of cases, become appropriate and viable options for substituting for lost income or even reinstatement of livelihoods. This aspect has been observed in the case of Kiambere Hydroelectric Scheme where the affected people did not receive adequate compensation to purchase replacement land lost to the project. Also, in the case of the Nubians for instance, the replacement houses were too small when compared with the old Nubian houses that were large and spacious. Furthermore, the houses that were indeed constructed did not take into account their needs such as high walls that provided the Nubians with security and privacy. The houses were not roofed with brick vault domes or palm trunks and reed suited to hot and dry weather, but instead tin roofing was used. The type of replacement housing forced a man to share a room with all his wives, which was against Islamic practice. This resulted in much dissatisfaction amongst the PAPs, thereby creating psychological stress among those who were relocated (Lavergne, 1986).

Similar observations were made regarding the Upper Volta Scheme, where resettlement of those affected caused social friction in that the design of the new houses never took into account the size, and the type of structure suitable in terms of meeting the needs of the resettlees. The replacement houses were much smaller than the original traditional houses; construction material (which was concrete) used on the replacement houses was unsuitable in that Ghanaians preferred mud and thatch-roofed houses as opposed to concrete structures which are generally hot during the day and cool at night. This was compounded by the issue of affordability that surfaced regarding the construction material. The concern was that, previously, the materials used on the houses like mud and thatch grass had been readily available locally at no cost. But with the material used in the replacement houses, it meant that costs would have to be incurred if there was a need to extend the house or to do maintenance work - the money which they did not have (Graham, 1986).

Another problem regarding direct compensation is born out of empty promises either by government(s) or those charged with the implementation of a dam project with a resettlement component. In the case of the Pantabangan Dam in Brazil for instance, the government promised replacement of all losses incurred. For example, there would be land

for land, house for house, tree for tree and so forth, few of these promises were actually being kept. None of those affected received replacement land, and in some cases the houses were never completed (Goldsmith & Hildyard, 1984).

No matter how much effort is put into making compensation comprehensive, there are those unquantifiable losses that are not always easy to compensate. This particularly pertains to those losses that are emotional and psychological in nature. This point is vividly captured by Hart (1956) in his description of the plight of the people of Narayana Deva Keri and their relocation to make way for the construction of the Tungabhadra Dam in India. He said that people in industrialised countries find their roots in the families of their own generation, in their relation to job and to country, in contact with the newspapers that give a stream of great events. The root of the Indian villager, on the other hand, goes deep in the family of his ancestors, his caste, his hereditary occupation; and all his ties have their manifestation in the village such as in the quarter meeting place, well reserved for his kind, in the hut or courtyard of his family, in the tools or fields of his ancestral work. So, if occasionally a family or village refuses to pull up roots so deep before dams are built, it is certainly not extraordinary.

What was remarkable to Hart was the resignation with which thousands in hundreds of villages had actually moved in India. This issue is similar to the experiences of the Cree in terms of their sentimental attachment to the area where each bend in the river is known and named, the footsteps of fellow neighbours could be easily identified, and common activities of hunting and story-telling are all familiar to a Cree person (Hart, 1956; Come, 2004).

3.5 Socio-economic factors in resettlement programmes

Socio-economic realities are usually most prominent in any resettlement scheme. This prominence of socio-economic factors notwithstanding, continue to be poorly articulated in most resettlement programmes because the planners concentrate more on effecting direct compensation for lost assets and not go further to ensure that adequate reintegration of the displaced people into the host community is properly done. The Mahaweli resettlement programme provides a typical example of where emphasis was placed on the physical aspects of the resettlement programme with hardly any attention being paid to the socio-economic aspirations of those affected by resettlement. In fact, Adams (2000) says that, the construction of large dams tends to aggravate class disparities between the displaced people, that is, those few who have the means to take advantage of the new opportunities and those without such means. The Mahaweli resettlement programme provides a typical

example of how class disparity was aggravated. The implementing agency, in an attempt to foster greater social cohesion, reduced the sizes of settlement hamlets and in the process relocated others on marginal lands, while others had already been relocated on productive plots with adequate water supply infrastructure. This resulted in distrust rather than building community spirit within certain sectors of those affected by resettlement (Scudder, 2005).

Whenever resettlement becomes a necessity in order to make way for the construction of large dams, little regard is paid to the individual or societal current and future needs in terms of whether they would find sustainable employment, receive education and health care, retain their cultural milieu and societal identity, safety assurance and societal continuity. The mentioned considerations become real, particularly in cases where resettlees had access to these amenities in places where they originally settled. For instance, in Tarbela resettlement scheme, agricultural land was not available, basic services such as electricity were only provided after 25 years, and no provision was made for health services and schools. Similar observations were also made in Tucurui, the Sirindhorn Dam in Thailand and Akosombo in Ghana. This view was also supported by the Chinese case study where the government reports described reservoir relocation problems as being confronted with what was referred to as 'seven difficulties' and 'four inadequacies'. The seven difficulties comprised shortage of electricity, drinking water, sanitation, schools, food, health services and infrastructure, while the four inadequacies included inadequate housing, flood control, reservoir maintenance and maintenance of other facilities (Shi & Chen, 2001; Egré & Senécal, 2003).

As already mentioned, large dams are constructed in remote areas inhabited by ethnic minorities, where living among close relatives provides a sense of security that enables free movement without any fear. But with relocation, resettled people experience some degree of fear and insecurity due to having strangers as neighbours (Goldsmith & Hildyard, 1984). In some cases, women have ended up being confined to their houses for the sake of their own security. Thus, in evaluating the success of a resettlement scheme, socio-economic factors should go beyond just the cursory indices of restoring the living standards, but should also address some of these salient unquantifiable aspects of resettlement. In the same vein, Scudder (2005) mentions that if improvement of standard of living is going to be important to those directly affected by resettlement, it is important to understand what the resettlees value, know and what existing economic systems entail.

Indeed, one of the greatest dangers with resettlement programmes lies with the tendency to give the more material/economic aspects of growth an overriding, disproportionate emphasis. As a result, the end may be forgotten in preoccupation with the means (Brokensha & Scudder, 1968). Although there is recognition that the laws of eminent domain, not simply compensation, ensure that there is both the economic and material well-being of the relocated population. These, therefore need to be remembered in the planning of resettlement programmes (Korsching *et al.,* 1980). Nevertheless, moving people from one rural area to another and then leaving them to try and recreate some farmlands and reinvest in land development is usually not a viable option in that this does not take into account intra-household relationships and the different contributions made by men and women to the household income. If the latter considerations were taken into account, there would be a better understanding of what the losses are and what type of assistance would be required (Mejia, 1997).

The question that immediately arises from the discussion of socio-economic factors within the context of resettlement is what these socio-economic factors are. The first of such factors arises from the resettlement policy itself. Presumably, as already stated above, an adequate policy is a precursor to an adequate resettlement programme and should therefore be pursued vigorously. A good resettlement plan starts with an initial social assessment (ISA) that addresses issues such as:

- the likely scope of land acquisition
- people likely to be affected
- the needs, demands, and absorptive capacities of subgroups, and the likely losses
- the links with other social dimensions like: poverty, women in development (WID), ethnic minorities, vulnerable groups
- possible ways to minimise or eliminate the impacts
- the capacity of the implementing agency to plan and implement a resettlement programme (Pelser, 2003; SEEDCO, 2005).

Information collected through ISA should guide the formulation of the resettlement policy and programme. This would ensure that the affected population are adequately catered for within the policy framework. The approach adopted by the Chinese State

Council in July, 1986 embodies these principles which are thus articulated in their resettlement policy:

> "We must rid ourselves of the traditional practice of simple rehabilitation and compensation, and convert from passive compensation to active assistance by helping the affected population establish their livelihoods, and convert from assistance in living to assistance in production. Furthermore, we must combine resettlement rehabilitation with construction of reservoir area and utilise the budget of resettlement rehabilitation in a more effective manner so as to pave the way for resettlement with development"
>
> (Shi *et al.*, 2001: 8).

3.5.1 Vulnerable groups in resettlement planning

Relocation is a painful exercise for those who are affected by it. But, among the affected population, some are more affected than others because of their special circumstances. For instance, it is widely held that women, children, the aged, indigenous people and other marginal people are more likely to be affected by relocation than the men (Colson, 1971). Thus, in planning a resettlement programme, the special circumstances of these people need to be taken into consideration and as much as possible, allowance be made for their needs. However, even when planning has been effective, some of the affected people would still find it difficult to come to terms with the resettlement programme. This is particularly so in the case of the aged, where because of denial, the resettlement can ultimately cause their death (Scudder, 2005). Widowed, divorced and the elderly people who previously resided with their immediate relatives in one household, find themselves scattered in one-room blocks that are often not within walking distance of their kinfolk. This results in a sense of feeling helpless, thereby causing strain and anxiety among the family members. A case in point is that of the Nubians, where ultimately, they abandoned their new settlements and returned to the shores of their flooded homelands (Lavergne, 1986).

Women tend to experience more adverse consequences of resettlement than men. This is because compensation payments are usually paid to the heads of households who are usually men. Obviously this means that collective assets of the family are converted into cash that is paid to men, thereby leaving women and children at higher risk of deprivation (Scudder, 2005; World Bank, 1994). In the majority of cases, eligibility criteria for compensation do not always include women, particularly in the patrilineal societies as they

are regarded as minors, and they would only indirectly benefit from the compensation paid to their husbands, which in the majority of cases does not happen. Female-headed households, which in some cases range from 20%-40% of the affected households, suffer most from such exclusionary policies. This was the case with the Gautemala Chixoy Project. In the rural areas, women may also be affected disproportionately since they are often more dependent on common property resources. In the case of the Tonga people who were resettled, the women in particular were concerned with the alluvial gardens to which they felt extremely attached because they had been cultivating them and had inherited them through their matrilineal system (WCD, 2000).

Although resettlement assistance should be extended to all those affected by the project, Kvam (1997) insists that vulnerability may be considered as a criterion for different kinds of assistance. Those who are most vulnerable should be encouraged to choose the least risky options. Going by this view, the aged, women and children, who have always been regarded as vulnerable should be given special attention within the resettlement plan. Sadly, however, the special needs of such people are not usually recognised until the resettlement programme has been completed and studies are being conducted to find out how they are coping in the location (Scudder, 2005).

The Tarbela Dam resettlement programme is another relocation project that did not take the special needs of vulnerable people into account. For instance, the needs of elderly men were not taken into account as they faced an uncertain future with problems both of losing control in their families and their political power. In a review of the scheme by the WCD (2000) it was noted that the specific social and cultural values of the tribal community aggravated their problems. One specific example is that, traditionally, the members of the clan or the extended family of a tribe live together. During the resettlement process this important factor was disregarded, with the result that when 140 residential plots and 30 commercial plots were allocated to the tribal communities, they refused to take possession. They demanded to be resettled collectively in one hamlet. The resettlement scheme had negatively impacted on the free movement of the women in that, prior to resettlement, they resided with close relatives in the village and their security was ensured, but with the new location, they could not move easily in the neighborhood (Scudder, 2005). Now, in the hamlets, the neighbours were not necessarily their relatives, and the women were thus confined to their houses. This was despite the fact that the literacy rate of women had improved with the relocation and more and more children were taking advantage of their new environment to attend schools. This improvement in literacy however came at a high

cost as it was discovered that there were social and moral costs, especially amongst youngsters in Khalabut who were addicted to drugs and alcohol.

3.5.2 Cultural issues within resettlement schemes

The experience regarding most resettlement schemes is that issues of culture within the socio-economic context are not always factored into resettlement programmes. This is partly attributed to a lack of full comprehension on the part of the implementing agencies the intricacies of cultural issues that shape relationships between the different ethnic groups and how they perceive their land that is affected by the construction of large dams. For instance, 69 000 people from over 700 villages affected by the Volta River Project in Ghana were resettled in only 52 new settlements. In relocating them, no attention was paid to their ethnic diversity. The result was that people of different ethnic backgrounds, speaking different languages, worshipping different gods and with totally different cultural orientations were forced to live together, while those with common socio-cultural backgrounds were split, thereby creating insurmountable problems (Graham, 1986).

The Tarbela Dam resettlement scheme presents a different type of issue. The project made the mistake of resettling some of the affected people among ethnic groups who were of different origin. For instance, people who were not ethnic Sindh were resettled in Sindh areas, which resulted in most of them having difficulty in taking possession of the land allocated to them. According to the report of the WCD (2000) on the project, those who were allocated land in Sindh bought homes in one of Tarbela's five resettlement townships in order to be near their family members and kin. Thus, in the Tarbela project, resettlement crossed ethnic barriers, which was an aspect that did not auger well with the Pakistani culture. This is because the resettlement programme laid emphasis on employment, rehabilitation and livelihood, while it was later discovered that relocation had a very severe impact on the social and cultural values of tribal communities in a way that had not been anticipated by the planners. Once again the physical security of the affected was also not taken into account. It was assumed that they would blend easily with their host communities, but this was not the case, and women became extremely vulnerable and therefore their daily living became extremely difficult (Asianics Agro-Dev International, 2000).

This issue of paying attention to cultural issues becomes even more pertinent in that most of the dam projects are usually sited in the least developed areas that are inhabited by minority groups in whose lives, culture plays an important role in their daily living (World Bank, 1994). An example is the case of the Akawaio Indians whose land that provided

them with direct links to their spiritual world was flooded through dam construction (Ahmad, 2003). In the case of the Tonga people affected by the Kariba Dam, issues of cultural concern related to the fact that they had to leave behind the land where their ancestors were buried, and this created enormous stress on the relocatees.

Inadequate attention paid to the cultural issues within the resettlement programme can in some cases result in the resentment of the incoming population by the host population, thereby ultimately fuelling social tension. For instance, 6 000 people relocated below the Kariba Dam in an unfamiliar area with a different heritage and speaking a different language, experienced social tension. As strangers, the relocatees felt a sense of insecurity that increased when the hosts warned them to truncate their complex funeral ceremonies, since this (they were told) would alienate the spirits of the land. So, the stress of the relocatees caused by not being able to cope with death in their customary way escalated. At first, there were numerous deaths and this created fear in many because people claimed that the land was 'bad'. This state of affairs lasted for several years, after which a new type of spirit medium arose, claiming that it was not the land that was bad but the people in it who were causing barrenness and a wide range of potentially fatal illnesses and conditions, all of which could be cured by the medium. Although the concept of spirit medium was fundamental to the belief system, the actual spirit involved was a new one associated with the new area. But, since the medium was indeed effective in achieving cures, it assisted the Tonga people to adapt in the new environment (Scudder, 2005).

On the other hand, in trying to be accepted by the host population, the Tongas forfeited their agricultural and other neighbourhood rituals because of being involuntarily moved to strange land. The Egyptian Nubians also dropped their Nile rituals when they were relocated in a desert area several kilometres inland from the river. Other activities were also not transferred for fear of being alienated by the hosts or of provoking their disdain. But there were also other fears associated with the relocation of the Nubians affected by the construction of the Aswan Dam. A decision was apparently taken to resettle three major ethnic groups at Khashm el-Girba. These groups were: i) the Shukyra; ii) the Beja who were pastoralists; and iii) the Halfans, who were agriculturalists. The first concern was how the first two groups of pastoralists would cope with the sedentarised livelihood to which they had never been accustomed. Another concern was that the Halfans who came from a prestigious cultural background would eventually become just one of the ordinary ethnic groups of the Khashm el-Girba region through their interaction with the other groups, and would lose their distinct qualities (Scudder, 2005), issues which resettlement

planners should have taken into account in the planning phase of the resettlement programme.

The relocation associated with the Papaloapan Dam project provides a sterling example of what can happen to the indigenous and marginal people after relocation. The relocation of the Mazatec from the Papaloapan for instance, resulted in a radical redefinition of the Mazatec culture. Barabas & Bartolomé (1973) observed that the essential elements of the Mazatec language were disappearing despite the fact that it remained the exclusive language of most women and of daily community business. Their traditional agricultural rites, designed to prevent the deer from attacking the corn and also ensure the release of rain from the deities of Cerro Rabon, were no longer performed. Also, aspects of Mazatec healing, divination and burial rites were no longer emphasised. Given the above, the prognosis for the continued existence of the Mazatec was severely threatened. The likelihood is that by today, the culturally distinct Mazatec may have been absorbed into some larger ethnic group, this resulting in loss of dignity usually associated with a loss of identity.

When cultural considerations are not factored into the resettlement programmes, the consequences may be similar to those experienced with the resettlement scheme in the Upper Volta, where the design of the replacement houses never took into account the cultural issues. For example, some of the resettlees were polygamous and, traditionally, wives had separate rooms from their husbands who would move from one room to the other, changing them (wives) on a monthly or a weekly basis depending on taste or circumstances. But the resettlement offered only one room for the man to sleep with all of his wives, which created resentment on the part of traditionalists (Graham, 1986).

But even where community resettlement is a policy, planning - and sometimes poor implementation - have led to communities being divided or otherwise mutilated in the course of resettlement. This has resulted in the breakdown of community life, which has had far-reaching implications for the preservation of law and order in the resettlement areas. Such fallouts include the breakdown of the traditional decision making hierarchy, the decline of community-based peer influence, the erosion of self-actualising, disruption of social networks and so on. Commenting on such fallouts of displaced communities, Scudder (2005) points to the loss of confidence in local leaders and to a crisis of cultural identity. On the loss of cultural identity, Abbink (1992), in his assessment of the Ethiopian Relief experiment in resettling the Surma, observed that most Surma could not live in a socio-cultural vacuum where a way of life, traditional rituals, settlement patterns and

family life could not be maintained. They felt alienated from the Surma mainstream and from their leaders, losing their Surma identity and the alternative of "becoming Bencho" was rejected by both the Bencho (in not accepting them) and the Surma alike.

A similar experience is reported by the Bikini islanders who were resettled on the island of Kili by the American government in 1948 to make way for the use of their former home as a testing ground for military weapons. Although there was no host community on their new island, and every effort was made to assist them with restoration of income - which sometimes exceeded their former incomes - both the loss of community life and its attendant difficulties became evident in the resettlement process. According to a report by Kiste (1974) on their first five years on Kili Island, it was observed that the communal organisation had ceased to be effective. Council meetings were taking up a good part of each morning, and the day was well advanced by the time the work was planned. Some men put little effort into their assigned tasks; as shirkers were not penalised by the communal distribution system, they had a negative effect on others. In part, the inability of the council to direct the community could perhaps be attributed to the decline of authority of the several alab-leaders (Kiste, 1974). The same case of the Bikinians is important as it demonstrates that the destruction of the social network fabric may not always be due to dispersal settlement or influence by the host community, but can occur even in situations where resettlement changes the power relations between individuals in the same community through creating new power structures.

On the other hand, the case study on the Cree in Canada highlights another dimension of the ability of local communities to maintain their tradition and customs against the rapidly changing external environment. Their customary beliefs apparently enabled them to adapt to changes emerging within their environment (Come, 2004). It is therefore important for the agency charged with implementing resettlement programmes to take cognisance of these cultural aspects through the stakeholder participation particularly of those directly affected by resettlement.

3.5.3 Participation in resettlement programmes

People affected by the construction of large dams usually feel marginalised because of not being involved in the decision-making processes when dams are planned or implemented, especially on the issues pertaining to their resettlement and rehabilitation. For instance, in the case of the James Bay project in Canada, the Quebec provincial government told the Cree and Inuit Indians that the project would go ahead despite their protests (Scudder, 2005). In the Ceyhan Aslantas project in Turkey, the resettlement

scheme took for granted that the affected people had no community attachments; as a result, the resettlement scheme did not take into consideration community affiliations as an important aspect. Indeed, the main thrust of the scheme was on how the economic life and quality of life in general could be sustained and improved. The non-participation of the people to be relocated resulted in unpleasant consequences whereby some of the affected people were resettled in urban areas, whereas their initial settlement had been rural. But even where people were consulted on the preferred location of the site, those who opted to be resettled in rural areas were nevertheless resettled in the urban resettlement. It was thus no surprise that the later assessment of the resettlement programme revealed that most of the affected people would have preferred to have been resettled as a group, or at least next to people with whom they had familiar relations. The WCD (2000) observed that the 25 families displaced from the Uzucek District of Kiyikci Village settled voluntarily at the Buyukmangit Village of Ceyhan. Data obtained through interviews showed that these 25 families were actually relatives of the host community. It could be deduced from this that, if the views of the affected people had been considered, most of them would probably have opted to stay among their kinfolk.

The Upper Mazaruni Dam project also brings out some of the unpleasant experiences of the relocatees. Here, because of lack of a policy to guide resettlement, the right of the affected people to participate in the development that affected them was violated. In the meetings held between the central government, who were the proponents of the project, and the local people, no discussions were ever held with the Akawaio people regarding the possibility of being relocated, the conditions for their removal, or even issues of compensation. Those who represented the indigenous people were not even given an opportunity to speak in those meetings or even to consult with the communities they represented because, as far as the government was concerned, the indigenous people - whether conveniently or factually - were regarded as squatters without any land rights (Ahmad, 2003).

Lack of participation in decisions, by those affected by resettlement, can result in crisis. For instance, regarding the resettlement that was a consequence of constructing the Chico Dam in the Philippines, the government mobilised both the police and the army to squash elements of opposition against the dam. This, according to WCD, (2000) resulted in the assassination of one of the main opponents of the dam. Another example is the case of the Mahaweli resettlement programme where, because of a lack of channels for grassroots

participation, both the sustainability of the resettlement programmes and socially responsible behaviour were impeded (Scudder, 2005).

The unavailability of livelihood opportunities, as well as a lack of factoring the views of the affected people into resettlement plans, usually results in relocation being sited around areas where resources are depleted, or in areas that are completely degraded, therefore leaving the relocated population to depend on marginal lands for survival. Examples of such instances include the Liu-Yan-Ba Project in China, where 40 000 people were resettled in desolate highlands, and where erosion and loss of soil fertility eventually forced them to desert their farmlands. Ultimately, this led to the extreme poverty now prevalent in that area. Some similar occurrences have been reported in Hoa Binh in Vietnam, Sirindhorn in Thailand, Batang Ai in Malaysia and other rice-growing East Asian countries where large populations were resettled on such lands (WCD, 2000).

The case of the Pak Mun Dam in the Mekong River Basin in Thailand presents another aspect where, although participation had been inculcated, problems arose from divided views that ultimately divided the community. This resulted in two groups: on the one hand there were those supporting the project, and on the other, there were those opposing it. These two opposing standpoints had devastating effects on the social cohesion of the affected local communities. The head (kamnan) of the community was among those who favoured the project; as a result, he deliberately alienated those headmen who were opposing the project by failing to invite them to the meetings and generally treating them as "mobsters". Those headmen and their followers belonging to the opposite camp regarded the kamnan as a traitor for having sold out to the government. They did all they could to undermine his authority. This social rift did not stop with the elders, but filtered down to the children in their schools and playgrounds and also involved discrimination against the children of each camp by teachers who belonged to the other camp. By the time they were moved to their new homes, the level of social disintegration was so high that family ties were weakened and community participation decreased. The traditional communal ceremony usually organised on the riverbank where villagers would come together to offer food to Buddhist monks and celebrate the traditional Thai New Year, was no longer held. The community began to disintegrate as more and more young people sought to escape the hostile social environment by migrating to the cities (Amornsachai *et al.*, 2000).

3.6 Conclusion

Involuntary resettlement has, in most cases, been fraught with unpleasant experiences. As observed above, this is due to a number of reasons such as not having in place policy and legal frameworks, as well as not paying adequate attention to the unquantifiable aspects of resettlement, such as socio-cultural issues. Therefore, one could conclude that the planning of resettlement programmes is characterised by serious procedural failures that fail to recognise the distinctive characteristics of indigenous peoples and their customary rights. These problems can be attributed to the fact that environment impact assessment (EIAs), including SIAs, were either not conducted or somewhat inadequate. As a result, resettlement programmes are frequently ill-planned, and compensation and reparations are tardy and therefore inadequate. Participatory mechanisms are also typically weak, with no negotiations or prior and informed consent (PIC). Within national societies, indigenous peoples are often subjected to social exclusion and are discriminated against, which exacerbates the failure of such programmes (Rivers for Life, 2003).

Atrocities caused by the construction of large dams have led to a number of reactions as will be discussed in the next chapter. These reactions are basically concerned with the effects of using high capital-intensive technologies; the widening of the gap in the inequality between the rich and the poor and between the countries in the Southern Hemisphere and those in the Northern Hemisphere. As a result, these social movements have formed networks of dam affected people (DAP), human rights activists and environmentalists (Rivers for Life, 2003). There are declarations and conventions in place to protect indigenous people displaced by the construction of large dams, as well as those that promote the protection of the biophysical environment through encouraging the sustainable use of natural stock. These and related issues are dealt with in Chapter Four.

CHAPTER FOUR

INTERNATIONAL REACTIONS AND RESPONSES TO THE CONSTRUCTION OF LARGE DAMS

"... opposition to dams exists in almost every country where there is democratic space to express dissent... . Protests about the construction of dams formed the focus for broad social movements in a number of countries... ."

(Adams, 2001:376-377).

4.1 Introduction

Protests against the construction of large dams have partly been influenced by theorists like Jean-Jacques Rousseau (1712-1778). He propagated the notion of anti-civilisation and actually suggested that the pre-civilisation stage was in fact virtuous, that is, morally better than modernisation. Similarly, Kropkin also regarded the minds of people as having been corrupted by advances made in science and technology (Barry, 2002). In the same connection, Barlow & Clarke (2002) view the harnessing of water through the construction of large dams by the "Water Lords" as synonymous with theft from nature. These expressed anti-dam opinions, compounded with the negative impacts that have emanated from constructing large dams, as outlined in Chapters Two and Three, have resulted in international mobilisation against their construction (see paragraph 4.2).

Chapter Four therefore discusses international mobilisation against the construction of large dams, specifically focusing on the social movements and international declarations on the protection of human rights and the maintenance of ecosystems. Thereafter, the discussions deal with the establishment of the WCD that reviewed the performance of projects on large dams in terms of their impacts on the people and the biophysical environment, as well as recommending a way forward for future construction of dams.

Highlights on the international treaties and conventions on the riverbasin developments are then provided. This is followed by a discussion of issues pertaining to vulnerable groups, specifically those relating to women, children and the elderly. The chapter concludes with a brief discussion of the international initiatives towards the sustainable use of natural resources like water harnessed to meet the needs of people.

4.2 International mobilisation against the construction of large dams

The negative side-effects of the construction of large dams, as well as the fact that people affected by such developments have become more conscious of the risks associated with such technology, have resulted in the polarisation of views on science and technology as an ultimate answer to meeting the needs of the people (Beck, 1992). Beck further indicated that this polarisation of views in the natural scientific fraternity resulted in the birth of social movements such as NGOs like the International Rivers Network (IRN). The concern of NGOs like the IRN, as contained in the San Francisco Declaration of 1988, was amongst others concerned with the negative impacts of the construction of large dams on the people and the environment.

These NGOs and the Green Party have brought to the fore international debates, in various forums, on the best ways of coping with and managing the detrimental effects associated with the construction of large dams. This is because as discussed in Chapters Two & Three, the effects of constructing large dams manifested themselves in human rights violations and the degradation of the biophysical environment. Therefore, issues of concern raised by the NGOs ranged from river flows to rights of access to water and river resources; to displacement of people and the disruption of culture or sources of livelihoods of local communities or depleted or degraded environmental resources; and to whether dams are the best economic investment of public funds and resources (WCD, 2000). This resulted in the mushrooming of social movements advocating for the protection of the human rights and also the preservation of the biodiversity. Strong links were also established between the North and the South in exerting pressure against further construction of large dams and propagating for the protection both of the environment and the people affected by these mega-projects (Rivers for Life, 2003; Scudder, 2005). Pursuant to their course, the anti-dam campaigners were concerned that the multi-development banks (MDBs), such as the World Bank were causing enormous environmental destruction through their financial support to the construction of these large

dams without much effort being expended in providing remedial measures (Barlow & Clarke, 2002).

It is important to be mindful of the fact that mobilisation against the construction of large dams in this section is discussed in two parts in the subsequent paragraphs. The first part focuses on the social movements concerned with human rights issues and the protection of the ecosystems, and the second part deals with the international declarations that were adopted when some of the members of these social movements met. The details are provided below.

4.2.1 Social movements against the construction of large dams

Opposition towards the construction of dams dates back to the 17th century when a group of fishermen attempted to destroy a newly constructed weir. Over time, such activists have evolved into what is now known as anti-dam campaigners who gradually became visible in Scandinavia, Switzerland, Austria and France from the 1970s to the 1980s. Preceding the anti-dam campaigns were movements that were led by conservationists concerned with the preservation of biodiversity. But when the anti-dam campaigns gained momentum, this resulted in a complex of built networks of the various groups such as environmentalists, human rights activists, democracy activists and community-based organisations. The evident growth of anti-dam campaigners has been facilitated by the strong ties between the indigenous peoples, community-based organisations (CBOs), NGOs, and between civil society in the South and North to oppose the neo-liberal development model, which subjects life-giving water from the rivers both to corporate interests through policies on privatisation and maximisation of profit, and to the logic of the market system that tends to result in the unequal distribution of wealth (Rivers for Life, 2003).

Nevertheless, some of the activists who gained more recognition were in Eastern Europe. In 1988, Hungarians took to the streets opposing the damming of the Danube at Nagymaros. Also, in Australia, in the late 1960s, the conservationists apparently wanted to protect Lake Pedder as it had unique characteristics of attraction. These anti-dam campaigners have succeeded in waging protests against continuation of dam projects such as Arun III in Nepal, or have even influenced changes in policy as was the case with the World Bank Resettlement Policy (Rivers for Life, 2003). Opposition to the construction of large dams exists in every country where there is democratic space to express dissent (Adams, 2001). These campaigns are formed on alliances and can to a large extent influence development agenda both at the national and the international level. Table 4.1 depicts some of the anti-dam movements which have been formed.

Table 4.1: Examples of movements against construction of large dams

Region	Name of Movement	Some of the dams in question	Area of focus
Africa	Network for Advocacy on Water Issues Southern Africa-NAWISA	Kariba, Gariep, Vanderkloof, Lesotho Highlands Water Project, proposed Mphanda Nkuwa in Mozambique, Grand Inga in the Congo, Epupa in Namibia	Reparations and retrospective compensation, resettlement and development for people affected by large dams
	National Association of Professional Environmentalists in Uganda which includes involvement of the NGOs	Bujagali	Alternative to dam construction - use of thermal power
Asia	Rivers Watch East and South East Asia (RWESA) formed in 2000	Mekong Basin, Yali Falls Dam in Vietnam affecting some communities in Cambodia, San Roque Dam in the Phillipines, Bakun Dam in Malaysia, Pak Mun, Rasi Salai	Resettlement, threatened cultural heritage, loss of assets such as rice fields
	Narmada Bachao Andolan.	Sardar Sarovar	Impacts on the culture and livelihoods of the indigenous peoples
	South Asia Solidarity for Rivers and Peoples (SARP).	Sardar Sarovar, Kali Gandaki, Tarbela, Ghazi Barotha, Chashma.	To facilitate dialogue for conflict resolution, impact assessments
Europe	European Rivers Network	Ilisu, Poutẽs	Dam Decommissioning and river restoration; and preservation of the biophysical environment
North America	Pimicikamak	Hydro-Québec, Manitoba Hydro, Theodosia	Rehabilitation of tribal people's livelihoods.
	International Working Group for Indigenous Affairs (IWGIA)		Concentrating on indigenous people issues
	Cultural survival		Cultural survival
	Environmental Defense	Dams internationally	Preservation of biodiversity and protection of human rights for local people affected by large infrastructure projects
South America	Latin America Network Against Dams and for Rivers, Communities and Water	Santa Isabel, Pangue and Ralco dams on the Biobio River, Urrá I & II, Yacyretá	Impacts on the local communities, compensation and resettlement; and protection of the wetlands

Modified from Rivers for Life, 2003.

As depicted in Table 4.1 above, increasingly NGOs and affected people's organisations are calling for reparations and an end to human rights violations committed against dam-affected people. These anti-dam movements are putting pressure on the projects' financiers to compensate communities both for their personal losses and for the restoration of the damaged ecosystems (Rivers for Life, 2003). Some of the key activists in the anti-dam

campaign activists groups are: Environmental Defense Fund (EDF), Rivers for Life, Friends of the Earth in Japan, International Water and Forest Studies (FIVAS) in Norway, IRN, AidWatch in Australia and the Ecologist in the UK. This network of anti-dam activists grew at all levels, from community level to international level; and so became more connected and sophisticated (Rivers for Life, 2003).

Some of the international pressure groups alluded to gained momentum with the dawn of a democratic dispensation which created political space for them because it is anchored on pluralism and inclusiveness. Consequently, the created political space provided avenues for NGOs and CBOs to voice their concerns on the detrimental effects resulting from the construction of large dams. For instance, in China where there were changes in the leadership and where the new government claimed openness, the era was marked by increased public criticism of China's dam-building plans in areas such as the Upper Mekong (Rivers for Life, 2003). Yet, in the case of authoritarian regimes, such avenues, if they existed, were extremely limited and therefore not accessible to a wider spectrum of society (McCully, 2001). In this regard, the democratic dispensation can thus be seen as having contributed to the increased international movement against the construction of large dams by civil society[47]. As already alluded to, some of these anti-dam campaigners have succeeded in stopping some of the dam projects, examples of which are provided below.

The Sardar Sarovar Dam in the Narmada Development Valley in India, with an estimated cost of about 11 billion US dollars, is an example where there was much opposition from the NGOs. The project was designed to irrigate 2 million hectares and to provide safe drinking water to 30 million people (Barlow & Clarke, 2002). Factors contributing to the volatile reaction were numerous, including the fact that the Naramada River was held sacred by the Hindus (Scudder, 2005). Their concern was mainly to defend the environment and also the rights of those people who would be affected by displacement. This concern was based on the fact that some of the necessary information was not collected, which would at least have guided the selection of the project site through assessment of the options or even have informed the mitigation measures necessary for managing the adverse effects emanating from the construction of the dam. An example was that no geological studies were conducted despite the Narmada valley is located within a seismic zone. Furthermore, the social studies conducted were inadequate in that those who depended on the forests as a means of livelihood were never considered as project- affected

[47] 'Civil society' in this instance refers particularly to those who are engaged in advocacy work on both human rights and the preservation of the environment.

people and therefore not eligible for compensation, despite the project having anticipated displacement of more than one million people and despite inundating a huge area covered by forests. The NGOs mobilised local communities to demonstrate against construction of the dam, focusing on key policy issues such as: i) compensation for the displaced landless people; ii) loss of common property of those whose livelihoods depended on gathering firewood; and iii) loss of other products from the forests.

While the anti-dam campaign gained momentum, on the one hand, the government was not able to mobilise support for the project on the other (Ascher & Healy, 1990). As a result, the Narmada Bachao Andolan movement vowed not to move when the dam started to rise. The movement had international support from the EDF in Washington, who assisted the representatives of the affected people to present their grievances to the World Bank in Washington. The campaigners had established strong networks with the environmentalists, human rights activists, religious movements and landless community-based organisations in the country. This led to the withdrawal of World Bank financing in March 1993, and the ultimate discontinuation of the project (Scudder, 2005).

Another dam project in India, which met with resistance from the NGOs, was the Indira Reservoir. As with the Narmada Dam, the grass roots advocacy groups who claimed to be representing the interests of the oustees, as well as those concerned with the preservation of the environment, made their protests. Their concern was over the disruption that would be caused by the dam to the livelihoods and the culture of the Bastar District tribes (Scudder, 2005). The Indira case study presents a scenario of conflicting interests which made decision making extremely hard. On the one hand, the tribal groups needed the forests for sustaining their livelihoods. Their fear, as expressed through the advocacy groups, was that their habitat could never be replaced as it had some special unique features and that, their earth god and ancestors resided in the forests. In the middle were the NGOs who had to be seen as advocating both for the protection of the indigenous people's rights and for the conservation of the biodiversity. At the other extreme, was the government whose concern was one of meeting the energy needs through hydroelectric power for the economic development in the country. So, whatever decision was taken, there would definitely be those who would be aggrieved. Chiotha (2005) succinctly remarked in his presentation in Lesotho that, in making decisions to provide a solution to a problem, another problem is created.

Other similar cases observed regarding the anti-dam campaigns were in Japan, South Korea and Taiwan. Cases like these increased public demand for free-flowing rivers. Their

demands resulted in a decrease in dam-building. In Pak Mun and Rasi Salai, there was a demand by the communities to have permanent decommissioning of the dams. In the case of the latter, the dam remained open since 2000, while in respect of the former, the Thai government agreed to open it four times a year from 2002 to allow for fish migration (Rivers for Life, 2003).

The foregoing examples only show that anti-dam movements are a force to be reckoned with in water development projects. This is particularly so because the effects of the mega-projects funded by the multilateral institutions like the World Bank can be enormous and detrimental to the affected people and the environment (Faruqui, 2003). Consequently, institutions like the World Bank are viewed as promoting the construction of large dams, yet problems already evident in the 1960s still prevail. The results thereof have been that more pressure has been exerted on the international financial institutions by the NGOs on the basis of the fact that they have been instrumental in promoting the destructive dams worldwide. The World Bank for instance, is the single largest financier of the world's renowned dams, with an estimated of $60 billion having been spent on their construction since the bank's establishment. The opposition the bank met from the anti-dam campaigners culminated in the calling of a moratorium on the bank's supported projects worldwide through various declarations that are discussed below.

4.2.2 International declarations on the protection of the rights of those affected by the construction of large dams and their natural resource base

The various declarations that have been adopted by the anti-dam campaigners are discussed in subsequent paragraphs. Basically their aim is to ensure that both the human rights of those affected by dam projects, and their ecosystems, are protected and the necessary reparations effected, based on comprehensive assessments of the impacts. For instance, the San Franscisco Declaration (Appendix F) propagates for a full and comprehensive assessment of the impacts associated with the construction of large dams on the bio-physical, social and economic environment(s). These assessments of the impacts should not only reflect short-term effects but also those that are long-term; and the results of the assessments should be subjected to a review for authenticity and reliability, by a panel consisting of an independent team of experts. The details of this declaration are provided below.

a) The San Franscisco Declaration of 1988

IRN members from 26 countries met in San Francisco in 1988 to initiate a global programme of action that focused on the protection of the world's rivers. One of the outputs of the meeting was the San Francisco Declaration of 1988, which recognised the atrocities caused by dam construction. The San Francisco Declaration calls for full compensation of all those who lose home(s), land or livelihood owing to the construction of large dams (see Appendix F). The same declaration further requires that all people, irrespective of whether they live upstream or downstream of the dam, must be provided with information detailing the probable impacts of constructing large dams, and their significance - through public consultations and participation processes - which ought to commence at the project's inception and be carried through to all stages of the project cycle. The declaration therefore recognises the importance of having in place effective political platforms/forums for vetoing dam projects. For instance, political movements like the Green Party do provide such political avenues where evidence-based public opinion regarding the impacts of large dams can be discussed. The Manibeli Declaration, followed by the Curitiba Declaration are discussed in subsequent paragraphs.

b) The Manibeli Declaration of 1994

The investment made by the World Bank in the construction of large dams was viewed by the anti-dam campaigners as having contributed to the miseries of many people worldwide. Thus, through the Manibeli Declaration of 1994, the anti-dam campaigners expressed a concern that the World Bank had had a long history of dam construction, yet miseries and problems following from the poor execution of those projects were still being experienced (see Appendix G). The poor execution of projects resulted in the violation of human rights in the form of arbitrary arrests, the shooting of those resisting relocation(s) or peaceful demonstrations against imposed dam projects (McCully, 2001; Rivers for Life, 2003).

The pressure exerted on development banks like the World Bank focused mainly on ethical issues and the development of procedures for evaluating the social and environmental impacts of the dam projects to inform the decision-making process (Figuẽres *et al.,* 2003). For instance, regarding the pressure exerted on World Bank financed-projects, the anti-dam campaigners, comprising 326 groups and coalitions of 44 countries, shared the view that the bank seemed neither willing nor capable of ensuring that, by means of its policies and the conditions of loan agreements, practices in managing the impacts of large dams be reformed to take into account concerns raised by the anti-dam

campaigners. Hence a call for an immediate moratorium on all World Bank funding for large dams - including all projects that were then in the pipeline for funding - until the conditions stated below were met. These conditions were that the World Bank should

- establish a fund to provide reparations to the people forcibly evicted from their homes and lands by Bank-funded large dams without adequate compensation and rehabilitation. The fund should be administered by a transparent and accountable institution completely independent of the Bank and should provide funds to communities affected by bank funded large dams to prepare reparations claims.

- strengthen its policies and operational practices to guarantee that no large dam projects requiring forced resettlement would be funded in countries without policies and legal frameworks in place to assure restoration of the living standards of displaced peoples. Furthermore, communities to be displaced were to be involved from identification, design, implementation and monitoring of the dam projects, and were to give their informed consent before the project could be implemented.

- commission reviews and implement the recommendations of an independent comprehensive review of all bank funded large dam projects to establish the actual costs, including direct and indirect economic, environmental and social costs, and the actual realised benefits of each project. The review should further evaluate the degree to which project appraisals erred in estimating costs and benefits, identify specific violations of Bank policies and the staff responsible, and address opportunity costs of not supporting project alternatives. The review had to be conducted by individuals completely independent of the bank without any stake in the outcome of the review.

- cancel the debt owed for large dam projects in which the economic, environmental and social costs were found to out-weigh the realised benefits.

- develop new project appraisal techniques to ensure that estimates of the costs and benefits, the risks and the impacts of large dams under consideration were rigorously based on the actual experience with past bank funded large dams.

- require that any large dam under consideration be a necessary part of a locally-approved comprehensive river basin management plan, and that the project be a last resort after all less damaging and costly alternatives for flood management,

transportation, water supply, irrigation and power supply had been exhausted (see Appendix H).

- make all information on large dam projects, including past and current projects and projects under consideration, freely available to the public.

- require independent monitoring and evaluation of the preparation of large dam projects, as well as systematic monitoring and auditing of project implementation, by persons outside the bank and with no stake in the outcome of the project.

- take a formal decision to permanently halt all funding of large dams through the International Development Association (IDA).

c) The Curitiba Declaration of 1997

The Curitiba Declaration of 1997 was signed in Curitiba, Brazil. This declaration (see Appendix I) affirmed the position taken in the Manibeli Declaration on World Bank funding of large dams. The declaration affirmed the right to life and livelihood of people affected by dams. It, in essence, aimed at protecting the rights of indigenous people affected by the construction of large dams, either through displacement or loss of valuable assets. In this international meeting there were participants from 20 countries who either represented organisations of dam affected people or those who were opposing the construction of large dams.

The Declaration recognised and endorsed the principles of the 1992 NGO and Social Movements Declarations of Rio de Janeiro[48]. The participants in this Curitiba meeting also expressed the will to continue to oppose construction of any dams that did not have the approval of the affected people after an informed and participative decision-making process. They (participants) recognised that they were a strength to be reckoned with, and, because of their diversity and unity. They have since been influential in stopping some of what they referred to as "destructive dams'. Their statement clearly articulates their stand:

> "We commit ourselves to intensifying the fight against destructive dams. From the villages of India, Brazil and Lesotho to the boardrooms of Washington, Tokyo and London, we will force dam builders to accept our demands. To reinforce our movement we will build and strengthen regional and international networks. To symbolise our growing unity, we declare 14th

[48] The principles of the relevant Rio Declaration are discussed in greater detail under paragraph 4.5.

March as Brazilian Day of Struggles Against Dams, and it will from now on become the International Day of Action Against Dams and for Rivers, Water, and Life."

(McCully, 2001:346).

The participants in this Curitiba meeting recognised that they shared common experiences which formed the basis for the conclusion reached there that their struggles are one because:

- everywhere dams force people from their homes, submerge fertile farmlands, forests and sacred places, destroy fisheries and supplies of clean water, and cause the social and cultural disintegration and economic impoverishment of local communities.

- everywhere there is a wide gulf between the economic and social benefits promised by dam builders and the reality of what has happened after dam construction. Dams have almost always cost more than was projected, even before including environmental and social costs. Dams have produced less electricity and irrigated less land than was promised. They have made floods even more destructive. Dams have benefited large landholders, agro-business corporations and speculators. They have dispossessed small farmers, rural workers, fishers, tribal, indigenous and traditional communities.

- they are fighting against similar powerful interests, the same international lenders, the same multilateral and bilateral aid and credit agencies, the same dam construction and equipment companies, the same engineering and environmental consultants, and the same corporations involved in heavily subsidised energy intensive industries.

- everywhere the people who suffer most as a result of dams are excluded from decision-making processes. Decisions are instead taken by technocrats, politicians and business elites who increase their own power and wealth through building dams.

- their common struggles convince them that it is both necessary and possible to bring an end to the era of destructive dams. It is also both necessary and possible

to implement alternative ways of providing energy and management of freshwaters equitably, sustainably and effectively.

Since the Curitiba Declaration in 1997, the anti-dam campaigners made long strides in their fight against the construction of large dams through challenging financial institutions, and national governments, as well as by stopping some of the approved dams that had already started. Again, participation in the decision-making processes and promoting the self-determination of the people affected regarding construction of large dams has also been part of their advocacy work (Rivers for Life, 2003).

d) The Rasi Salai Declaration of 2003

Subsequent to the Curitiba Declaration came the Rasi Salai Declaration of 2003, which was a result of a meeting held in Rasi Salai in Thailand attended by more than 300 people from 62 countries all over the world who were affected by the construction of large dams. The participants had a common goal of ensuring that the fight against the construction of large dams would be continued, as well as advocating for sustainable and equitable water and energy management. Through the declaration, the anti-dam campaigners committed themselves to intensifying both their struggles and their campaigns against what they perceived as destructive dams, inadequate reparations and watershed restorations (Rivers for Life, 2003). The Rasi Salai Declaration thus affirmed the principles of the Curitiba Declaration of 1997, and the participants at the meeting committed themselves to:

- intensify their struggles and campaigns against destructive dams and for reparations and river and watershed restoration;
- work towards implementation of worldwide sustainable and appropriate methods of water and energy management such as rainwater harvesting and community-managed renewable energy schemes;
- continuous renew and vitalise diverse water knowledge and traditions through practical learning especially for children and youth;
- intensify information exchange between activists and movements working on dams, water and energy, from different countries;
- strengthen movements by joining with others struggling against the neo-liberal development model and for global social and ecological justice;

- celebrate each year the International Day of Action Against Dams and for Rivers, Water and Life on March 14th.

McCully (2001) states that anti-dam campaigners are not just about stopping the dams, but also about propagating for what they consider to be the most sustainable, equitable and efficient strategies for harnessing water as suggested in the Watershed Management Declaration (Appendix H). The Rasi Salai Declaration calls for the rehabilitation of ground cover for the river catchment areas, as well as phasing out the use of capital-intensive methods in favour of low-cost, and safer alternatives like the reinstitution of traditional methods of water preservation and use that would not cause so much misery. Some of the suggested strategies include rainwater harvesting, drip kits for irrigation and community-managed renewable energy schemes[49]. The members of Rivers for Life do not view the construction of large dams as a positive solution to meeting energy and water needs, but rather they have come up with alternative solutions in the form of advances made towards renewable energy technologies and methods that focus on demand management (Rivers for Life, 2003). Nonetheless, the pressure exerted by the anti-dam campaigners contributed to the establishment of the World Commission on Dams in 1998.

4.3 The World Commission on Dams

In 1997, 39 delegates representing, amongst others, governments, the private sector, civil society organisations, affected people, financial institutions like the World Bank, the international union for the conservation of nature and natural resources (IUCN), the World Conservation Union and others from diverse interests met in Switzerland, to discuss the controversial issues surrounding large dams. One of the outcomes of the meeting was a recommendation to establish a World Commission on Dams (WCD, 2000).

Subsequently, February 1998 marked a milestone through the establishment of the WCD, which was born out of the debates and concerns that emerged pertaining to the impacts emanating from the construction of large dams (WCD, 2000). These debates were initially focused on specific dams and their impacts, but evolved to the global level, looking at the costs and benefits of dams in terms of their impacts on people, the environment and their economic performance. As the debates evolved, representatives of the public, private and civil society sectors were involved in the process (WCD, 2000). The work of the WCD began in May 1998 under the chairmanship of professor Kader Asmal, the then South

[49] Some of the alternative solutions propagated by anti-dam campaigners include low-cost drip irrigation systems, treadle pumps and water storage systems by international development enterprises; rain water harvesting; water conservation; renewable energy, and some of the principle approaches of Tarun Bharat Sang in India (Rivers for Life, 2003).

African Minister of Water Affairs and Forestry. Although the WCD comprised 12 members to reflect regional diversity, expertise and stakeholder perspectives, it is important to note that they served on the commission in their individual capacity and provided an independent review on issues that pertained to experiences associated with the construction of dams (WCD, 2000). The objectives of the WCD were therefore:

- to review the development and effectiveness of large dams, as well as to assess alternatives of water resources and energy development; and

- to develop internationally acceptable criteria, guidelines and standards, where appropriate, for the planning, design, appraisal, construction, operation, monitoring and decommissioning of dams (WCD, 2000).

The work of the Commission involved a review of documented information on experiences with large dams contained in individual country reports plus the 17 thematic review papers and submissions that were made. All this information collected by the WCD formed the basis for the assessment of the technical, financial, economic, environmental and social performance of large dams, and provided the basis for criteria to be used for the future approval of dam projects (WCD, 2000).

The Commission reached consensus on the following points, namely that:

- dams had contributed significantly to human development;

- unacceptable prices had been paid by those people who had been involuntarily displaced as well as by the affected biophysical environment;

- dams had caused inequity in the distribution of benefits;

- inadequate participation of all affected and interested parties in the decision-making processes, including assessment of the options, had created unhealthy competition, thereby creating unnecessary conflict; and

- a process of evaluating dam project options by all participating stakeholders would enable elimination of unfavourable projects right at the onset (WCD, 2000).

The Global Review of constructed dams provided a report detailing evidence to illustrate that governments, in constructing dams, have often found themselves in conflict with basic

principles of good governance. The level of conflict surrounding large dams is sufficient to illustrate that dams frequently trigger disagreements about the respective rights of governments and their citizens (WCD, 2000). The UN Declaration of Human Rights, the Right to Development and the Rio Principles together have been used as an accepted framework of norms empowering a concept of development that is economically viable, socially equitable, and environmentally sustainable as summarised in figure 4.1

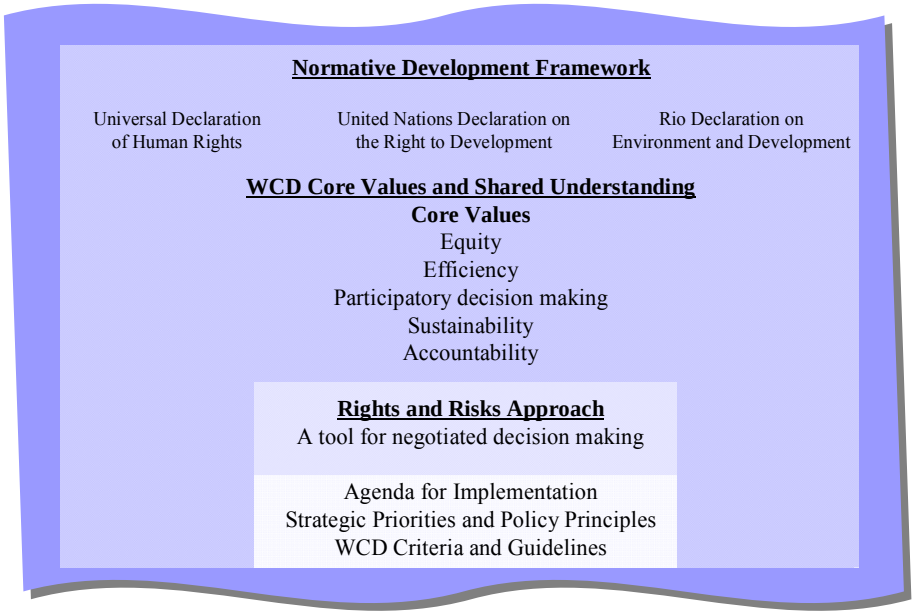


Figure 4.1: The WCD policy framework

WCD, 2000:202

The WCD observed that the adoption of a rights-based approach does not on its own resolve the practical challenge of meeting human needs. During its regional consultations, the Commission listened to a wide range of views and reasoning on this matter. Meeting rapidly growing needs for water and energy, particularly in the developing economies of the South, imposes difficult choices on governments. Failure to respond to these needs carries significant economic and political risks. Food insecurity, blackouts, empty water taps and floods are among the most immediate and sensitive public service issues for which society holds government accountable. In the past, large-scale dam projects seemed to offer both straightforward and highly visible options for responding to these pressures. But now, under neo-liberal policies, water is increasingly no longer viewed as just a free commodity, and is therefore becoming increasingly inaccessible where it is most needed, and balancing it as an economic good against human right still poses as a major challenge (Molaoa, 2005).

At the same time, the WCD recognises that the decision criteria used by governments do not always match those of organised groups of citizens. Governments are too often inclined to invoke urgent development needs as a reason for restricting rights, while civil society groups believe that full respect of rights and the search for alternatives represents the surest way of promoting equity and justice in development.

As expected, views differed regarding the outcome of the Commission's report. For instance, there were views that, i) the report itself underestimated the benefits derived from the construction of dams; ii) the report did not address the counter-factual; and it did not adequately address other alternatives. However, the WCD report did bring to the fore some of the serious challenges experienced through the construction of dams. Furthermore, the report confirmed that dams were not performing as promised and that more environmental and social costs were incurred, some of which were sometimes irreversible and therefore difficult to mitigate. As a result, the report proposed a new framework for decision making on water and energy-related projects, which recognise the rights of, and assessed the risks to all stakeholders, including the requirement that the affected people should, before dams are built, give their consent, based on the assessment of options (Rivers for Life, 2003).

Subsequent to the termination of the WCD in November, 2000, the Dams and Development Project (DDP) came into existence in 2001. The DDP was established under the UNEP for the purpose of taking the WCD process forward and to try and overcome the obstacles that were met by WCD (Scudder, 2005).

4.4 International conventions[50] on the protection of the human rights and the natural resources

In response to the above international outcry in the form of movements and campaigns, the international community resolved to establish international conventions which would either protect the basic human rights or even strengthen them through the development of instruments. This is because it became evident that the construction of large dams as a development strategy was fraught with serious problems that adversely affect the human rights of those directly affected by large dam construction as well as contributing to the deterioration of the biophysical environment. Some of these instruments are:

[50] In this report, conventions, declarations, treaties and agreements are regarded as synonymous.

4.4.1 International treaties and declarations on shared water systems

Treaties or agreements between countries on river basin developments, particularly on rivers that flow in more than one country, have been done to protect the interests of each affected party as well as ensuring an equitable share of the water resource (Wolf, 2003). These agreements in the form of treaties bring to the fore international political considerations in the agenda of the construction of large dams, which attempt to engender peaceful resolution and cooperation over the use of shared waters. One such agreement was between the USA and Mexico over the use of the Rio Grande, which was signed in 1944 and was operated by the International Boundary and Water Commission. This body ensured equal allocation of the annual average flow between the two countries.

The Tigris-Euphrates scenario in the Middle East presents a different dynamic in that the absence of treaties or agreements on the shared river basin represented a significant potential for a conflict to arise as a result of the scale of the planned development, which raised concerns particularly in the light of water shortages in this region (Guerquin *et al.*, 2003). Turkey's South-Eastern Anatolian Project, a regional development scheme, is another example. The development here involved twenty-two dams on the headwaters of two rivers. In early 1990, when the filling of the Ataturk Dam reservoir commenced, thus stemming the flow of the Euphrates, immediate alarm was expressed by Syria and Iraq, despite the fact that governments in both countries had been alerted and water discharged before the cut-off in order to enhance compensation water. Full development of the South-Eastern Anatolian Project had the potential of reducing water flow of the Euphrates by as much as 60%, which would severely jeopardise the Syrian and the Iraqis' agriculture downstream. The three Tigris-Euphrates riparian states had tried to reach agreements over the water use from these two rivers, and the need for such an agreement became even more necessary for equitable[51] access and use of the resources.

The Orange River Basin is another example where a river cuts through a number of countries. The river's headwaters are in Lesotho, it then runs through South Africa; its estuary runs through Namibia into the Atlantic Ocean, after having passed through the southern border of Botswana. The region is prone to long periods of drought interrupted by severe floods. Although the headwaters are in Lesotho, it is important to note that more than half of the 1 million km^2 of the Orange River Basin is in South Africa, whilst the remaining portion is shared between Lesotho, Namibia and Botswana. As members of the

[51] Those with riparian rights

Southern African Development Community (SADC), they supported a Protocol on Shared Watercourse Systems opened for signature in 1995, which called for rational and sustainable utilisation of water in this basin and therefore provided an important impetus towards reaching a closer cooperation between the member states (BKS & Ninham Shand, 1999). Subsequently there was the SADC Water Protocol that affirms the commitment of signatory state members to the principle of equity and provides procedures for applying the principle in an orderly structure of bi-national and multi-national relations on shared watercourses. The SADC protocol is based on the following principles:

- there is a need to improve the overall utility achievable from a common resource through the joint action/participation of more than one country, leading to increased financial and economic benefits obtained through utilisation of the water;

- equitable benefits, both tangible and intangible, should accrue to all parties.

Based on the recognition of the important role played by the river in the economic development in this region, it was found necessary by the parties concerned that they should share information regarding developments planned on the Orange River, and the impacts of such developments downstream. This is particularly important because the Orange River Estuary is ranked the seventh most important system in South Africa in terms of conservation importance and is considered to be an estuary of high importance as it had been declared a wetland of international importance in 1991. In 1995, this site was placed on the Monteaux Record as a result of a belated recognition of the severely degraded state of the salt marsh on the south bank.

The importance of the Orange River Basin subscribing to the regulatory principles originally contained in the Helsinki Rules, later to be known as International Law Association of 1966, cannot be overemphasised. The International Association was later expanded and codified in the Convention of the Law of Non-navigational Uses of International Water Courses, adopted by the UN General Assembly on May 21st, 1997 (BKS & Ninham Shand, 1999). The Orange River Basin Commission was subsequently mooted by all the riparian states, which was a step in the right direction to protect the individual interests of each country on issues of water resources. Through the Orange River Planning Study - ORPS (BKS & Ninham Shand Consultants, 1994), South Africa was looking at its own water needs. Each of its neighbouring countries were expected to do the same on the Orange River Basin so as not to compromise the ecological and socio-

economic needs of each of the riparian states. Subsequent to ORPS was the Orange River Development Project Replanning Study, the main purpose of which was to determine a strategy for the most beneficial utilisation and optimal development of the water resource of the Orange River (BKS & Ninham Shand Consultants, 1999).

Obviously the international treaties do, to a large extent, provide a peaceful framework for the interested parties affected by shared water courses to ensure that, in pursuing their individual economic developments, the water interests of their neighbours and the environment are also considered. If much detail has been provided on the Orange River Basin, it is because this study actually focuses on the development that has happened on the tributaries of the Orange River. Nevertheless, the Orange River Basin provides a sterling example of initiatives taken by the riparian states to ensure equitable distribution of the shared water resource.

Other than the international agreements on shared water systems as just discussed above, there are declarations that deal with the sustainable use of water resources like the Hague Ministerial Declaration, which is discussed below.

4.4.2 The Hague Ministerial Declaration (2000)

The linkages between the environment and development are also recognised through The Hague Ministerial Declaration. This declaration was an output of a conference for the council of ministers held in The Hague, 2000 on Water Security in the 21st Century. Water, which is a life-sustaining natural resource, was listed as having the following key challenges:

- ***Meeting basic needs***: to recognise that access to safe and sufficient water and sanitation are basic human needs and are essential to health and well-being, to empower people especially women through a participatory process of water management.

- ***Securing food supply:*** to enhance food security, particularly of the poor and vulnerable people through more efficient mobilisation and use, and the more equitable allocation of water and food production.

- ***Protecting the ecosystem:*** to ensure the integrity of ecosystems through sustainable water resources management.

- ***Sharing water resources:*** to promote peaceful cooperation and develop synergies between different uses of water at all levels, whenever possible, within and, in the case of boundary and transboundary water resources, between states concerned, through sustainable river basin management or other appropriate approaches.

- ***Managing risks:*** to manage water in a way that reflects economic, social, environmental, and cultural values for all its uses, and to move towards pricing of water services to reflect the cost of their provision. This approach should take account of the need for equity and the basic needs of the poor and the vulnerable.

- ***Govern water wisely:*** to ensure good governance, so that the involvement of the public and the interests of all stakeholders are included in the management of water resources (Guerquin *et al.*, 2003).

Although the sustainable use of water resources is extremely important for economic development, it is also vital to ensure that due regard is paid to the United Nations Declarations on Human Rights and Right to Development as presented in the subsequent sections.

4.4.3 The Universal Declaration of Human Rights (1948)

The human rights herein referred to are based on the framework of human rights adopted by the international community in 1948, which advanced the process of planning and decision making in the development process. The human rights discourse is quite new. The Universal Declaration of Human Rights is only just over 50 years after its completion, which is a short time in which to change cultures and legal practices (Arzabe, 2001). The Universal Declaration of Human Rights has nine preamble paragraphs and 30 articles. Article 1 stipulates that all human beings are born free and equal in dignity and rights. Article 3 states that everyone has a right to life, liberty and the security of person; and Article 25 states that all have a right to a standard of living adequate for the health and well-being of themselves and their families, including food, clothing, housing and medical care and necessary social services; but, as discussed in Chapter Two and Chapter Three, people affected by dam construction have, in most cases, been denied these rights. Evidently, from the information presented in the preceding chapters, the construction of large dams has resulted in the violation of the basic human rights of particularly those who were involuntarily resettled. In most cases, the resetlees did not have access to basic amenities, and in some cases temporary shelters were provided, which became permanent, thereby adversely impacting on the well-being of the resettlees.

4.4.4 The Declaration on the Right to Development (1986)

Since the late 1970s, the international community has attached importance to the universal realisation of the right to development. The idea is that a relationship exists between human rights and economic and social development. The draft Declaration on the Right to Development (DRD) was adopted by the United Nations General Assembly in 1986. In adopting the Declaration, the General Assembly recognised that development is a comprehensive economic, social and political process that aims at improving the well-being of the entire population and of all individuals on the basis of their active, free and meaningful participation in development and in the fair distribution of benefits resulting therefrom (Van Weerelt, 2001). The Declaration proclaims that:

- The right to development[52] is an inalienable right by virtue of which every human person and all people are entitled to participate in, contribute to, and enjoy economic, social, cultural, and political development, in which all human rights and fundamental freedoms can be fully realised (Article 1, paragraph 1).

- The human person is the central subject of development and should be the active participant and beneficiary of the right to development, which because of non-adherence led to the Curitiba Declaration of 1997 (where those affected made demands on their right to participate).

- All human beings have a responsibility for development, individually and collectively, taking into account the need for full respect for their human rights and fundamental freedoms, as well as their duties to the community, which alone can ensure the free and complete fulfilment of the human being and they should therefore promote and protect an appropriate political, social and economic order for development.

- States have the right and the duty to formulate appropriate development policies that aim at the constant improvement of the well-being of the entire population and of all individuals, on the basis of their active, free and meaningful participation in development and in the fair distribution of the benefits resulting therefrom (Article 2).

The issues raised above have also remained on the international agenda in that during The Hague ministerial meeting in 2000, some of the key debates included the fact that

[52] Development in this instance also covers construction of large dams.

access to safe drinking water and sanitation are regarded as basic human rights. Therefore as a basic human right, the issue is how to ensure that these services are accessible to those many millions who are desperately in need of services such as water in a sustainable manner. Another issue also discussed at this meeting was the fact that water users should participate in the decision making on the management of the resources, an issue which seems to be fraught with many problems as seen in the preceding sections (Guerquin *et al.*, 2003). Yet, experience has shown that people affected by dam projects scarcely participate in the decision-making processes around the construction of large dams, yet they are the ones whose property is sacrificed in the name of development.

The right to development is related to all human rights, but cannot simply be identified as the sum total of civil, political, economic, social and cultural rights. It allows for the recognition of the ties between various human rights and enables integration of the body of rights from the perspective of the individual's participation in sustainable development (Van Weerelt, 2001). It is thus recognised that development is more than just economic growth. Not all forms of growth are compatible with development. The distinguishing criteria are whether the processes of growth are such that they do not negatively affect civil and political rights and do actually give better protection in terms of economic, social and cultural rights to the most vulnerable and impoverished people. The right to development therefore encompasses the place of individuals in civil society, their personal security and their capacity to determine and realise their potential.

Again the DRD sought to clarify the role of the State in exercising its rights, responsibilities, duties and obligations in planning and implementing national development policies and programmes. It reflects the recognition that every society acts as an organised polity in which the state is accorded powers and responsibilities. At the same time, states are subjected to conditions that can be summarised under the heading of good governance criteria, such as those in the Declaration of Human Rights, including the rule of law, accountable bureaucracies and freedom of information (UNDP, 2003). The legitimacy of the state in exercising its role is premised on the assumption that it acts in accordance with these criteria. Without good governance, the legitimacy of the State and, ultimately, its ability to take decisions are compromised. State authority may also be limited through adherence to the framework of international conventions that, in certain circumstances, supersedes strict sovereignty.

Although the state may see the construction of large dams within the context of its obligation in terms of ensuring that basic needs such as water supply reach those in need,

the rights and aspirations of the vulnerable groups, are most often than not violated, not considered within the development agenda despite international instruments that propagate for the protection of their rights, which some are discussed in the ensuing paragraphs.

4.4.5 Issues of vulnerable groups and their rights

As mentioned in the preceding chapters, involuntary resettlement emanating from the construction of large dams most often results in the violation of the human rights of particularly the women, children and the elderly. This section therefore, deals with a number of instruments available for protecting the rights and interests of these aforementioned groups, the details of which are provided below.

a) Women's issues

The general lack of attention to women's needs within the resettlement programme(s) stems from a general lack of gender awareness amongst those who plan and implement development projects. The PAPs are often treated as an undifferentiated group of people without recognising the special needs of the different subgroups such as women, the aged and children. Moreso, a constant use of male-biased vocabulary which is often applied to describe target group(s) becomes 'men' rather than 'people'. In this way the women of the target group actually disappear from sight and from thought. Elson (1991) supports this view, saying that in project document(s) the Third World farmer is usually referred to as 'he'; but in actual fact, farmers in the Third World are more often than not women. This therefore becomes a great cause for concern in the process of identification of the PAPs in order to prepare a comprehensive resettlement programme, because women's issues end up being subsumed under those of their husbands, and ultimately forgotten. This therefore means that gender relations have been virtually ignored within the theory and practice of development[53] (Elson, 1991).

Nonetheless, lately a concerted effort has been observed to address women's issues within the broader development agenda - although the change is very slow and uneven. Women still continue to be systematically excluded from both mainstream and alternative developmental efforts. They have been excluded from various aspects of development and also from directly benefiting from the resettlement programmes. Mainstream development approaches such as modernisation and Marxism have been accused of being inherently economistic, reductionist, and gender blind. As a result of these approaches, women's work has been rendered largely invisible because much of it is unpaid (or paid for only indirectly

[53] Elson (1991) identifies gender relations as 'the socially determined relations that differentiate male and female situations'. This definition stresses the social, rather than biological, determination of gender relations.

through male intermediaries who are usually the household heads). Women's contribution is therefore viewed simply as a form of domestic labour without economic value. An essentially gender-blind class analysis in which women merit little, if any, specific attention has often driven studies of social stratification. The results of the gender bias against women, is also mirrored in the undercounting of the PAPs who have to receive compensation for assets lost to development projects like large dams. The inclination is that the direct compensation payments are made to the senior male relative if the husband of the women is deceased, an issue that predisposes women and children to high levels of vulnerability. Again donor-sponsored development projects pay lip service to the importance of women's participation in programme conception and implementation, and to the need to be responsive to women's own definition of the problems they face during the resettlement process through making sure that they participate. Unfortunately this still remains a difficult and elusive goal in some of the developing countries, like Lesotho. This problem is rooted in the failure of most projects to develop disaggregated policies on the basis of gender, which recognise the specific needs of women.

Therefore, the central issue in women's development is primarily concerned with women's empowerment, to enable women to take an equal place with men, and to participate equally in the development process in order to achieve control over the factors of production on an equal basis. This involves three essential elements in gender awareness and these are: firstly, the recognition that women have different and special needs; secondly, that they are a disadvantaged group, relative to men, in terms of their level of welfare and access to and control over the factors of production; thirdly that women's development entails working towards increased equality and empowerment for women relative to men. Consequently, the international community has developed instruments specifically to ensure that these elements are adequately addressed. These instruments include but are not limited to: i) the Beijing Declaration, ii) the Nairobi Platform for Action and iii) the Declaration on the Elimination of Discrimination against Women.

b) Children's issues

As already mentioned, involuntary resettlement does result in devastating consequences for the children. This becomes more of a concern in that children[54], as minors, are usually not at the centre of development programmes, especially those that are meant to reinstate the living standard of the people affected by involuntary resettlement. Yet, on the other hand, UNICEF (2003) provides a commitment by world leaders to providing a better future

[54] 'Children' refers to anybody below the age of 18 years (UNICEF, 2003)

for the children. This is because the experiences in the past decades have brought to the fore the need to ensure that the rights of children are prioritised in all the development efforts. Hence it is important to have policies that address both the immediate factors affecting or excluding groups of children. Furthermore, UNICEF (2003) recognises the need to pursue well-targeted interventions that can achieve rapid successes, with due attention being paid to the participation of children in the decision-making processes, while also ensuring the sustainability of such interventions. All these issues just raised are contained in the Declaration on the Right of the Child, Clause 7[55], which emphasises that children's interests should always be considered, and that there should not be discrimination between girls and boys so that they can all reach their fullest potential.

As with the women, children receive very little consideration in the development of resettlement programme, let alone being allowed to participate in the decision-making process, which is a culture requiring mindset changes, hence, perpetuating the violation of children's rights. The elderly are also usually excluded when it comes to development. The details are provided below.

c) Issues pertaining to the elderly

The needs of the elderly within resettlement programmes are never considered and therefore still remain a major challenge to many planners. The trend in the planning of resettlement programme(s) is to adopt a generic approach to the process without unpacking the target groups with a view to addressing their specific needs. This trend is not unique to resettlement programmes, but applies generally to the other development initiatives especially in the developing countries. Elderly people are commonly considered vulnerable or potentially vulnerable in that, at present, very little is being done to meet their needs, or to recognise their unique capabilities and contributions (Government of Mauritius, 2006). This is even more of a serious problem when they form part of a population that is involuntarily resettled, since most of them would have lived in an area for a long time, and it would therefore be difficult for them to adjust in the new environment and to take advantage of new opportunities offered by the resettlement area.

As is the case in any discipline, there are varying views regarding the elderly; however, the researcher only provides two opposing views: (i) There are those who believe that the elderly can remain vigorous, engaged and healthy into their nineties. Therefore, instead of simply consigning seniors to a state of sickness, aging and death, governments and

[55] Only those paragraphs deemed relevant to the study in Clause 7 have been included.

development agents should reduce factors that can contribute to their mortality rate, and also realise that greater support for anti-aging therapies could then become one of the key strategies for improving public health and extend life. Transhumanists believe that twenty extra years of healthy life are just as valuable in people's second century as in their first. Through this view, engagegement of the elderly through public participation is welcomed, particulalry when dealing with issues of relocation (Transhumanist FAQ, undated). (ii) Yet there are those who believe that it is natural for the elderly to fall ill and die - which view has influenced many policy makers not to support or else to reject outright the idea of therapies that retard aging. They regard the lengthening of life expectancies as "unnatural" and ecologically unsustainable or stultifying (Betterhumans, 2004). Obviously the perspective held by those people charged with the implementation of the resettlement programme would naturally greatly influence the content of the resettlement package in terms of whether it addresses issues that pertain to the needs of the elderly or not. The Government of Mauritius was the first African country to launch a National Policy on the Elderly in May 2001, the theme of which is "Ageing with dignity". This national policy of Mauritus on the elderly does to a large extent, confirm principles guiding the Vienna Plan of Action on Ageing (1982) and the UN Principles for Older People (1991), which amongst others addresses issues of recreation centres for the elderly, their housing, health and nutrition, and employment.

Although this section has dealt extensively with the issues of vulnerable groups, the following paragraph focuses on the international initiatives towards the sustainable use of natural resources, like water, in order to meet developmental needs.

4.5 Contextualisation of large dams within the sustainable development framework

There is a contradictory relationship between economic advancement and environmental disruption. Thus, in order to have ecological synthesis, it is necessary to have in place enabling political and economic forces (Dunlap, Michelson & Stalker, 2002). Unfortunately, the human and environmental relationships tend to be more disruptive rather than working towards societal-environmental equilibrium in pursuit of economic advancement (Barry, 2002). Prior to the 1970s-80s, environmental quality took a back seat to "economics" and "progress" in the decision-making process, particularly regarding the construction of large dams. Today, however, alterations in the natural system are more frequently being viewed by the public as deleterious, and with this change in the values of those doing planning for future development, they are being forced to evaluate more fully

the total environmental consequences of their planning decisions with a view to avoiding incidents such as the collapse of the Merriespruit slimes dams, which left the residents devastated (Attorney-General of the Free State, 1995).

Various definitions of sustainable development have been advanced. For instance, some of the definitions on sustainable development focus only on the natural capital assets and suggest that such capital assets should not decline over time. The stock of natural assets covers a wide spectrum of natural stock, thus: water, soil fertility, forests, fisheries, waste assimilation capacity, oil, gas, coal and the ozone layer are all "natural capital". Ascher & Healy (1990) refer to what they call 'tragedy of the commons' where the natural stock is used at unsustainable rates and ends up being completely destroyed partly due to ineffective management. However, some natural capital assets are more important than others. For example, we may well want to distinguish oil from the ozone layer, diamonds from tropical forests. It is important to be aware of the fact that there is critical natural capital, such as the ozone layer, global climatic processes, biodiversity, the wilderness, etc., of which substitution is very difficult and perhaps impossible. The climate-regulating functions of ocean phytoplankton, the watershed protection functions of tropical forests, the pollution-cleaning and nutrient-trap functions of wetlands are all essential services provided by natural assets and for which there are no ready man-made substitutes. The fact of non-substitutability provides a basic reason for protecting natural assets. Other natural capital, such as some renewable natural resources and some finite mineral resources, can be wholly or partially replenished or substituted by man-made capital or by other resources.

Some of the natural resources are therefore vital, irreplaceable and beyond price, and the preservation of such assets should be key in all economic activities. This also implies setting safe minimum standards for economic activity (e.g., in the preservation of biodiversity) and ruling certain kinds of development out of bounds. In recognition of the intricacy of these issues, initiatives have been taken on the international front to address some of these issues. For instance, during the early 80s, following the Review of the State of the Environment, and ten years after Stockholm, countries of the world agreed that both developed and developing countries shared responsibilities in respect of the protection of the environment (the natural stock) and this would require a concerted effort in order to promote attainment of sustainable development by the start of the twenty-first century (Chatterjee & Finger, 1994). Agenda 21, to be discussed below, provides a broad framework to use as a basis for pursuing a sustainable development agenda in that it covers

issues from water quality and biodiversity to the role of women and children in delivering sustainable development (Adams, 2001).

4.5.1 Agenda 21 (1992)

The place of sustainable development in development discourse was assured in the early 1990s when it became the driving concept behind the 1992 United Nations Conference on Environment and Development in Rio (UNCED, or the 'Earth Summit'). This was attended by representatives of more than 170 governments, most of whom made some kind of public proclamation of support for environmentally sensitive economic development. This 1992 United Nations Conference on Environment and Development, the 'Earth Summit', was the largest ever international conference and it was also attended by the international organisations, NGOs, the scientific and technological community and other major groups to pronounce their vision on the future of the planet. The central aim was to identify the principles of action towards 'sustainable development' in the future. The challenge was to acquire consensus at the highest level in that, for the first time, heads of states gathered to consider the environment (Adams, 2001).

Whilst the primary output of the UN Conference on Environment and Development was the huge Agenda 21 document, which carried much political authority and moral force towards reconciling conservation and development actions into the twenty-first century, nevertheless, substantial debate over the meaning and practice of sustainable development also continued (NES, 1998). Yet, important tensions persist, for example, between the environmental concerns of rich and poor countries, between those who wish to exploit natural resources and those who wish to conserve them, and between the development needs of current generations and those of the future generations.

Furthermore, there was a general acceptance by both developed and developing countries regarding poverty as a major factor in the loss of environmental resources and in land degradation. Again, economic growth was envisioned as a key factor in fostering job creation which could directly benefit the poor (NES, 1998). Agenda 21 therefore contains many recommendations for integrating environment and development in all the major sectors of the economy. It proposes a broad range and mix of regulatory measures and economic incentives to ensure that national development becomes ecologically and economically sustainable (SADC, 1996).

It was also recognised that the state of the physical and natural environment is influenced by the pattern of developmental activities of both developed and developing countries. In

this regard, all governments committed themselves in 1992 to pursue national and international sustainable development objectives that would protect the atmosphere, prevent climatic change, safeguard natural resources such as land, soil, and water, and channel development assistance towards poverty reduction and the improvement of economic growth (NES, 1998). Under Agenda 21, countries assumed the responsibility to ratify and implement the international conventions on biodiversity, climate change, drought and desertification, and the *Kyoto,* Protocol, which are elaborated in the next section. Countries of the world committed themselves to develop national economic policies and strategies that would directly benefit the poor and avoid damaging the natural environment, thus helping to meet the needs of the present and future generations. The Rio Declaration contains 27 principles, usually known as the Rio Principles. Several of these are of immediate relevance to the study, as well as to the 'right to development' and to issues of 'sustainable development':

- Principle 1 states that 'Human beings are at the centre of concern for sustainable development. They are entitled to a healthy and productive life in harmony with nature'.

- Principle 3 recognises the right to development, but insists that it be met in an equitable way that considers future generations, as well as present participants, in development.

- Principle 10 underlines that all concerned citizens must be involved in handling environmental issues, and must participate in the decision-making process. This participation must be accompanied by effective access to relevant information and by opportunities to seek redress and remedy in case agreements are not respected.

- Principle 15 states that the precautionary approach shall be widely applied by states according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.

- Finally, Principle 22 recognises the vital role of indigenous people and other local communities in environmental management and development, and entrusts states with ensuring their effective participation in the achievement of sustainable development.

4.5.2 The Convention on Climate Change (1992)

The main objective of the Convention on Climate Change is to achieve the stabilisation of atmospheric concentrations of greenhouse gases at levels that would prevent dangerous anthropogenic (human-induced) reservoirs or large dam construction from interfering with the climate system. Addressing climate change is not an easy task in that it raises difficult dilemmas such as how to distribute the burden of reducing emissions among different countries. The convention defines a global framework for addressing climate change but requires industrialised countries to take the lead by modifying their long-term emission trends.

The convention divides countries into two main groups: industrialised countries currently including the relatively wealthy industrialised countries that were members of the Organisation for Economic Co-operation and Development (OECD) in 1992, plus countries with Economies In Transition (the EIT). On the other hand, there are the developing countries. The convention requires that all Parties report on their greenhouse gas emissions and climate change activities so as to provide the basis for the Conference of the Parties (COP) to assess the implementation of the Convention and its effectiveness.

4.5.3 The Kyoto Protocol - KP (1992)

The Kyoto Protocol supplements and strengthens the above convention. Only countries that are already party to the said convention can ratify the Protocol, and thereby become party to it. Only those party to the protocol will be subject to its commitments once these have entered into force.

4.5.4 The Convention on Biological Diversity - CBD (1992)

The CBD is one of the *Rio* Conventions. The Convention came in response to the deterioration and loss of national and international heritage of species, habitats and ecosystems, some of which were critically important for the existence of humans. Through the Convention the contracting parties committed themselves to taking appropriate measures to minimise loss of biological diversity.

Biological diversity “means the variability among living organisms from all sources including *inter alia* terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part, which includes diversity within species, between species, and of ecosystems"(NES, 2000:5).

The aim of the CBD is to conserve and to promote the sustainable use of species and ecosystems, and the equitable sharing of the economic benefits of genetic resources. The important elements of the convention are:

- Conservation of biological diversity
- Sustainable use of its components
- Fair and equitable sharing of benefits arising from utilisation
- Appropriate transfer of relevant technologies
- Protection of riparian rights.

Since the United Nations Conference on Environment and Development in Rio in 1992 (UNCED, or the 'Earth Summit'), it has been necessary for the international community to review how far each country has progressed in terms of implementing the principles as contained in Agenda 21. The details are provided below.

4.5.5 The Johannesburg Plan of Implementation - JPI (2002)

The purpose of the World Summit on Sustainable Development held in Johannesburg in 2002 was to review progress made on Agenda 21. The output of the Summit was the Johannesburg Plan of Implementation that identified five sectors, referred to as water, energy, health, agriculture and biodiversity conservation (WEHAB), as central to meeting the basic needs and alleviating poverty. These were to:

- improve access to safe drinking water and sanitation;
- provide affordable, reliable and cleaner energy sources;
- minimise diseases and deaths caused by waterborne diseases;
- improve food security through the use of sustainable agricultural practices; and
- to protect ecosystems, particularly those related to water stress and loss of biodiversity (Guerquin *et al.*, 2003).

Although the construction of large dams has been adopted as a means of improving livelihoods whether in the form of improved access to safe drinking water or irrigation or even generation of hydroelectric power, worldwide experience has shown that their

construction has, in most cases, had detrimental effects on the environment. Yet, over time, there has been a growing recognition that environment and development objectives are potentially compatible and can therefore complement each other. Economic growth, it has been argued, could be pursued in an environmentally benign way, provided that economic activity and its negative impacts on the environment are decoupled. Instead of "environment *versus* development", the watchword is "sustainable development". On the same issue of complementarity between the biophysical environment and human advancement through economic activity, Wilson (1993) in his hypothesis perceived biophilla as having a great potential if substantiated to provide powerful arguments for the conservation of biological diversity, on grounds of anthropocentric basis in that maintenance of a diverse and richly varied biological range is genetically important for human well-being and provides ecological resources for society. Hitherto, the result has been a concern over sustainable development. Ascher & Healy (1990) mention that while environmentalists argued that abuse of natural resources can have devastating effects on the environment, their wise use and protection can certainly ensure free services provided by environmental systems that actually spur the development process.

4.6 Conclusion

Negative consequences emanating from the construction of large dams have resulted in many local communities mobilising popular uprisings against some dam projects. These uprisings or anti-dam campaigns and pressure exerted on some of the financial institutions, like the World Bank, have demanded that they review their policies so that they advocate for the protection of human rights and the environment. At the same time however, national governments are expected to respect the human rights particularly of those people affected by the construction of large dams; and to comply with the self-determination and cultural rights of the affected local communities (Rivers for Life, 2003).

A number of international instruments such as the Manibeli Declaration, Right to Development and Agenda 21 all allude to the importance of ensuring a free flow of information and participation of interested and affected parties in the decisions affecting them. In taking this issue further, Rivers for Life (2003) refer to FPIC that requires that all members of affected communities give consent to decisions prior to the commencement of any project, which is free from coercion, manipulation or interference of any kind. For FPIC to happen, full disclosure of the intent and the scope of the activity is mandatory, especially using a language which is understood by the local communities. FPIC is required for the following activities: exploration, development and use of natural

resources; research, bioprospecting, displacement, archaeological explorations and policies affecting indigenous people (Rivers for Life, 2003).

Violations committed against dam-affected communities are noted through declarations that have emerged from conferences of the NGOs and affected people's organisations since 1994. Many of the groups have called for the establishment of a fund by the World Bank to pay reparations for damages suffered by those people displaced by the construction of large dams who had never received adequate compensation or rehabilitation. Therefore, it is recognised that their right to claim proper compensation and rehabilitation, and that claiming an equitable share of the benefits accruing from the project is justifiable. Indeed, things have gone wrong because of lack of knowledge, attitude - insensitivity towards project-affected people - lack of experience - poor implementation and corrupt management. But again, a blind opposition to each large dam becomes an extremely subjective appraisal and it denies one to recognise the chance to appreciate that economic development, in the form of dam construction, and environment can be complementary in the agenda of poverty eradication and to improve the standards of living for the world's poor. Therefore a change in the mindset and ways of doing things are of paramount importance in managing the impacts of large dams, particularly those people affected by involuntary resettlement (Ahmad, 2003).

In many parts of the developing world, access to capital, technology and development opportunities all determine the extent to which local and national economies are able to develop. Similarly, the political economy of power, vested interests and access to resources that characterise each society bring their influence to bear on that society's commitment to equitable and sustainable development. Lesotho is therefore no exception. Chapter Five provides contextualisation of the LHWP within the country's biophysical and socio-economic situation.

CHAPTER FIVE

THE LESOTHO HIGHLANDS WATER PROJECT: BACKGROUND, FRAMEWORK AND OVERVIEW

5.1 Introduction

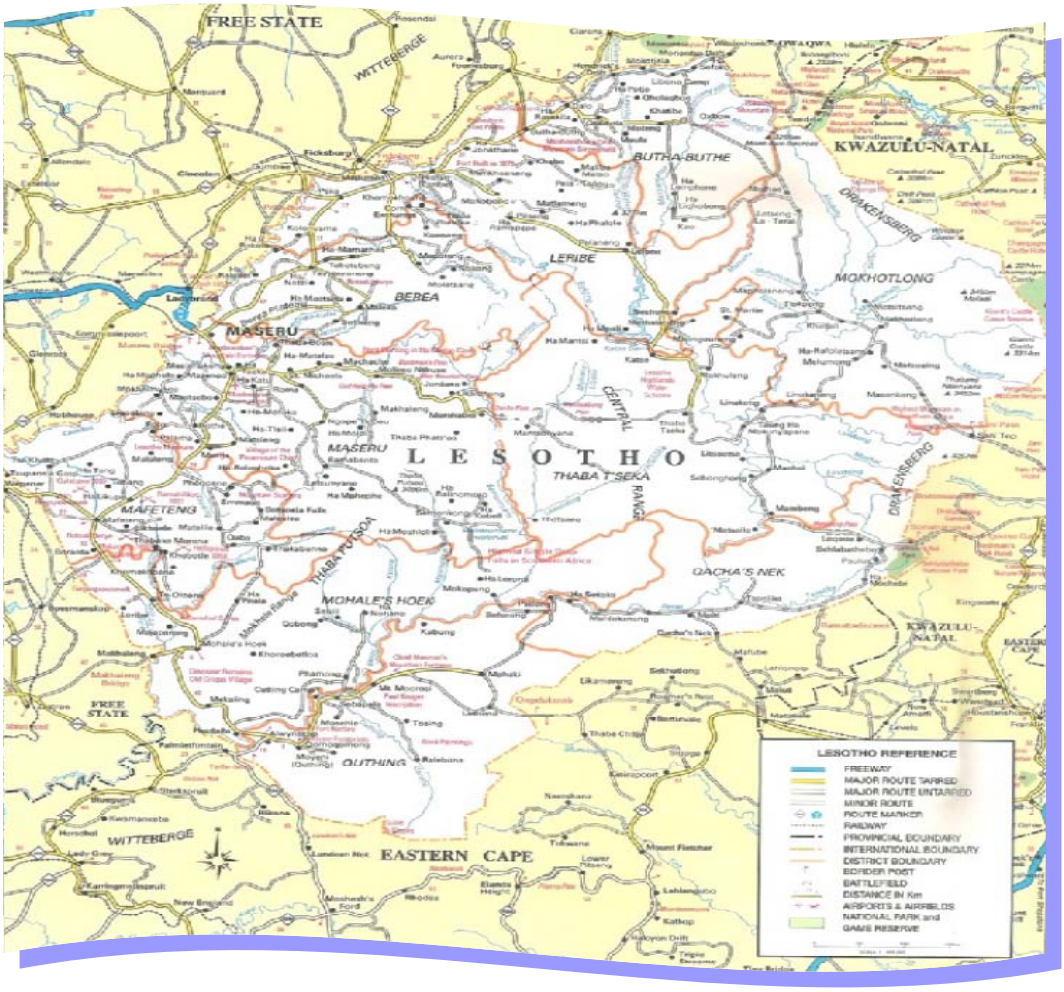
Prior to the construction of the LHWP, Lesotho had no experience regarding the construction of large dams, this despite the enormous challenges facing the water sector in the country in terms of meeting water needs. This chapter starts by first outlining the Lesotho's geographical location and those biophysical characteristics that gave it a competitive edge over the other options for augmenting water supply in South Africa. This is followed by an analysis of the socio-economic environment, which highlights the challenges faced by the Lesotho government, and which ultimately made the LHWP an attractive option for improving on the national income so as to meet the needs of the nation. Details on the LHWP are then provided, including the details on the legal and policy frameworks that guided the implementation of the LHWP's resettlement programme.

5.2 The physical geography of Lesotho

As a small country, Lesotho covers 30 555 km^2 of land surface of which 60% is rangeland, and the remainder comprises either arable land or mountains (Phororo, 2000). The country is characterised by mountainous and rugged terrain. The elevation rises from 1 500 metres in the lowlands to 3 482 metres in the highlands. Lesotho is thus like a massive amphitheatre rising in steps from west to east, where the mighty Drakensberg Mountains form a natural boundary with the South African province of KwaZulu-Natal (Cook, 1994). The country as reflected in map 5.1 below is situated in the eastern part of Southern Africa.

Lesotho is located between 28˚ and 30˚ south, and 27˚ and 30˚ east (NES, 1997). It is apparently the only country in the world with its land surface found at more than 1 000m

above sea level. The lowest point in the country is where the Senqu[56] river crosses the border, at 1 388m above sea level, while the highest part, *Thabana Ntlenyana* is at 3 482m above sea level. The altitude therefore varies from just over 1 000m to almost 3 400m. It is the very high altitude, that made the Lesotho option for augmenting the Vaal (through the construction of LHWP) a much more attractive and cost-effective alternative in that the water gravitates down naturally without the aid of expensive pumping equipment.



Map 5.1: Map of Lesotho

Source: GOL, 2001d: 97

As shown in map 5.1 above, Lesotho is an enclave within South Africa, and is bounded by three of South Africa's nine provinces, namely KwaZulu-Natal to the east, the Eastern Cape to the south, and the Free State to the north and the west, (NES, 2000). It is important to note that, the LHWP is located in the heart of the mountain region of Lesotho. The great Drakensberg escarpment forms the north-eastern and practically the whole of the eastern boundaries. The western and a portion of the northern boundary is formed mainly by the

[56] Senqu river when it crosses the border into South Africa, it is known as the Orange river.

Caledon River, and in the south, the tributaries of the Orange river such as the *Makhaleng* (*Kornetspruit*) and the *Tele* rivers form part of the boundary. The Maluti Mountain range stretches across the country in a south-westerly direction from the north-eastern boundary. The southernmost section of the Maluti Mountains is known as the *Thaba-Putsoa* Range and the south-easterly extension as the Central Range (NES, 1997). NES further states that the western slopes of the Maluti Mountains form an escarpment stretching from the north-east to the south-west, forming a watershed between the two great river systems, via the Caledon and the Orange rivers. Drainage of these rivers is to the west of the Maluti Mountains, towards the Orange river and its tributaries, the *Malibamatso, Khubelu* and *Senqunyane* rivers, to mention but a few, all of which feed LHWP - associated reservoirs.

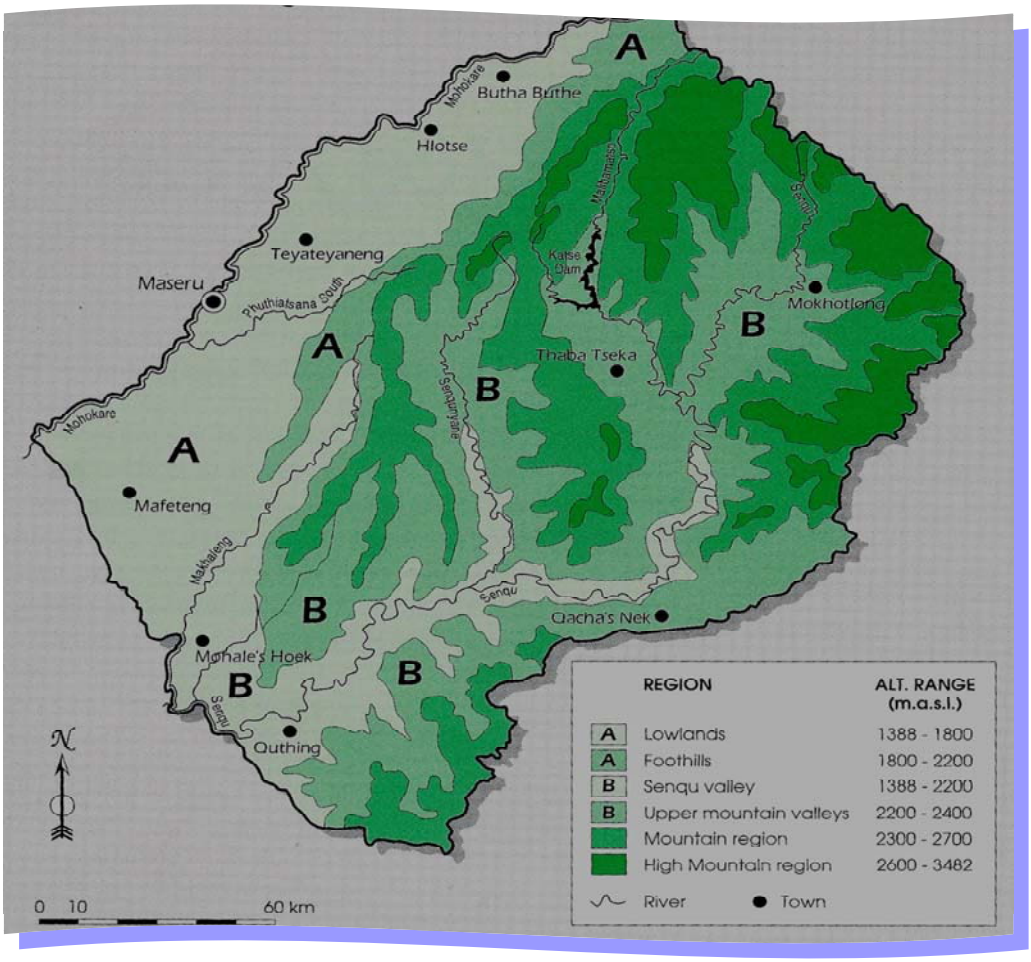
Table 5.2 below depicts the largest river, Senqu, as having a drainage area within Lesotho of 20 847 km^2 and a mean annual run-off at the point of exit of 128 m^3 per second. On the other hand, the Caledon, which forms the western border with the RSA, has a drainage area within Lesotho of 6 890 km^2 and an average discharge rate of 30.0 m^3 per second at the point of exit. The smallest of the three rivers, the *Makhaleng*, runs from the central range to join the Senqu at the RSA border, registering a mean annual run-off of 16.7 m^3 per second at the lowest point, and covering a drainage area of 2 911 km^2, (GoL, 2000b).

Table 5.1: Hydrometric data of the three major river basins

River basin	Drainage area within Lesotho		Mean annual runoff at lowest point (m^3/second)
	Km^2	Percent	
Senqu	20 847	96.8	128.0
Mohokare	6 890	51.3	30.0
Makhaleng	2 911	99.5	16.7

Source: TAMS Consultants, 1996

Furthermore, Lesotho is divided into four geological zones, namely the lowlands, the foothills, the highlands (where the LHWP dams were constructed) and the Senqu river valley (See Map 5.2 below).



Map 5.2: Ecological Zones of Lesotho

Source: NES, 1997:146

5.3 The status quo of fresh water resources in Lesotho

Lesotho is well endowed with water when compared with most of its neighbouring countries (WHO, 2000). This means that the country can meet its own water needs, as well as contributing to regional developments as exemplified in the case of LHWP. However, because of lack of capital investment to exploit the resource and also owing to a lack of proper management of the water resource, the results have been variability of river flows and seasonal shortages in water availability both in terms of quantity and of quality (NES, 2002). Furthermore, groundwater sources are generally small and they become even smaller when they are explored in perched water tables. Thus, further compounded by a lack of sufficient capacity to drill deeper, this means that some of these boreholes are often overused, leading to local depletion and a shortage in respect of water supply. Factors such as these made Lesotho see an opportunity through royalties earned from the sale of water

to South Africa, and thus allow the country to invest in projects that would enable it to earn an income so that it can meet some of the pressing domestic developmental needs.

Renewable groundwater resources constitute approximately 340 million m^3 per annum, while the rest is surface water (springs and rivers) available through rainfall and winter snowfalls that provide an estimated average of 5.5 billion m^3 of water per annum, which is equal to 175million $m^3$of water per second in Lesotho. Although Lesotho has water in abundance, it is confronted with challenges of how to meet the water demand domestically and within the region. For instance, in Lesotho in 1987, domestic consumption accounted for 22% of the water used; another 22% was used for industrial purposes while 56% was for agriculture (CSIR, 2005). Part of the water demand in the country is satisfied through a river abstraction system, boreholes and well fields.

At present there are two departments charged with the responsibility of water distribution, namely the Water and Sewage Authority (WASA), which supplies water to the gazetted urban areas plus the peri-urban areas, and the Department of Rural Water Supply (DRWS) that focuses only on the rural areas. The overall aim of the DRWS is to supply safe drinking water to the rural communities, on sustainable basis, so as to improve the health conditions of the rural people of Lesotho. The procedure of the DRWS is such that it requires the communities to establish water committees prior to the provision of water infrastructure. However, DRWS has problems related to unsustainable water supplies; some of the water supply systems were reported to be dysfunctional shortly after their construction (Lemphane, 2003). In the same vein, Sechaba Consultants (1995) reported that 25% of the newly built rural water supply schemes in Lesotho were not functioning as a result of poor and inappropriate operation and maintenance of water supply schemes. Lemphane (2003) demonstrated that this situation led to the DRWS revising its strategies for operation and maintenance of water supplies, and proposed a new "Aftercare" strategy as an effective and efficient way of attending to water supply maintenance problems.

WASA, on the other hand, is the sole provider of reticulated water for the gazetted urban areas. It provides water to approximately 50% of the population living within its designated area of responsibility (NES 2002). NES further noted that by the year 2000, there were 31 685 customers being served by their system and this figure rose to 34 492 during the 2000/01 period, which also reflected an increase in the water demand. Therefore, in order that both the present and future water demand are met, climatic

conditions, water resource use and management, and land management practices then become critical.

The above discussion provided the biophysical context for the construction of the LHWP. It is however the socio-economic sitiuation of Lesotho that made the construction of the LHWP an attractive option to the Lesotho Government as a means of providing the much - needed revenue in the form of royalties to meet the needs of the population.

5.4 Lesotho's socio-economic characteristics

Lesotho has an average household[57] size of 5 people (GoL, 2003a). The average population density of Lesotho is estimated at 69 persons per km^2, rising to 745 persons per km^2 on arable land. Currently the population of the country is estimated at 1.8 million (BOS, 2007). This shows a decline in the total population that, in 2000, it was estimated at 2.1 million people (BOS, 2001). This decline in the population growth rate is partly attributed to the alarming spread of HIV/AIDS, which was first reported in the Thaba-Tseka District, in 1986, where the first activities of the LHWP, Phase IA were taking place. By 2002, the prevalence rate of HIV/AIDS in the adult population had increased to 31%. Although the recent statistics show a decline in the prevalence rate of HIV/AIDS at 23.2% (UNICEF, 2005; PRB, 2007), Lesotho is still one of the three countries in the world with the highest levels of HIV infection and is exceeded only by Swaziland and Botswana (PRB, 2007). Parkman (2004) suggests that the population growth rate, particularly in the Lesotho lowlands, will continue to decline as a result of AIDS until it ceases to grow around 2007/2008, and reaches negative rates thereafter.

Obviously one of the devastating consequences of HIV/AIDS is that it has reduced life expectancy in the country by 20 years. For instance, in 1986, before the onset of HIV/AIDS, the average life expectancy was 55 years, and was at the time expected to increase to 60 years by 2001. However, average life expectancy is now estimated at 35 years and could decline even further by the end of 2010 (Parkman, 2004).

5.4.1 Contextualisation of LHWP within the economic situation of Lesotho

Lesotho is amongst the 42 least - developed countries (LDCs), which constitute the weakest segment of the international community (UNDP, 2002). By the same token, the World Bank states that the country's real per capita GDP in 1997, measured in purchasing-

[57] Household has been defined in Chapter One.

power parity, was US$ 1,860, placing Lesotho among the world's 50 lowest - income countries (GoL, 2001d).

Lesotho generates an estimated revenue of approximately US$ 267 million per annum. South Africa, on the other hand, has a revenue estimated at US$ 23 billion per annum, with a population of approximately 43 million people (Statistics South Africa, 2003). The disparity in the socio-economic status of the two countries has resulted in the split of views[58] regarding the partnership of the two governments on the LHWP. Obviously Lesotho's limited capacity to generate adequate national income to meet the needs of its people makes it susceptible to high depency on foreign aid. Table 5.3 below provides a brief economic profile of the country.

Table 5.2: Socio-economic situation of Lesotho

Population:	1.8 million
Urban population:	29%
Major ethnic and linguistic groups:	Sesotho - 99%
Population growth rate:	0.19%
Life expectancy:	35 years
Infant mortality:	86 per 1,000 live births
Per capita income per month:	M40-00
GNP per capita:	$550
Percentage population with access to safe drinking water:	78%

Source: Care, 2006.

Other than the information portrayed in Table 5.3 above, some of the factors that contribute to the deteriorating socio-economic situation in the country, include:

- Extreme weather changes not conducive for agricultural production. As a result, the country is often prone to natural disasters, especially drought, with the consequential effect of food insecurity.

- Loss of arable land due to soil erosion, coupled with disincentive to invest in the land, owing to the land tenure system, ultimately contributes to inadequate absorptive capacity for new entrants to the labour market.

[58] Split of views in this instance refers to those who see the project just as benefiting South Africa to meet its water needs for its industrial development and for consumption for the growing population. On the other continuum, the project is regarded as a means of improving the national income through earning royalties to meet the basic needs of Lesotho.

- The physical location of Lesotho as depicted in Map 5.1 has made it such that the economy of the country has been integrated with that of South Africa ever since the discovery of gold and diamonds and the development of the mining industry in South Africa, making Lesotho vulnerable to external economic forces (Ntlafalang, 2004).

As migration continues to play an important role in Lesotho's economy, and as life realities compel Basotho men in particular to drift from the rural areas to urban areas and to South Africa, they leave behind over 60% of the households headed by women, who cannot make decisions on the valuable assets of the family. The income earned by migrant workers is either spent in South Africa or remitted to Lesotho to further purchase or pay for imported goods. This places the country in a completely dependent position. On the other hand, the government of Lesotho is unable to create adequate jobs, this resulting in a significant percentage of unemployed labour in the country. Phororo (2000) further states that 25 000 youths enter the workforce annually but only about 9 000 find employment.

So, Lesotho, in trying to redress its plight, saw the opportunity of improving its national income through the sale of water to South Africa as having the potential of going a long way towards reducing poverty in the country. This would be achieved through investing the earned royalties from the sale of the water harnessed by means of the LHWP in other development projects that would directly address poverty reduction. Obviously the move to support the construction of LHWP was eagerly welcomed by Lesotho, particularly because poverty in the country was escalating (Sechaba Consultants, 2000).

About 56% of the population in Lesotho live below US$2 per day (UNDP, 2004). A very large proportion of the population thus look to Government for almost all of their needs; and see Government as the ultimate solution to their problems of poverty, yet Government itself has meagre resources at its disposal. Sechaba Consultants (2000) noted that the districts hardest hit by poverty were those in the mountainous regions of the country, i.e the area where the LHWP is located.

Table 5.3: Changes in Lesotho's national income

Year	1998	1999	2000	2001	2002
GDP	-4.6	0.2	1.4	3.4	4.0
GNI	-9.0	-3.9	-3.1	-1.7	2.6
GDP per capita	-6.8	-0.7	0.4	0.7	1.3
GNI per capita	-11.3	-5.6	-4.9	-3.9	0.9

Source: Central Bank of Lesotho, 2003

Table 5.3 above shows that after four years of negative growth in Gross National Income (GNI), a positive increase was realised in 2002. GNI increased to 2.6%, thus surpassing the country's population growth rate of 2.3%; as a result GNI per capita also registered positive with an annual growth of 0.9% (Central Bank of Lesotho, 2003). This positive performance in Lesotho's economy was largely influenced by the following factors:

- The negative growth of labour income from abroad, especially from the mining sector, which constitutes the largest share of net factor income from abroad, increased as a result of increases in the price of gold in 2002.

- Royalties from sales of water to the RSA through the LHWP. In 2002 the LHWP's contribution to GDP was 16.5%.

- Increases in textile manufacturing industries from the early 1990s lead to increase in jobs created.

- Privatisation of previously owned government business enterprises.

The 1990s was a time of rapid economic growth, generated not so much by locally-initiated macro-economic policies, but by external forces set in motion by the LHWP and changes in the South African political economy (Sechaba Consultants, 2000). Even though there was a significant increase in GNI in 2002, the completion of Phase 1 of the LHWP resulted in loss of jobs for thousands of Basotho and this also negatively impacted on the country's economy. Nonetheless, the sale of water to South Africa through the LHWP did improve the country's GDP, although natural factors such as drought, followed by excessive rains, resulted in poor harvests and an increase in food prices, thus further exacerbating the problems of food insecurity in the country.

Although Lesotho today cannot produce enough food for its population throughout the year, it was originally known as the Grain Basket of the Cape Province and the Free State. But in 1902, food was imported to Lesotho for the first time. By the same token, Ntlafalang Consultants (2004) showed that in the mid-late 1970s, Lesotho was able to provide 50% to 60% of its total food requirements, while in 1984 it only met 40% of its total food supply from domestic production and, as a result, 46% had to come from commercial imports and 14% from food aid. Though dependence on agriculture is high, more than 95% of the rural households that cover the LHWP area cannot adequately

produce their own food requirements, and even those with adequate land find that home-grown food often lasts for less than five months of the year, even in good years.

Although Lesotho is indeed a poor country, it has water in abundance, which can be harnessed for the economic advancement of the country and also contribute to the regional development in terms of meeting the water demands. What therefore becomes critical is to ensure sustainable management of the abundant water resource in order to meet the needs of both current and future generations. This calls for deliberate efforts within the water sector, both at the policy and the institutional levels, to ensure sustainable use of the resource. Details of efforts to this end are provided below.

5.5 Contextualisation of LHWP within the broader water sector

Since the study focuses on involuntary resettlement as a result of the construction of large dams, it is important to therefore, briefly discuss the water sector in Lesotho in order to contextualise the study. This is because water is an essential human need, be it for human consumption, industrial or energy purpose(s). Therefore, how the water resource is managed becomes critical in order to meet the needs of the present and future generations. Some of the initiatives that have been advanced at the regional level[59] within the SADC include the adoption of the two instruments that guide water resources management in the member states of which Lesotho is part. These instruments are:

i) The SADC Protocol on Shared Water Course Systems[60]; and

ii) The Regional Strategic Action Plan (RSAP) for Integrated Water Resources Management and Development in the SADC countries (1999-2004).

As mentioned in Chapter Four, the SADC Protocol on Shared Water Course Systems seeks to promote close cooperation for the judicious and coordinated utilisation of shared water within the SADC region. The protocol seeks to coordinate the environmentally sound development of the shared water course systems in order to support sustainable socio-economic development. The protocol has provisions promoting equitable and sustainable management and development of the international waters. This requires coordinated and harmonised approaches to various activities including impact assessment, awareness-building and - training, as well as data collection and information management (CSIR, 2005). On the other hand, the RSAP provides a framework within which the region

[59] In this case, the regional level refers to SADC.

[60] This has been discussed at length in Chapter Four.

should manage water in a comprehensive and integrated manner (CSIR, 2005). These ratified instruments become extremely relevant in the case of Lesotho, particularly because Lesotho, South Africa, Botswana, and Namibia are the riparian states[61] of the Orange River. These countries signed a protocol to establish an Orange River Commission in 2000. The Protocol provides for member states to notify one another of the developments on the river and its catchments, including the Caledon River (World Bank, 2000).

In responding to the challenge of sustainably managing the water resource, the Ministry of Natural Resources[62] in Lesotho, established the Office of the Commissioner of Water in 2002 to oversee those activities within the water sector that are carried out by the different institutions such as the Department of Water Affairs and the DRWS, as well as the two parastals, LHDA and WASA (Parkman 2004; World Bank 2000). The roles of these institutions are described in Table 5.4 and their relationship is illustrated in Figure 5.1 below.

Table 5.4: Key institutions within the Lesotho water sector

Institution	Mandate
Office of the Commissioner of Water	Responsible for coordination within the water sector. The Office was established in October 2002 to implement the National Water Resources Management Policy and to improve coordination in the water sector. The Office of the Commissioner of Water is supported by the Policy, Planning and Strategy Unit, which was established in January 2003.
Department of Water Affairs	Responsible for assessment and management of water resources, and the monitoring of water quality in public and private boreholes.
Department of Rural Water Supply	Provision of water supply in rural areas.
Water and Sewerage Authority	A semi-autonomous institution, which provides water and sewerage services to the gazetted urban centres, and this includes Maseru and fifteen other centres. However, most of the peri-urban areas are not (yet) served, and some industrial demand is equally constrained by the lack of availability of infrastructure.
Lesotho Highlands Development Authority	Responsible for the implementation, operation and maintenance of the LHWP within Lesotho. It is an inter-basin water transfer scheme from Lesotho to the Republic of South Africa. Construction of Phase 1 of the project which had two components (A&B) has been completed. But the operation and maintenance are continuing.
Lowlands Water Supply Project	Established within the Department of Water Affairs to oversee the implementation of the Lowlands Water Supply Feasibility Study. It is also responsible for overseeing the implementation of the Metolong Feasibility Study.

Source: CSIR, 2005

[61] Riparian states are those countries that share in the use of water resources.

[62] Refers to the Lesotho Government, Ministry responsible for water issues in the country.

Water resources activities in Lesotho were previously highly fragmented. This resulted in the duplication of efforts, poor conservation of water resources, and conflicts in the management of the resources, all of which contributed to the inability of government to meet the water demand. There was a need therefore for water sector reforms, implemented through a structural adjustment programme which started in the 1990s. The programme called for structural reforms in the sector such, as optimisation of the country's environmental resources like water, in order to achieive the two major goals of poverty reduction and economic growth (Phororo, 2000).

The Lesotho Government consequently commissioned a study on Water Resource Management Policy and Strategy whose conclusions and recommendations informed the formulation of the National Water Resources Management Policy (NWRMP) in 1999. The policy seeks to create an integrated and sound management of water resources to ensure sustainable development of resources, adequate supply even in times of drought, and proper assessment and protection of available resources. The water policy aims to:

- provide practical direction and guidance to all water sector stakeholders;
- allocate water resources to meet the current demands of $1.5m^3$ / sec (1999) and future demands of $5.18m^3$ / sec by the year 2025;
- avoid potential conflicts in water management; and
- allocate appropriate investments for resources development and management.

The activities suggested under this policy are to:

- build multi-purpose dams like those of the LHWP;
- build large conveyance systems to supply lowlands areas;
- create a bulk water supply authority;
- create a water distribution authority;
- ensure that the environmental aspects of water resources are protected;
- ensure that, in the development of Lesotho's water resources, there is compliance with the international obligations for downstream users; and

- to ensure that stakeholders are involved at all stages of water resources development projects.

The structure of the water sector in Lesotho is set out in Figure 5.1 below. This figure shows how the LHDA, which is responsible for implementing the LHWP, fits into the overall water sector.

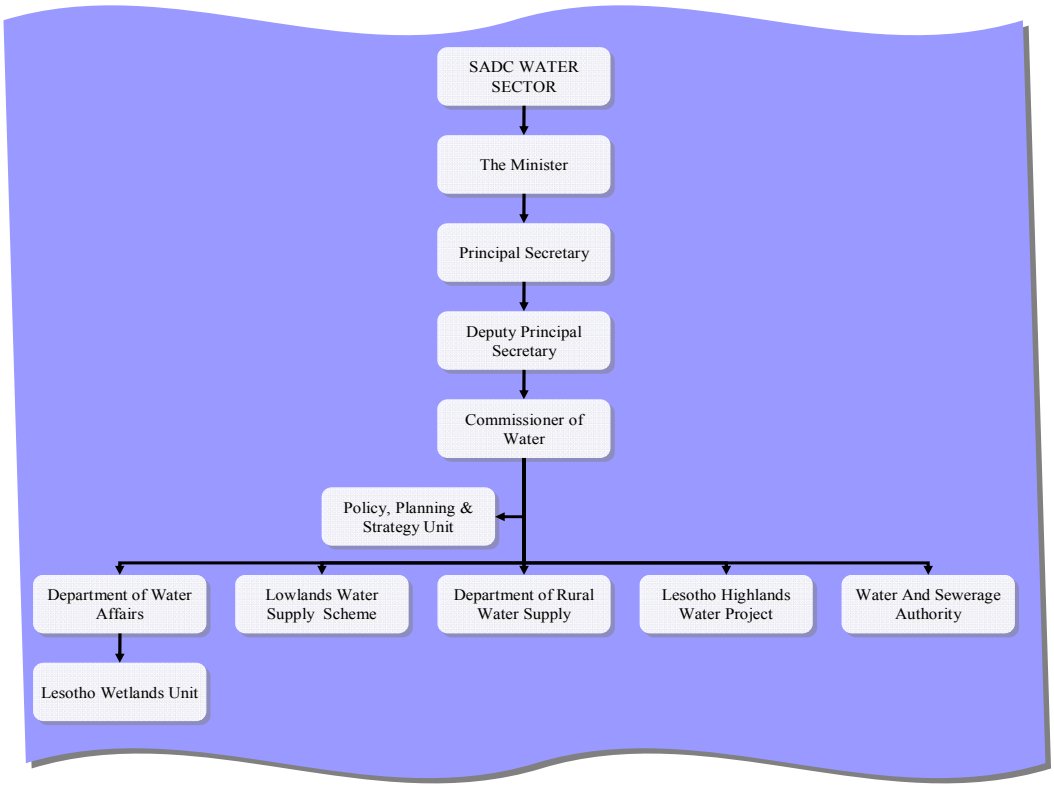


Figure 5.1: The structure of the water sector in Lesotho

Source: CSIR, 2005

Table 5.5 below presents several instruments which regulate activities within the water sector both at the regional and national levels.

Table 5.5: Policy and legislation governing water-related developments in Lesotho

Legislation or Policy	Description	Responsible institution
Regional level		
a) SADC Protocol on shared water systems b) Regional Strategic Action Plan	Coordinated and integrated management of shared water course systems with due consideration given to environmental sustainability	The SADC Water Sector
The Lesotho Highlands Development Authority Order of 1986	Establishment of structures required for the implementation of the LHWP and other relevant issues	LHWC
The Lesotho Highlands Water Project Treaty of 1986	This is an agreement between the two governments of Lesotho and South Africa on the implementation of the LHWP.	
National level		
The Water Resources Act No. 22 of 1978	Use and control, protection and conservation of water resources in Lesotho	DWA
The Lesotho Water and Sewerage Authority (WASA) Order of 1991	It established WASA and it basically sets outs the operations of the Authority. The Act also deals with issues of efficient use of water at the domestic, social, commercial, fisheries, agricultural, industrial, manufacturing and recreational levels.	WASA
The Lesotho Water and Sewerage Order of 1992	Gives WASA the mandate to formulate the by-laws for collection, treatment, storage and distribution of water plus the collection and treatment of sewerage and disposal of treated effluents in a fair, regular and efficient manner for protection of consumer safety	WASA
National Environment Policy 1998	Contains provisions for the protection of water resources	NES
Water Resources Management Policy of 1999	Seeks to have an integrated and sound management of water resources within the country to ensure "sustainable development of water as a resource, adequate supply of water even in times of drought and proper assessment and protection of available water resources"	DWA
Environment Act of 2001	Contains relevant content towards protection of water resources with regard to licensing for water pollution and formulation of standards. However, the act has not yet been operationalised.	NES
Draft Water Services Bill	An improvement on the WASA 1992 Order and 1991 regulations.	DWA/WASA
Draft Industrial Effluent policy	Currently being developed to deal with industrial wastewater	DWA

Source: Adopted from CSIR, 2005

5.6 Construction of Large dams in Lesotho

Lesotho did not have much experience regarding the construction of large dams prior to the LHWP, which commenced in 1986 when the treaty on the LHWP was signed. However, there are two other major dams[63], albeit small in the context of the definition of large dams provided in Chapter One. Nonetheless, these dams are of great significance in Lesotho in terms of meeting water needs. The details of these dams are provided below.

[63] The Maqalika dam had a resettlement component. Unfortunately not much documented data exist. There was thus a heavy reliance on people's memories. Information in terms of how many were "resettled" and how much land had been lost through inundation was therefore not available.

5.6.1 The Maqalika Dam

The Maqalika Dam was constructed during 1979-1981. The purpose of its construction was to provide water to Maseru Urban Area (Lahmeyer-International, 1992). The main source of water for Maqalika Dam is the Mohokare (the Caledon) River, where water is directly extracted near the treatment plant. During periods of low or zero flow in the river - that is, during the months of June to September - quantities of raw bulk water are supplemented by water from the Caledon river through an off-channel storage reservoir, located on the north-western outskirts of Maseru. Maqalika Reservoir has the second largest storage capacity to LHWP (3.7 million cubic metres), which is decreasing, owing to increasing loads of sedimentation. Immediately upstream of Maqalika Reservoir is a second storage reservoir, which provides additional storage, thereby supplementing the overall system. The current yield of the existing systems, i.e the Mohokare river in conjunction with the Maqalika Reservoir is approximately 23 700m^3 per day at 98% reliability. The water quality in the Maqalika river is better than that of the Mohokare river, with turbidity varying between 70 and 320 NTU. Water then gravitates to the treatment plant, which has a capacity of 13 060 m^3. At the works flow of 18.9 ml per day, the storage period is 16.5hrs (WASA, 1989).

Prior to the existence of the reservoir, Maqalika was a natural water course with people inhabiting or living close to the watercourse that flowed into the Caledon River. When the project started, it necessitated the relocation of those households who were living around the watercourse. The affected households were provided with replacement sites about 100kms away from their original location (Theko, 2006: pers.com). Those who had structures already existing on their plots were compensated in cash and the compensation was based on the market value of the house at the time, after valuations that were done by government. The recipients of cash compensation were expected to use the money for the construction of replacement house(s). However, after receiving their compensation, the affected people went back to their original sites and some let their newly constructed houses, whilst others sold their replacement sites.

The Maqalika enhancement project was initiated in 2004, so as to increase water storage for the Maqalika by raising the spillway. The project was considered for financing under the water sector reform programme, financed by the World Bank. The initiative was born out of the recognition that the Maseru population was growing at an unprecedented rate of 7% per annum (BOS, 2001). This population growth necessitated a response to an increased water demand exacerbated by the increasing number of textile industries in the

country at the time. The contentious issue of resettlement arose, as this would be a second resettlement for some of these people residing around Maqalika. The area of contention was the fact that the World Bank regarded these people as being eligible for relocation, irrespective of whether it had been done earlier or not, as long as they had lived in the area for longer than five years. The government on the other hand, argued that those people were squatters, and therefore illegal occupants of the land, and that they should be encouraged to move out of their own free will. This issue was never resolved, which led to the shelving of the project.

5.6.2 The Rasebala Dam

The Rasebala Dam was constructed in 1987, with a view to improving the water supply for the town of Mafeteng. With the first impoundment of the dam in February 1988, it collapsed and the problem was attributed to faulty design of the civil structures (WASA, 1990). The dam site is located in the eastern part of Mafeteng town. According to WASA, the dam was constructed on the Rasebala river, which had a catchment area of 13.1 $km^{2.}$ The dam type was an earthfill dam with geomembrane surface sealing. It had a crest level at 1 700 - 50m a.s.l, with a width of 4.80m, plus a length of 4.88m and a height of 23m above ground level (maximum), and an intake tower. Construction of the dam did not call for resettlement despite rangeland for the local livestock owners being affected, but no compensation was paid as the land affected was communal and thus no - one could claim any right to compensation at the time.

5.6.3 The Lesotho Highlands Water Project (LHWP)

As pointed out earlier, implementation of the LHWP envisaged exploitation of the country's abundant water resource for the benefit of its economic development. The LHWP was conceived way back in the 1950s to provide a solution for the much - needed water for industrial development in the Witwatersrand region, and the mines and farms in the Free State province of South Africa (Spence, 1968). The Orange and Tugela rivers were explored as possible options, most of their major tributaries being in Lesotho. The Cape Town based engineering company, Ninham Shand, advocated the option of the Orange River as it would provide 1 600 million gallons a day of high quality water, through the Ox-bow Scheme. Apparently the scheme would dam the upper reaches of the Malibamatso river to form the Ox-bow Lake, where water would be tunnelled through the Drakensberg into the Vaal catchment area (Spence, 1968). The Lesotho option was eventually seen as the most cost-effective scheme because Lesotho is located at a high

altitude and therefore harnessed water would simply gravitate down without the incurring heavy expenses of installing pumping equipment.

Subsequently, in 1979-1980, a decision to conduct feasibilty studies was reached by the governments of Lesotho and South Africa, with a view to investigating the feasibility of diverting the water of the Senqu river system for export from Lesotho. In 1983 specific studies were commissioned by the two governments of South Africa and Lesotho to assess the feasibility of the water conveyance scheme with a view to selecting an optimal scheme, having a layout acceptable to both governments, and carrying out studies which would inform design and costing that would be used in the preparation of tender design and procurement of finance (Lahmeyer Macdonald Consortium & Oliver Shand Consortium, 1986a). The findings of the feasibility studies in 1985 culminated in negotiations and, ultimately, the signing of the treaty between the governments of Lesotho and South Africa in 1986. This marked an agreement to proceed with the option of the Lesotho Highlands Water Project, even if the location of the dam had changed. The purpose of LHWP was therefore to transfer water from the headwaters of the Orange river to the Vaal river catchment in South Africa and on to the commercial and industrial heartland in Gauteng. In a nutshell, the LHWP supplies water to the urban industrial hub of drought-prone South Africa, whilst the national benefits to Lesotho are the revenue earned from the sale of water to support national developments, as well as being self-sufficient in electricity through the generation of hydropower at Muela.

The above Treaty also addresses issues of the rights and obligations of the parties (Lesotho and South Africa) and lays down the quantities of water to be delivered, the basis for sharing the cost of the project, as well as the formulae for calculating the royalties. The Treaty clearly stipulates that South Africa was responsible for most of the costs relating to the transfer of water including the costs of implementing and maintaining the scheme. On the other hand, Lesotho's responsibility coveres the entire costs associated with the hydropower generation and other ancillary development programmes. Phase 1 of the project, which included generation of Muela hydroelectric power, is now complete and operating. Regarding the subsequent phases of the project, the Phase 2 feasibility study is in progress and will be completed by December, 2007.

In terms of project implementation, the LHDA Order of 1986 created the LHDA, whose responsibilities are outlined in Article 7 of the Treaty as:

i) The Lesotho Highlands Development Authority shall have the responsibility for the implementation, operation and maintenance of that part of the project situated in the Kingdom of Lesotho and shall be vested with all powers necessary for the discharge of such responsibilities.

ii) LHDA shall annually deliver minimum quantities of water as specified for each calendar year to South Africa at the designated delivery point.

iii) The quantity of water to be delivered in each calendar year by LHDA to South Africa shall be delivered in monthly quantities schedules in operation plans.

iv) LHDA shall from time to time, establish the Nominal Annual Yield which shall be that quantity of water delivered annually from the stage of each phase of the project which has to be maintained continually on a long-term basis with a reliability of 98%.

v) In the event of storage reservoirs being at full storage capacity, LHDA may deliver to South Africa in any one calendar year, water in excess of the Nominal Annual Yield.

The LHWP is divided into four phases. The first of these has been implemented and comprises Phases IA and IB. As already mentioned, feasibility studies for Phase 2 are being conducted.

Photo 5.1: Katse Dam and Reservoir - Phase IA

Photo by Mope Lepelesane, 1998

Phase IA, shown in the photo 5.1 above, was constructed at a cost of approximately R20 billion, which included the construction of the large Katse Dam on the confluence of the Malibamatso and the Bokong rivers. At 180m, it is one of the highest dams in Africa and has a 45 km transfer tunnel to Muela hydropower station and Muela tail-pond, and a further 37 km delivery tunnel to the Ash River in South Africa (LHDA, 1999).

Photo 5.2:Mohale Dam - Phase IB

Photo by Mope Lepelsane, 1998

Phase IB includes the Mohale Dam shown in the photo above. It is the highest rock-filled dam in Africa at 145m. The Mohale Reservoir is located on the confluence of the Senqunyane and Jordane rivers. The Mohale Dam was built on the Senqunyane river, just downstream of its confluence with the Likalaneng river. The dam floods large areas of land in the valleys of the Senqunyane, Bokong, Jordane, Bokoaneng and Likalaneng rivers. There is also a 32 km tunnel connecting the Mohale Reservoir to the Katse Reservoir. Phase I also has a weir at Matsoku near Muela on the Matsoku river, from which there is a 5.6 km transfer tunnel to the Katse Reservoir. There is also the 72 MW hydropower station at Muela that connects with the Southern African Power Pool, providing Lesotho with its electricity needs. All these were constructed in Lesotho under the LHDA as the implementing agency. The structure of the LHDA is set out in Figure 5.2.

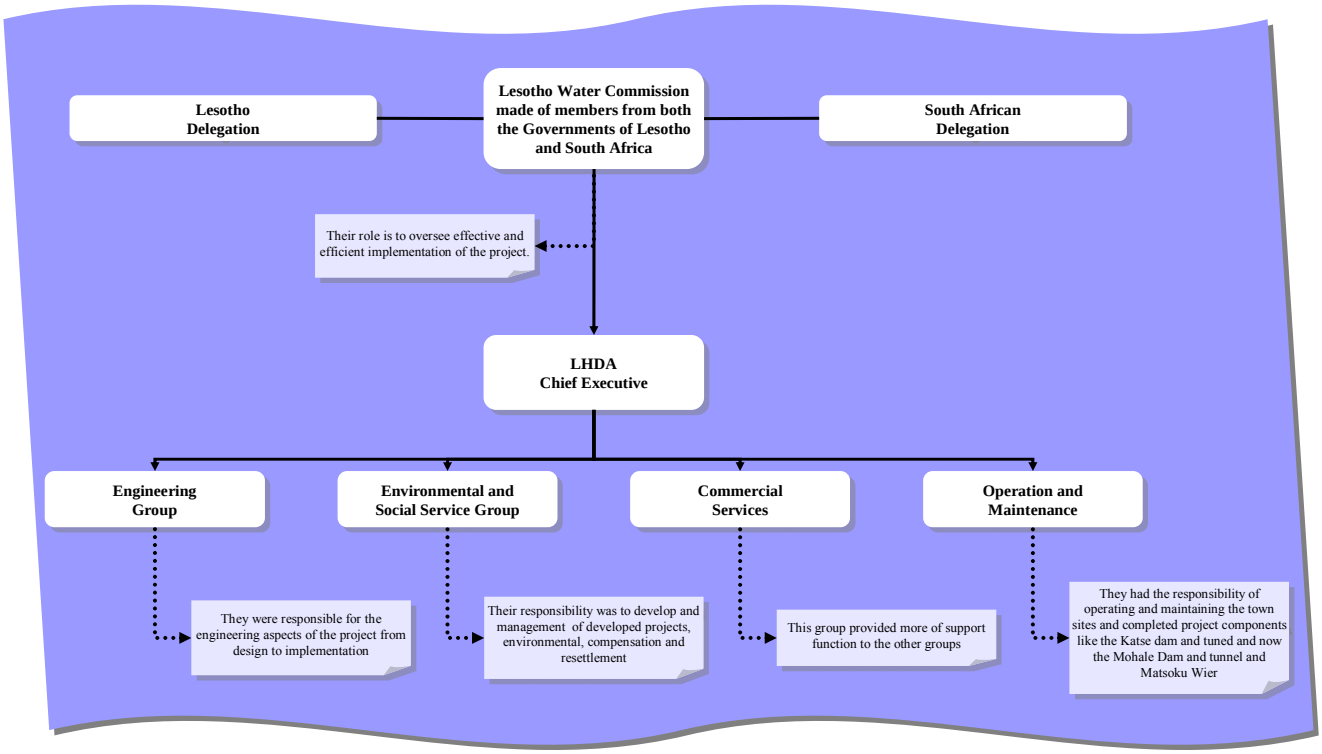


Figure 5.2: LHWP Management Structure in Lesotho

Author's own construction, based on the knowledge of the organisation as of 2003.

The environmental and Social Service Group (ESSG) as shown in Figure 5.2 above, was established within the LHDA with the sole purpose of ensuring that the environmental and social considerations as contained in the legally binding articles of the Treaty and the Order (both of 1986a&b) are meticulously pursued in the implementation of the resettlement plan. These legally binding stipulations contained in the treaty allude to the

maintenance of the environment and to the standard of living of the affected communities to at least the same level it was prior to any disturbance.

Article 7(18:27) of the Treaty states:

> "The LHDA shall effect all measures to ensure that members of the local communities in the Kingdom of Lesotho, who will be affected by flooding, construction works or similar project-related causes, will be able to maintain a standard of living not inferior to that obtaining at the time of the first disturbance, provided that such Authority shall effect compensation for any loss to such member as a result of such project-related causes not adequately met by such measures"
>
> (GoL, 1986b).

Similarly, Article 15 of the LHDA Order, of 1986 states the following:

> "The Parties agree to take all reasonable measures to ensure that the implementation, operation and maintenance of the Project are compatible with the protection of the existing quality of the environment and, in particular, shall pay due regard to the maintenance of the welfare of persons and communities immediately affected by the project"
>
> (GoL, 1986a).

Both the Treaty and the LHDA Order of 1986 thus formed the basis for the development of the compensation policy and the resettlement plan. This was necessary because it was already known through the feasibility studies as mentioned, that the construction of the LHWP would result in the loss not only of communal assets but also of individual properties. Mitigation measures in the form of compensation were consequently of necessity. For instance, some negative biophysical and social consequences identified by means of the feasibility studies included inundation of land resources and other assets, relocation as a result of road construction, filling of the reservoir, interruption of communications across river valleys by the reservoir, general social and environmental disturbances caused by the construction, the introduction of diseases previously uncommon in the area and a host of other inconveniences not mentioned here.

5.7 Policy and Legal framework guiding resettlement programme

The development of the LHDA's resettlement programme had to take into account the laws of the land, as well as to pay attention to the settlement patterns as discussed below. It is important to note that when the resettlement programme was being developed, there was no environment law or policy. So, basically, the only legal instrument at the national level was the Land Act of 1979 and the National Settlement Policy of which the details are provided below.

5.7.1 Legal and policy framework at the national level

The formulation of compensation and the resettlement plan for LHWP were mostly informed by the National Settlement Policy and the Land Act of 1979. This is because through the feasibility studies that were conducted, it became apparent that the construction of the LHWP would affect both individual and communal property, issues which are addressed in the Land Act (GoL, 1979). In terms of the land rights, according to the Land Act of 1979, the land belongs to the nation. The King is entrusted with the power to administer the land on behalf of the nation (GoL, 1989). Traditionally, the power to allocate and revoke land was vested in the King but was exercised by chiefs on his behalf. Therefore, the King had all rights in respect of land holding, while individuals only had user rights (Phororo, 2000). Every Mosotho man was traditionally entitled to three fields although he could however expect two additional ones for every extra wife he married (GoL, 1989). Both population growth and development, particularly in the urban areas, rendered the traditional land tenure system ineffective. As a result, government enacted the Land Act 1979, which provided some drastic changes in the land tenure system, to grant people individual rights to the land they held through new rules of inheritance and leasehold. The following forms of tenure were introduced by this legal document:

i) Rights to land given more or less along the lines of customary procedures. However, unlike the case under customary tenure - where applications for an allocation of arable land were sent to the chief of the area where the applicant resided - under the Land Act (GoL, 1979) applications are sent directly to the land committee of the area where the applicant resides. The chief of the area was *ex-officio*[64] chairman of what used then to be known as Development Councils[65] and

[64] Initially, chiefs were automatically chairpersons of the Development Councils, but with the 1991 Development Councils, the chiefs now became *ex-officio* members of the council and members were to elect their chairperson.

[65] The Development Councils have been replaced by the Local Government Structures since 2005.

which have now been replaced by the Community Councils. The latter are also mandated to deal with issues of land management, including land allocations.

ii) Allocations were not to be used in monetary exchanges but were inheritable. The Land Act (GoL, 1979: Section 3) explains the conditions under which an allocation may be terminated as misuse of the holding through:

- Overgrasing
- Failure to combat soil erosion
- Failure to cultivate arable land for more than three years

iii) The allottee[66] is entitled to compensation if the land is revoked for public purposes, as was the case with the LHWP.

The Act also provides that a lease holder enjoys full personal rights on the land. A lease can be obtained in one of three ways:

i) A registerable title can be converted from an allocation to a lease. "Registerable titles" are rights to land that have been allocated for non-agricultural purposes such as business, education, religion and residence.

ii) A holder of an allocation for agricultural purposes can apply to the Commissioner of lands to have his allocation converted to a lease.

iii) A lease can be obtained in areas that have been designated as selected agricultural areas, zoned for modern agriculture.

A lease can be sold, sub-leased or mortgaged. The normal duration of a lease varies from 10 years to 90 years. As already mentioned, a person designated by the deceased's family can inherit a lease based on the stipulations in Section 39 of the Act that: a lease shall not be granted for a term exceeding 90 years, where the lease is:

i) For residential purposes;

ii) For purposes of exercising a profession or a calling;

[66] An allottee is a person who has been allocated the land under the 1979 Land Act.

iii) For any devotional, religious, benevolent, educational, recreational, charitable and medical purposes.

5.7.2 Settlement patterns in Lesotho

Cook (1994) noted that contact with foreigners influenced the settlement patterns in two ways. Firstly, the colonial government offices (later developed into the central government) established reserves for administration centres. These developed into trade and industrial centres, which are now considered to be the primary regional centres for settlement planning. Secondly, missionaries established stations that became important centres for worship, education and health care. Some of the earlier mission stations have subsequently developed to a level where they are considered to be secondary centres for settlement planning.

Lately, settlement patterns are said to be influenced by the development of infrastructure, particularly roads. Villages served by these roads expand quickly, particularly those located at the main intersections. These villages are now considered tertiary for settlement planning purposes. Any expansion or development activities will somehow affect property or resources that belong to some individual or community. Nonetheless, as observed by Mothibe (2002), there is a strong tendency amongst the population to live together in groups, the family with their relatives as extended family inhabiting a kraal comprising 2 or 3 huts on average. Cook (1994) observed that in the lowlands, there are a number of large villages in which a few hundred people live. Yet, in the mountainous regions, the settlement pattern tends to be traditional, consisting of only a few families scattered all over the countryside. This traditional settlement pattern of Lesotho is characterised by dispersed, concentrated villages, mainly located on spurs above cropland and on rough land near cropland, but in most cases villages are separated from the cropland (Cook, 1994). The scatteredness of settlements, particularly in the montainous regions of the country, has made provision of infrastructure services very expensive and almost impossible.

This section becomes pertinent in that, discussions on resettlement and compensation at Makhoakhoeng makes reference to some of these issues as shall be seen in Chapter Six.

5.7.3 LHDA Compensation Policy

The specific objectives of the LHDA Compensation are to:

- satisfy the legal obligations

- facilitate and provide mechanisms of participation to the people and communities directly and indirectly affected by the LHWP

- ensure that compensation principles are applied uniformly throughout the project

- encompass those elements of development, environmental protection, health and social welfare as an integral part of the Environmental Action Plan (EAP)

The Lesotho Highlands Water Project provides for compensation, resettlement, and development initiatives which aim at ensuring that PAPs are enabled to at least maintain a standard of living not inferior to the one that existed at the time of the first disturbance (GoL, 1986b). Therefore, the LHDA's Compensation Policy aims at restoring the incomes and living standards of those people affected by the project, through addressing specific issues pertaining to losses incurred as detailed below. For instance regarding loss of arable land, the compensation policy identifies three alternatives for compensating such a loss, and these are:

a) Land for land

The policy does recognise that the rural communities depend for a large part of their income on arable land. Therefore, where land of equivalent size and quality is available, then such land should be made available as a means of compensation to those directly affected by the project activities. This aspect of policy, particularly as it relates to replacement fields, has not been adequately explored especially in the light of the fact that quite a substantial area of cultivable land is not in use (LHDA, 2002a).

b) Cash for land

Those who have lost small plots of land of less than 1000 m^2 or less, are given cash compensation calculated at M3.00 per m^2 over a 50-year period. However, as observed by Scudder (2005), the tendency is normally to undervalue the assets when compared with the previous market value.

c) Grain compensation

This type of compensation is given to those who lose more than 1000 m2. Therefore, for every hectare of arable land acquired by the project, there is a payment of 1000kg of grain divided as thus: 970kg of maize grain and 30kg of beans over a period of 50 years. This type of compensation is actually meant to replace the harvest lost to each individual household affected. According to Hoover (2001), grain compensation, from a nutritional

standpoint, is currently far from adequate. This grain compensation does not replicate the diversity of crops that the affected people produced on their fields. Basotho farmers grow a variety of crops such as wheat, beans, potatoes and sorghum on their fields. One other major problem is that the delivery of grain compensation is frequently not on time and also often of poor quality.

The compensation policy does not address issues of sharecropping, but focuses only on the rightful owner of land without necessarily looking into landuse arrangements.

d) Loss of fuel wood

Although the policy is not explicit on the issues pertaining to loss of fuel sources consisting mainly of bushes and trees, they are addressed through the Environmental Action Plan, which the rural development plan is part.

e) Compensation for gardens

The LHDA Compensation Policy defines a garden as a small cultivated area around the homestead and therefore part of the residential site or part of a field. However, LHDA officials responsible for compensation arbitrarily decided that on top of this definition, no piece of land measuring more than 400 m^2 would be classified as a garden and would receive the fixed arable land compensation rate (Hoover, 2001). Some of the affected people grew vegetables on plots of land larger than 400m^2, but were not compensated on garden rates, an issue that led to numerous complaints about this decision. This is because the LHDA Compensation Policy stated that:

i) Where LHDA acquires garden land, it shall ensure that the replacement residential site includes a cultivable area of equivalent size or equal in productive value to that of the previous garden. LHDA shall in any case provide a minimum of 300 square metres of garden land for each resettled household.

ii) If suitable, garden land at the new site cannot be found, LHDA shall investigate the feasibility of creating gardens by earth moving and landscaping. Wherever feasible and cost effective, gardens shall be created by those means.

iii) Only when these possibilities have been exhausted, and where uncompensated garden land remains, then LHDA shall offer compensation for loss of garden production in the form of an annual cash payment or lump sum.

f) Communal compensation

Communal compensation aims at compensating for the loss of communally owned assets such as grazing land on which some wild vegetables, important grasses and medicinal plants are found. Initially, fodder was delivered for loss of grazing land, but such deliveries ended in 1997. LHDA's primary concern in stopping this form of compensation was the rising costs of transport. The affected people were then promised compensation in the form of lump-sum payments as a condition that they develop viable development projects.

g) Replacement housing

Those who lose residential houses or any structure are provided with a replacement structure of equivalent size in terms of internal surface area. The affected people can however choose the type of design. Most of these replacement houses look like those shown in the photographs below.

Photo 5.3: Typical replacement Houses provided by LHDA

Photo by Mope Lepelesane, 1998

Photo 5.4 A closer view of some of the houses that people chose and constructed as replacement houses

Photo by Mope Lepelesane, 1998

There was also the Rural Development Plan that was intended to restore the disrupted regional economies affected by the LHWP activities. The plan included projects such as animal husbandry, range management, community forestry, village water supply and rural training, and the construction of schools. Some of the specific programmes were:

h) Water supply and sanitation

Through this programme, water and VIP toilets were to be provided to affected households within the project area, irrespective of whether they were directly affected or not.

i) Range management

In pursuance of the range management programme, Range Management Associations were to be formed and their task was to manage livestock and initiate fodder production programmes. The associations would then have exclusive grazing rights in certain fenced-off pastures.

j) Rural training centre

The intention with this programme was to equip the affected communities with the necessary skills to start their own enterprises by taking advantage of opportunities offered by the LHWP, which would assist with the reinstatement of livelihoods. This development concept was used in Phase IA. Regarding Phase IB, there was a slight modification in that LHDA decided to provide people with training through the existing institutions rather than to manage one, as was the case with Phase IA. So, it provided financial support for those

who opted to go for skills development in any institution of their choice. The skills offered included woodwork; sewing; masonry and poultry-raising. These would not only qualify them for employment opportunities at the project's construction sites, but they would also have access to credit so that they could start small businesses.

k) Infrastructure

LHDA has constructed roads and electrical powerlines, built some community halls, market places, communal latrines and village offices in several villages affected by the project as an indirect compensation to offset the social disruption caused by the influx of outsiders.

Although the policy does not address loss of natural resources, these are addressed in the natural resources plan, the EAP, through a forestry programme. Efforts were also made to protect culturally important sites and to relocate the deceased relatives of people affected by the project. Some of the considerations made regarding the LHWP provide for environmental rehabilitation, natural resources management and conservation. Efforts were further undertaken to conserve endangered species such as the Maloti minnow (*pseudobarbus quathlambae)*, the bearded vulture, and the spiral aloe. Some new protected areas were established, which included a new national park at *Ts'ehlenyane*, not far from Muela. There is also an important new cultural park at *Liphofung*, a 4.5 ha cultural site where there is a small cultural museum associated with a community conservation forum (CCF), near Muela. This cultural site comprises a historically and archaeologically important rock shelter with contemporary ethnoarchaeological materials, including the remains of facilities used for livestock-keeping by local herders. The project also affected rock art sites, a number of which were preserved.

As seen above, compensation has been both in kind (in the form of grains and pulses) and in cash. Houses, schools, and churches were replaced, and payments were even made also for losses of other assets such as brushwood, trees, thatching grass, and stones used for construction. In addition, communal compensation was paid in the form of cash to community co-operatives or local legal entities (LLEs). Compensation was provided to both upstream and downstream populations. Some of the factors considered in the preparation of the compensation package include but were not limited to:

- The proportion and quality of arable land plus other investment costs made on it;

- The proportion and quality of residual land available to the household and to the whole villages, where that land is, and whether it can sustain the households and the community;

- The extent to which physical residual arable land will be restricted;

- The potential for future sharecropping and renting in the existing location based on the extent to which land losses are incurred by the village as a whole;

- Whether land left behind by resettlees is or can be made available, or is accessible to households remaining behind but who nevertheless lose a significant proportion of their land;

- The village and its homestead;

- The arable land;

- Accessibility;

- The loss of winter grazing and other communal resources, and access to summer grazing;

- Access to services, mainly schools, shops and clinics.

When the resettlement programme and compensation were implemented, there were different units within the ESSG responsible for issues pertainintg to direct compensation, rural development, looking at reinstatement of livelihoods, provision of infrastructure services like water and sanitation, feeder roads, electricity and natural resources management.

5.7.4 Resettlement/relocation criteria

Criteria were developed to determine who would be eligible for resettlement. This enabled necessary planning required for a resettlement programme in terms of knowing how many people would be resettled, how much land is required for resettling those who have to be relocated and what are the costs associated with the resettlement programme in totality. Assessment of eligibility for involuntary resettlement required use of both quantitative and qualitative judgements particularly in respect of the marginally affected villages, in order to provide estimates of households qualifying for resettlement. Some of the criteria were:

- Residential houses situated below or within 100m of the full supply level were considered to constitute a hazard that could put the inhabitants at risk;

- Those who lost all of their arable land;

- Those who lost at least fifty per cent of their arable land;

- Those households whose access to important facilities and resources was severely impaired by the Mohale Reservoir; also, where access was not restored by the construction of roads and bridges, households were eligible for relocation;

- Those who were not directly affected, but because most of the community members were being relocated, were given an option to move out of the Mohale Basin.

People were given a choice of selecting where they would prefer to move for resettlement, and some chose to move out of the Mohale Basin. This scenario posed questions as to what happens to the arable land left behind, which in most cases would be used by relatives of resettlees or by individuals who encroached on the land without permission. Those affected households remaining in the Mohale Basin needed the replacement fields promised by the LHDA. Obviously this required the involvement of legal bodies at the local level who are mandated to deal with issues of land allocation. Nonetheless, the households resettled at Makhoakhoeng originally came from Molika-Liko, where they had to move in order to facilitate impoundment of the Mohale Reservoir. More details regarding their move and how they perceive their resettlement are provided in Chapter Six.

CHAPTER SIX

RESULTS AND DISCUSSIONS

6.1 Introduction

An empirical survey was conducted to determine the perceptions of those households who were resettled at Makhoakhoeng, through the LHWP resettlement programme. The resettled households originally came from Molika-Liko, about 120kms of distance from their new location. They had to be moved in order to make way for the construction of the LHWP, Phase IB. This chapter interrogates resettlees' perception of the resettlement programme at Makhoakhoeng. This interrogation, as mentioned in paragraph 1.3 (Chapter One), was necessary in respect of human dignity which demands ascertaining the extent to which the resettlees are satisfied with the whole resettlement programme - especially after the completion of the physical relocation and after compensation payments have been effected. The resettled households had previously lived in a typical traditional village similar to the one depicted in Photo 6.1. Yet, the new location does not have the same traditional outlook. Hence the importance of finding out how the resettled households feel about these changes cannot be overemphasised.

Photo 6.1: Typical traditional settlement in Lesotho

Photo by Mampho Molaoa, 2004

As mentioned in paragraph 5.7.2 (Chapter Five), the traditional settlement pattern consists of only a few families - scattered all over the countryside where Basotho live together as extended family in a kraal comprising 2 or 3 huts on average. As shown in Photo 6.1, the traditional settlement pattern is such that the village is located on the spurs above and on rough land near cropland, but it is separated from the cropland. Recently there have been instances of encroachment on the arable land. But, as discussed in paragraph 6.5 of this chapter, the resettlement of people from Molika-Liko has resulted in changes in the settlement patterns in that they now live in an urban area where there is not much arable land available due to population pressure.

Before discussing the findings, background information is provided on the LHWP resettlement programme at Makhoakhoeng in order to contextualise the views of the respondents.

6.2 Background information

The households interviewed were those who were resettled at Makhoakhoeng, located in the south-eastern part of the Maseru Municipal area. As mentioned earlier, the resettlees originally came from Molika-Liko located in the mountain ranges of Lesotho. The distance between the two areas is approximately 120km. These households are amongst those who had to be moved in order to make way for the construction of the Mohale Dam and its

associated infrastructure. It is important to mention here that it was the first time that the implementing agency (LHDA) undertook a resettlement programme other than the relocation of households in Phase IA of the LHWP. In Phase IA, households were simply moved short distances away from the critical zone into safety locations, but still remaining within the jurisdiction of their chief and still having access to almost all of their resources, other than those that were covered by water. As a result, expert assistance through consultants was required to assist with the whole Phase IB resettlement programme. Hence the resettlement programme was designed by the consultants who were engaged under LHDA Contract 1012[67] (Makhetha, 2006).

Upon completion of the planning phase of the resettlement programme, there was a variation order to this contract whereby the same consultants were given additional responsibility of actually implementing the resettlement programme, though under the supervision of LHDA. It is important to mention that when the resettlement programme was being planned, it was during the time when LHDA had changed its *modus operandi*. Field operation teams (FOTs) had just been established at all the project sites, whereas LHDA operations had previously been highly centralised. Through these FOTs, professional, technical and support staff were transferred from the headquarters to work in the project sites with the sole purpose of trying to improve the efficiency and effectiveness of the LHDA (Sefeane, 2006). As a result, the consultants who were engaged by the LHDA to deal with resettlement issues found on site a multidisciplinary team comprising engineers, environmentalists and social scientists employed as compensation officers to work with them. This multidisciplinary team in Mohale for instance, became known as the compensation and resettlement task team (CRTT) who worked closely with the consultants.

Obviously the rationale for setting up CRTT was to ensure that there would be a multidisciplinary team approach in the resettlement programme. Whether this was eventually achieved is another issue. Nevertheless, Phakisi (2006) mentioned that the CRTT provided the affected households with the compensation options in terms of their entitlement, resettlement options, and the time in which they would be expected to move to the replacement sites. The resettlement of these affected households was done in stages, for instance, those who were resettled at Makhoakhoeng were resettled under Stage One of the three stages, where the following criteria applied:

[67] Contract 1012 was the contract between the resettlement consultants and the LHDA on the planning and implementation of the LHWP resettlement programme for Phase IB.

- Those households whose property is wholly/ partly inundated or is located below the reservoir demarcation line, showing the full supply level at 100 metres of the reservoir;

- Those households who were dangerously situated in a position relative to the reservoir or associated infrastructure; and

- Those households who were severely affected by the construction work(s) such as the dam (LHDA, 1997d).

The setion below provides a demographic profile of the respondents.

6.3 Demographic profile of the respondents at Makhoakhoeng

As mentioned in Chapter One, the study targeted all the heads of the households because Lesotho is a patriarchial society where headship within households rests with men who as a result, control most of the valuable resources like land belonging to the family. However, there are cases where women are *de facto* household heads because their husbands are either deceased or absent for various reasons (Ntlafalang Consultants, 2002a). It therefore follows that whenever compensation is paid in respect of household assets acquired by a development project like the LHWP such payments are made to the heads of households, who usually are men. How such compensation is used then becomes the prerogative of the men. Although the study targeted to interview the heads of the households and such appointments made with the heads of households, but if they were not present on the day of the interview, the next senior person present at home was interviewed.

Despite the intention to interview all the heads of the households, it is important to mention here that out of the 23 households who were resettled at Makhoakhoeng, 6 rented out their property and therefore they do not reside in the community. They were thus not included in the sample. All of the remaining 17 households at Makhoakhoeng were reached through the study. In terms of who the interviews were conducted with, 47% (n=8) were the heads of households, whilst 29% (n=5) were their spouses. The remaining 24% (n=4) of the interviews were conducted with children[68] who were found at home on the day of the interview.

[68] The category of children in this study also includes those chidren who have inherited the property or are caretakers of the property while their parents are still residing in the mountain areas.

Regarding the gender distribution of the respondents, the findings revealed that 59% (n=10) were males, while 41% (n=7) were females. Although most of the respondents were men, in cases where women or a girl child had to respond, it was interesting to observe that, during the interviews, they did not feel comfortable to respond to the questions without the approval of the head of the household, who in most cases was a male. This also applied in those cases where the parents had died and a male child had assumed headship of such a household. His female sibling(s) did not feel too comfortable to respond to the questions without his consent. So the research assistants would either wait or make another appointment for the interviews.

6.4 Participation in the decision-making process

The respondents were asked to state the first time they had heard that they were going to be relocated from Molika-Liko. As per Figure 6.1 below, the majority, 70% (n=12) said they first heard between 1990 and 1995, while 18% (n=3) heard between 1996-1997 which was just about a year or two before the actual physical relocation in 1998. Only 12% (n=2) purported not to remember. Obviously, the 18% who had heard between 1996 and 1997 had had less time to prepare for resettlement. The issue of delay in knowing about the possibility of resettlement can be attributed to the application of the criteria discussed earlier in this chapter that the eligibility for resettlement of those households found to be below the full supply level or located too close to the full supply level of the reservoir[69] became immediately obvious after the demarcation of the reservoir. But eligibility for resettlement based on the criteria of either being dangerously located or severely affected by the construction, definitely posed some challenges in that more time was required to identify those who would be affected. As such, delays to inform some of the affected households about the possibility of their relocation were inevitable.

[69] 'Dangerously located' were those households that were found to be within 100m from the full supply level of the reservoir.

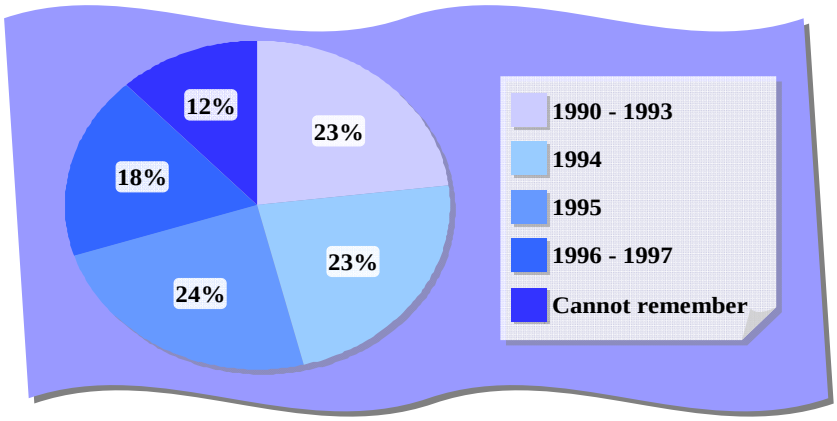


Figure 6.1: The first time the respondents heard about their relocation

According to Makhetha (2006), it was only after decisions had been taken regarding the location of the dam and its associated infrastructure that the LHDA informed those whose property was going to be affected that they would be moved. The fact that decisions were actually taken before broader public participation typifies worldwide experience where the environmental and social issues of concern take a back seat while engineering decisions take precedence (see paragraph 2.2.1, Chapter Two). This also contradicts a number of international instruments like Principle 22 of Agenda 21, which provides a broad framework for sustainable development (see paragraph 4.5, Chapter Four), the Declaration on the Right to Development (see paragraph 4.4.4), and the San Francisco Declaration (see Appendix F; paragraph 4.2.2, Chapter Four). Instruments such as the ones just mentioned recognise the importance of the participation of people affected by development in the decision-making processes right from the pre-feasibility stage of the project; and this was not the case with the Mohale Dam. The assessment of the options for locating the dam and the eventual site selection did not incorporate the views of the public, particularly those who were likely to be affected until the verdict was passed that they were going to move, which was after conducting the detailed studies (Sefeane, 2006). It is important to mention here that the households affected by the construction of the Mohale Dam were resettled at different places like Ha Makotoko, Nazaretha, Ha Thetsane, Thuathe, Ha Makhalanyane and Makhoakhoeng. This relocation through being involuntarily resettled has resulted in the separation of extended family members, where some of the respondents said: *'Karohano le ba leloko la rona e re amme a bohloko'* (Separation from kinsmen has affected us in the most painful manner).

The above sentiment is in line with the survey results, where 64% (n=11) of the respondents said they were unhappy with the news that they would have to move, but had not been able to do anything about it. Further elaborating, they said they had been told that

it was a government decision to construct the dam and that they would have to make way for it to be constructed. It is important here to be mindful of the fact that the decision to proceed with the LWHP was taken during the period of the military rule in 1986. Planning of the LHWP, Phase IB was done in the mid-1990s when Lesotho had just had a democratic government after three decades of non-democratic governance. Therefore people had obviously got used to accepting instructions from 'higher above'. Only 12% (n=2) said they had been happy when they were told that they were to be moved. A further 12% (n=2) of the respondents said '*Re ne re sa lumele'* (We were in denial) and another 12% (n=2) of the respondents felt a sense of uncertainty as they did not have a clue of what the future held for them *'Re ne re sa tsebe hore na bokamoso bo re tšoaretse eng'* (We did not know what the future held for us). The above responses are reflected in Figure 6.2 below.

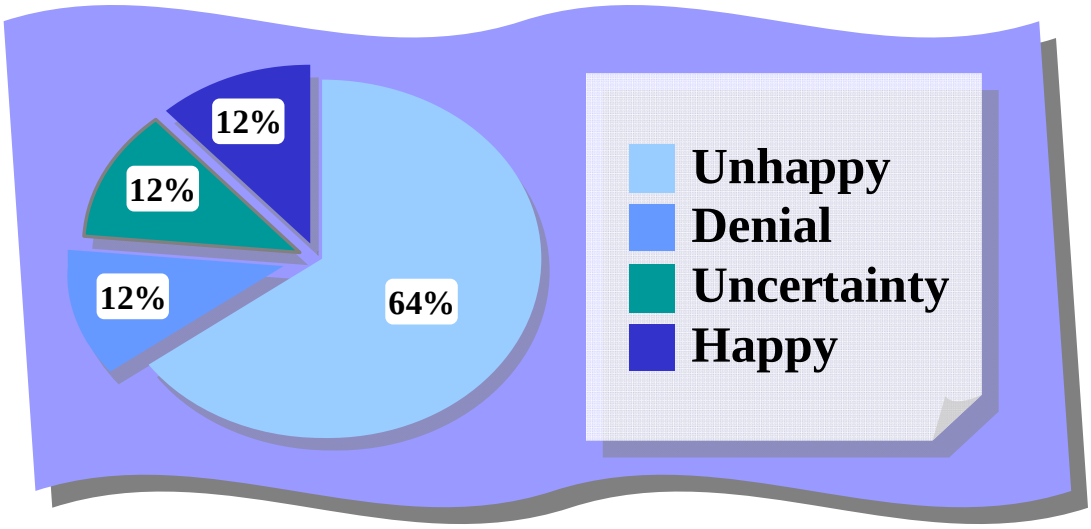


Figure 6.2: Reaction(s) of households when they first heard that they were going to move

Those respondents who said they were unhappy about the news that they were going to be resettled elsewhere, explained it like this: '*Re ne re sa khotsofala, hoba re sa tsebe mofuta oa bophelo bo re ilo bo phela le malapa a rona, moo mo re isoang teng'* (We were dissatisfied because we were uncertain about the type of life our families were going to lead in the new location). In terms of how those who had been unhappy with relocation dealt with the situation at that time, 60% (n=9) of the respondents said they sought counselling and medical services because they felt unwell and stressed after having been told that they were going to be moved. On this issue, some of the respondents said: '*Re ne re sa kholoe, ra ba ra leka ho hana, feela ra fumana re tlameha ho falla'* (For a while we were in a state of denial and tried to resist the relocation but eventually we had to move).

This is characteristic of what Scudder (2005) called multi-dimensional stress, where one of the stages entails people suffering from psychological stress after hearing that they are going to be moved in order to make way for the dam construction. The remaining 40% (n=6) said they had done nothing as they felt helpless.

As earlier mentioned, when people participate in the decisions regarding the construction of dams, they become part of the option selection and are better able to deal with the consequences of their choices. Therefore, issues of people's future being adversely affected may not even arise at all. However, in the case of Molika-Liko, since the resettled people did not participate in the selection of dam location, the results were devastating to some of the households where 41% (n=7) of the respondents said they had to put on hold their plans such as extending their houses, which was obviously an opportunity lost. But 24% (n=4) of the respondents said they had not been aware of the family plans as they were just children at the time; and the other 35 % (n=6) said that none of their plans had been affected. It is important to mention that even though there was no participation regarding the assessment of the options for site selection for the Mohale Dam, this was partly due to a lack of a regulatory or policy framework in the country at that time.

However, participation of the affected households became evident when dealing with the consequences of the selected dam site for the Mohale Dam. Affected households participated in the selection of replacement sites and house type in order to facilitate their physical resettlement. The details of their participation are discussed in the ensuing paragraphs.

6.4.1 Selection of replacement sites

Once the decisions were made on the overall programme for constructing the Mohale Dam and the date of inundation, the affected households were informed of the resettlement programme; also when to expect to be moved so that the engineering works could proceed without any hindrances (Sello, 2006). Since the LHDA was responsible for the planning and implementation of the resettlement programme, it had to ensure that the replacement sites were available on time for constructing the replacement houses. During the focus group discussions, the affected people said *'lipitso'* (public gatherings) were held to inform the affected households that they were going to be resettled and that they would be given the opportunity *'monyetla'* to select areas that they would prefer for resettlement. For this LHDA said it would provide transport, which indeed it did. LHDA identified areas that were not occupied and provided transport for the affected households to see these areas so that they can make informed decisions. The process of securing the replacement sites thus

entailed showing the affected people areas to which they could possibly relocate, particularly those who had not indicated their preferences. One of the areas where the affected people were shown sites was Matala Phase II, known as Makhoakhoeng (Sefeane, 2006).

The sites at Matala Phase II initially were fields belonging to the residents of Makhoakhoeng (Sefeane, 2006). The Lesotho Housing and Land Development Corporation (LHLDC) bought the land from field owners and converted the land into residential plots and sold them to the willing buyer, which in this case was the LHDA (Pholo, 2006).

The LHLDC is legally mandated to assist with meeting the shelter needs of Basotho, by providing a variety of housing sites, home ownership and rental accommodation options for all income groups (Pholo, 2006). In providing their services, the Corporation, where applicable, provides compensation to property owners. The rate used by LHLDC to purchase the land is thus based on valuations provided by the government valuation section under the Ministry of Local Government in the Department of Lands, Survey and Physical Planning. For those who preferred the sites at Makhoakhoeng, LHDA purchased sites from LHLDC (Mateka, 2006). '*Re filoe monyetla oa ho khetha libaka tsa phalliso*' (We were given an opportunity to choose the preferred replacement sites).

Similarly, Sefeane (2006) outlined the steps that were followed in carrying the resettlement programme as follows:

- **Step 1:** Soliciting the views of the affected households on their relocation preferences, which was done. During the focus group discussions, the resettlees said they had been transported to the different areas, like Nazaretha, Thuathe and others as mentioned earlier so that they could make informed decisions in terms of site selection. After their site selection, consultations were made with the authorities responsible for land allocation as discussed in step 2.

- **Step 2:** Consultations were made with the Commissioner of Lands, the Principal Chiefs, Local Chiefs and headmen in the receiving areas, to discuss the availability of land and the mechanisms for transferring land rights in order to ensure compliance with the law. In the case of Makhoakhoeng however - as shall be seen in the later sections of the chapter - because of inadequate consultations

with some of the stakeholders like the host community, this contributed to conflicts between the resettlees and the host community.

- **Step 3:** Field visits were undertaken to each of the main potential receiving areas by the representatives of the affected communities, the traditional authorities and the consultants in order to facilitate physical resettlement through ensuring that those affected could make informed decisions.

- **Step 4:** After choices had been made by those who had to be resettled in respect of indicating their replacement site preferences, the agreements were then drawn up between the affected communities, host communities, traditional authorities and LHDA on the preferred sites. Here also there was a slight deviation in that since the sites were bought from the LHLDC, the host communities were not signatories to the agreements because they had given up their legal title to land by selling it to LHLDC (Mateka, 2006).

- **Step 5:** Subsequently, detailed site investigations were done to inform the resettlement package. According to Sello (2006), this was in terms of informing the physical relocation of the affected households, i.e. the investigations were mainly done to address the tangible aspects of resettlement, in terms of how the LHDA was going to address issues of water supply, electricity, roads and so forth. However, issues of compensation for natural resources were not as well addressed when developing the resettlement package. This is unfortunate because such resources contributed to the daily sustenance of the affected households. This factor is discussed in detail in paragraph 6.6.6.

- **Step 6:** Lastly, based on the resettlement policy and the information gathered in Step 5, a resettlement programme was next developed for the selected resettlement sites. As in Step 5, the programme mostly dealt with issues of physical relocation, indicating when the construction of houses would be completed, and the date of the move from Molika-Liko to Makhoakhoeng. But plans regarding, for instance, reinstatement of livelihoods were not thoroughly captured in terms of how people would start generating their own income at Makhoakhoeng.

Although the affected people were not engaged in the selection of the Mohale Dam site, they were however engaged at the stage of managing the resettlement programme. In

managing the resettlement programme, the affected households participated in the selection of their preferred replacement sites. The LHDA was thus responsible for the logistical arrangements like providing the affected households with transport to visit areas that were unoccupied so that they could make informed decisions in terms of selecting their preferred replacement sites. Furthermore, the affected households also participated in the selection of the type of replacement house(s) they would prefer. This is discussed in the next section.

6.4.2 Selection of housing type

According to Sello (2006), LHDA produced six prototype house designs from which the affected households selected their preferred house type. In instances where households had separate house units, the household head would indicate whether they would prefer their house units to be built separately as in the old site or built as one house with a number of rooms. The LHDA Resettlement Policy (LHDA, 1997d) requires that whatever happens, the internal surface floor area should at least be equal to the house inhabited before relocation.

It is important to mention that in selecting the house type, the affected households also indicated their preferred building material in terms of whether they wanted stone houses, concrete bricks, thatch roof or corrugated iron sheets. After the selection of the house type, the affected people were asked to select an area within the new replacement site where the house was to be erected (Sello, 2006). Thereafter, the implementing agency proceeded with the construction of the houses.

6.4.3 Participation forums

Three main categories of participants can be identified in the construction of large dams (including Mohale Dam). These are: (i) the planners for instance, from government who are responsible for preparing and carrying out development work (for example, the implementing agency like the LHDA, consultants and contractors); (ii) individual households directly affected by the construction of large dams as has been with the case of the residents of Molika-Liko; and (iii) intermediaries like the NGOs. These groups are also referred to as interested and affected parties (I&APs).

Various methods and approaches can be used to facilitate participation of the interested and affected parties regarding decisions on how to meet the much - needed water supply or energy needs. But, unfortunately, as discussed in paragraphs 2.2 and 2.3, decisions to construct large dams are usually influenced by a number of factors, including political

considerations that normally take precedence over other factors, as was the case with the Aswan Dam in Egypt. This resulted in the failure to engage interested and affected parties to participate effectively in the selection of the best option for meeting the much - needed water supply needs, leaving the affected local communities to deal with the adverse consequences of having to be involuntarily resettled owing to decisions taken elsewhere.

This is in line with the worldwide experience, which shows that people affected by the construction of large dams usually feel marginalised because of not being involved in the decision-making processes when dams are planned and implemented (see to 3.5.3). The interviewees were asked whether there were forums for public participation of the aforementioned interested and affected parties. The responses are reflected in Figure 6.3 below, where 64% (n=11) of the respondents said there were public participation forums that were specifically established to deal with issues of resettlement during the planning and implementation stages of the programme. The affected households said they had community liaison committees (CLCs), the membership of which comprised representatives from the affected households, local authorities and LHDA staff. Another 18% (n=3) said they were not aware of such forums. The remaining 18% (n=3) said there were no such forums and that they were simply going by the decision of the implementing agency, the LHDA.

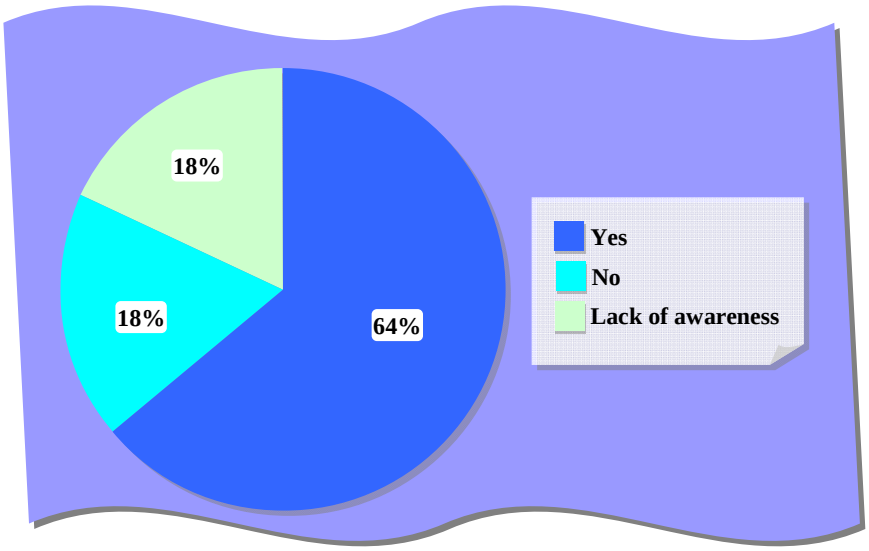


Figure 6.3: Views of the respondents on whether there were public participation forums

As already mentioned, the CLCs dealt with issues that pertained to the facilitation of physical relocation of people without necessarily delving into addressing issues of specific subgroups like, women, the elderly and children. This obviously typifies worldwide

practice where people affected by the construction of large dams are treated as an undifferentiated group of people without recognition of the special needs of each of the different subgroups (cf. 4.4.5, Chapter Four).

Nevertheless, the respondents were asked to state whether they had an opportunity to participate in those forums. The results as reflected in Table 6.1 show 70% (n=7) males and 29% (n=2) females as having said that they had participated in such forums, whereas one respondent - who was male - and 57% (n=4) of the females indicated that they had not participated. A further two of the male respondents and one of the female respondents said they did not know, maybe because they had been minors at the time.

Table 6.1: Participation of the respondents by gender

Gender	Yes		No		Do not know	
	%	(n)	%	(n)	%	(n)
Males	70	7	10	1	20	2
Females	29	2	57	4	14	1

Table 6.1 above further shows that most of the respondents who said they had participated in these forums were males. The women said that their participation in these forums had been conditional to the availability of their husbands. If their husbands were not available because of being away at work or for any other reason, they would go as representatives of their husbands who were the heads of households and not to advance their views as women. Congruent with earlier discussions (paragraph 4.4.5, Chapter Four), women as a subgroup of the resettled community, continue to be excluded from the broader development agenda in terms of decision-making processes. This gender disparity is not only manifest in the public participation processes but is present in almost all spheres of life in Lesotho.

In terms of trying to determine the satisfaction of the respondents regarding their involvement in the public participation forums, Table 6.2 reveals that 50% (n=5) and 29% (n=2) of the males and females respectively were generally satisfied, while 30% (n=3) of the males and 57% (n=4) of the females were dissatisfied. Another 20% (n=2) of the males and one female (14%) said they did not know because issues such as this one had been handled by their parents at that time.

Table 6.2: Perceptions of the respondents regarding their participation

Gender	Satisfied		Dissatisfied		Do not know	
	%	(n)	%	(n)	%	(n)
Males	50	5	30	3	20	2
Females	29	2	57	4	14	1

The study findings reveal that there are more women who are dissatisfied than satisfied with their participation in these forums. This could partly be attributed to some of the issues that were raised during focus group discussions, where the women mentioned that, as part of their culture, they had to have their husbands' consent not only to participate in those forums but also on what issues to talk about. Obviously this means that some of the decisions that were taken did not necessarily reflect their views and aspirations as women in terms of their security and daily living. Nevertheless, they said, '*Re tlameha ho hlompha liqeto tsa banna ba rona*' (Customarily we have to respect our husbands' views). Dissatisfaction regarding participation in these forums was further compounded by the fact that LHDA as the implementing agency used these forums for communicating decisions taken by the project authorities - with little attention being paid to the aspirations of the affected communities.

On the issue of participation forums, Makhetha (2006) indicated that during the planning and implementation of this specific resettlement programme, there were CLCs. Membership of these CLCs comprised representatives of the affected communities, local authorities and the technical team from the LHDA operating on site. These CLCs were useful in that they provided a platform for exchange of information between all parties concerned; and this information was used to facilitate the implementation of the resettlement programme. CLCs met on monthly basis. Although the decision to proceed with the construction of LHWP was taken by the 'powers that be' and although the political environment at the time did not permit participatory decision making, the implementing agency did try to consult with the affected households on issues of resettlement through providing them with information (Phakisi, 2006). In terms of future resettlement programmes, the affected households highlighted the importance of having forums that deal with issues of specific subgroups like women, children and the elderly because different groups would have different issues that might require different mitigation measures.

However, experience has shown that reinstatement of means of livelihoods, especially in cases of limited participation by those affected by dam projects, usually poses a major challenge in most resettlement programmes, particularly because the means of sustaining livelihoods would also have changed. These issues are discussed below.

6.5 Household income

This section deals with information on the main sources of income that sustain the resettled households at Makhoakhoeng in terms of the amount of income that the households receive and how frequently such income is received. This information is then compared with the main sources of income that sustained livelihoods in Molika-Liko prior to relocation.

6.5.1 Sources of income

Respondents were asked to state their main source of income while they were still living in Molika-Liko and after being resettled at Makhoakhoeng. Fifty nine percent (59%) of the respondents (n=10) said that in Molika-Liko, they depended mostly on agriculture. This was then followed by 24% (n=4) who reported their main source of income as coming from the sale of dagga. Two of the respondents said that their income came from salaries they earned by working in the South African mines; and the last respondent said that their household relied on income that was earned by selling handicrafts (Figure 6.4). This is in line with results of the LHDA census (LHDA, 1993) where most of the people within the Mohale Basin depended on farming as the main source of income.

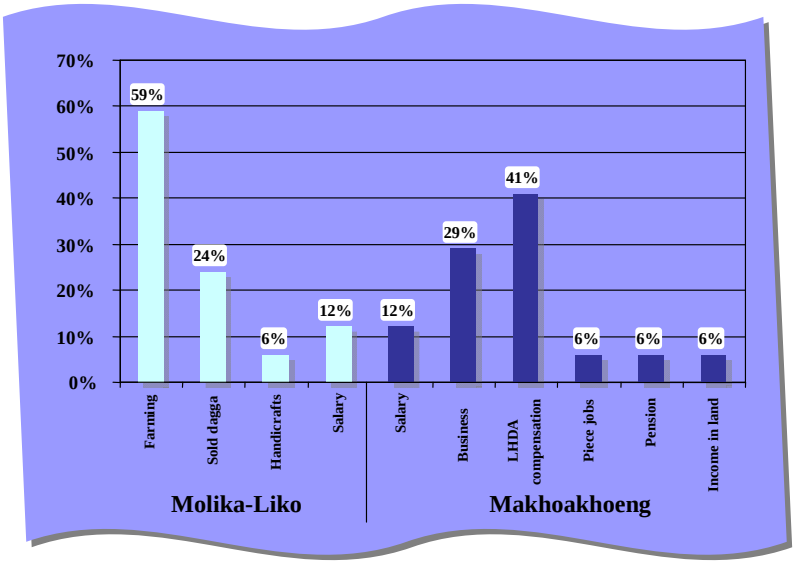


Figure 6.4: Main source of income in Molika-Liko and at Makhoakhoeng

Figure 6.4 above also shows 41% (n=7) of the respondents as having said that their main source of income at Makhoakhoeng was the compensation money paid either on an annual basis or as a one-off lump-sum payment that they received from the LHDA. As discussed in paragraph 3.4.1 (Chapter Three), compensation payments in most cases do not become an appropriate and viable substitute for lost income or reinstatement of livelihoods. Furthermore, Scudder (2005) has shown that compensation paid over long periods tends to encourage a dependency syndrome which is counter-productive. Thus, it is important to put in place much more sustainable means of livelihoods through income-generation projects where people can actually use their own initiative and intellect while using compensation payments as safety nets for ensuring that, at the start of projects, people's livelihoods do not drop.

Compensation money as a source of income is followed by 29% (n=5) of the respondents reporting that their main source of income as coming from their own businesses they started after resettlement, like owning taxis, tailoring, hair salon, renting out rooms, etc. Two of the respondents said that salary was their main source of income and was earned through being employed either in South Africa or elsewhere in Lesotho. Income for one household came through the head being employed on a part-time basis (piece jobs). Another respondent's main source of income was a monthly pension. The last respondent reported the household's main income as being cash in kind received from friends and relatives.

Based on the above findings, most of the respondents at Makhoakhoeng rely on LHDA compensation as their main source of income. This means that there is a high level of dependency on LHDA for income. This could be fine in the short to medium term while other more sustainable means of reinstating livelihoods are being sought, which does not seem to be the case with the resettlees at Makhoakhoeng.

Another interesting observation is that in comparing the main sources of income between Molika-Liko and Makhoakhoeng, the former appears to be more reliant on agricultural farming as the main source of income. This is mostly due to the fact that, in Molika-Liko, arable land was available which made agricultural production possible, whereas at Makhoakhoeng, there seems to be a heavier reliance on cash. This may be a result of the fact that, Makhoakhoeng is located in an urban area, where cash plays an important role in the economy. Molika-Liko, which is in the rural areas where although arable land is available, production is however more for subsistence. Yet, in Molika-Liko, it is quite evident that there were a substantial number of households, whose main sources of income

had been the sale of dagga, and that they thus dealt with significant amounts of cash. This change in the main source of income from agricultural production to cash has made the lives of resettlees difficult at Makhoakhoeng where, for one to secure a job, this requires one to have competitive skills - which they do not have. Other menial jobs are also difficult to find.

6.5.2 Average income received

Based on the information collected through the interviews, 68% (n=11) of the households at Makhoakhoeng earn income of up to M1 499, while 16% (n=3) earn from M1 500 to M2 999. Another 11% (n=2) of the respondents reported earning between M3 000-M5 999 and the remaining 5% (n=1) earn M6 000 (Figure 6.5 below).

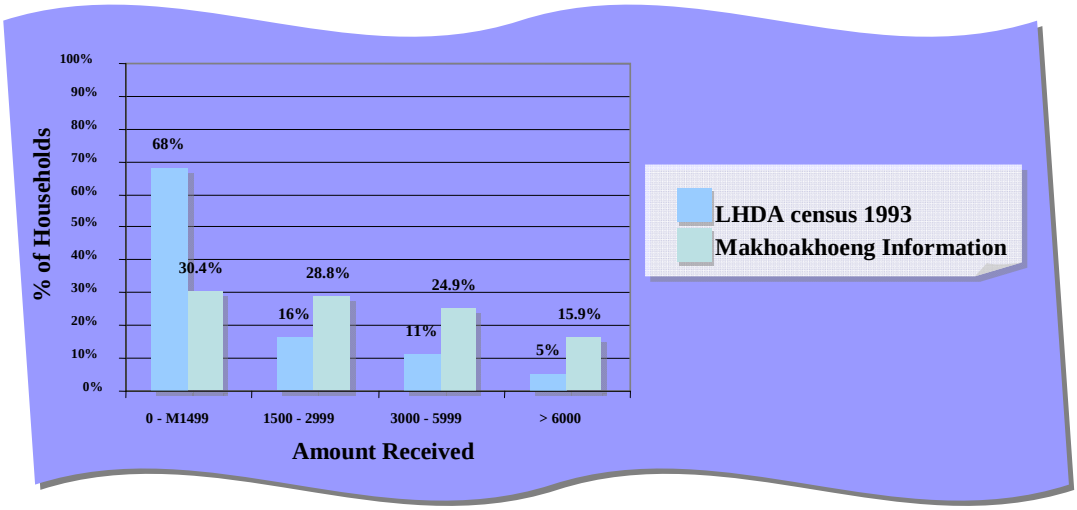


Figure 6.5: Average income received at Makhoakhoeng

The Mohale[70] census data (LHDA, 1993), as shown in Figure 6.5, portrays similar trends. About 30% of the respondents said that they received up to M1 499 as income earned. This may imply that prior to resettlement there had been a more equal distribution of income when compared with income earned at Makhoakhoeng, where more than 84% of the resettled households earned less than M3 960[71] while they were still living in Molika-Liko (LHDA, 1993). This implies that any household earning an income below M3 960 is categorised as vulnerable and has to receive a top-up payment for a period of ten years (Ramoeletsi, 2007). At Makhoakhoeng however, the proportion of households earning less

[70] As mentioned in the last section of Chapter Five, Molika-Liko was part of the Mohale catchment area.

[71] M3 960 is a minimum threshold below which the resettled households as determined by LHDA should not earn.

than M3 960 has decreased to about 60%, which could mean that there have been some improvements in the average income earned by some of the resettled households.

The issue of minimum threshold is based on the LHDA policy that, as an organisation, they have to ensure that those households categorised as vulnerable should receive special support from the organisation; and, in order to determine these households, LHDA undertook the following:

i) It established a minimum threshold of household income as M3 960 in 1997 below which no vulnerable household's income would be allowed to fall. This amount would be annually adjusted, based on the inflation rate. In 2006, the recipients received approximately M8 000 (Ramoeletsi, 2007). LHDA recommended that in the case of household incomes below the determined threshold, the difference would be paid to such a household by the LHDA for a maximum period of 10 years. The top-up payment would be the difference between the threshold amount and the household income.

ii) This ensured that the vulnerable households would receive individual attention from the LHDA's staff to ensure that they were enabled to retain and, where possible, improve upon the standard of living they had enjoyed before the project affected them.

Although resettlement has brought improvements in terms of the average income earned, there is still a significant number of households that are categorised as vulnerable and therefore still require the top-up payment from LHDA. Since the main source of income has changed from agricultural production to cash, it was necessary to ascertain what assets the resettled households own - an issue that is discussed below.

6.5.3 Changes in assets owned

Assets owned are good proxy indicators of the income status of households. Hence the respondents were asked to state the assets they own at Makhoakhoeng and this information was compared with that of what they had owned in Molika-Liko. As depicted in Table 6.3, appliances that are usually indicative of the quality of life, like television sets and telephones, are owned by 65% (n=11) of the households, while no households had previously had access to such items. Another 18 % (n=3) said they now own cars which they did not possess in Molika-Liko. This could be because the availability of LHDA

compensation money had made it possible for these households to purchase some of these assets, thereby, assisting them to fit into the urban environment.

Table 6.3: Assets owned by households by area

Equipment	Makhoakhoeng		Molika-Liko	
	%	(n)	%	(n)
Radio	88%	15	82%	14
Television	65%	11	0	0
Telephone	65%	11	0	0
Motor car	18%	3	0	0
Refrigerator	41%	7	6%	1
Bicycle	6%	1	6%	1
Sewing machine	29%	5	24%	4
Business[72]	59%	10	29%	5

Table 6.3 also reflects an increase in the percentage of items that were owned in Molika-Liko where for instance, only one respondent had had a refrigerator, but at Makhoakhoeng, the number has increased to 7 (41%). Again the percentage of those owning businesses doubled at Makhoakhoeng when compared with the percentage of those who had owned businesses in Molika-Liko.

One can thus conclude that, after resettlement at Makhoakhoeng, the resettled households had been able to acquire assets which otherwise they had not had, including luxury goods like television sets and motor vehicles. This could have been made possible by the availability of the compensation money. As discussed below, when it comes to agricultural equipment and ownership of animals at Makhoakhoeng *versus* Molika-Liko, the situation is reversed, as reflected in Table 6.4.

[72] Business enterprises are discussed in more detail in the following paragraphs.

Table 6.4: Agricultural assets by area

Agricultural equipment & products	Makhoakhoeng		Molika-Liko	
	%	(n)	%	(n)
Scotch cart	0	0	18	3
Fields	18	3	82	14
Cattle	18	3	76	13
Sheep	12	2	59	10
Goats	12	2	59	10
Poultry	0	0	76	13
Horse	0	0	71	12
Donkeys	0	0	59	10
Yokes / chains	12	2	59	10
Hoes	12	2	65	11
Arable land	76	13	82	14

Table 6.4 shows an inverse situation, with more households in Molika-Liko having owned agricultural equipment prior to resettlement than they now have at Makhoakhoeng. For instance, 65% (n=11) of the households had hoes in Molika-Liko, while at Makhoakhoeng only 12% (n=2) now have hoes. This can be attributed to the fact that, most of the households relied on agricultural farming in Molika-Liko as a means of sustaining their livelihoods. On the question of whether the households who still own agricultural equipment derive any benefits from it, the respondents confirmed that the equipment was still being used in their home gardens at Makhoakhoeng.

Also, while living in Molika-Liko, more households had owned livestock than they now do at Makhoakhoeng; for instance, 76% (n=13) of the respondents said that they had owned cattle in Molika-Liko, while at Makhoakhoeng only 18% (n=3) own cattle. Some of the respondents, when probed on what had happened to their cattle, said they had sold them, or left them with relatives because they had been told that the law did not permit people to keep animals in the urban centres, so they could not continue to keep them. Regarding those who said they still own cattle, in responding to whether they derive benefits from their cattle, the affected households said that they do, although it was not the same because they now depend on other people for the safety of their livestock. However, they also mentioned that they had forfeited other benefits like access to cow dung that is used as free manure or fuel.

Regarding fields, Table 6.4 above shows that 82% (n=14) of the respondents said they owned fields in Molika-Liko; while 18% (n=3) at Makhoakhoeng admitted to owning fields and going back to Molika-Liko to work on their fields together with their relatives.

During harvest, they shared the produce with their relatives who would have assisted them to work on their fields, sometimes on a 50/50 basis. Those with fields grow the main staple food, which is maize. Those without fields said they left their fields to their relatives in Molika-Liko to use them. Some indicated that the fields were handed back to the local chief for reallocation, since they were now receiving compensation. Although most of the resettlees do not own fields at Makhoakhoeng, they nevertheless have vegetable gardens in their yards. One respondent said their household, through sharecropping, still continues with agricultural production in Molika-Liko in the area not affected by the dam construction. In terms of wild vegetables, however, they do not always have the same access as prior to resettlement, because they now reside far from their fields and range land, where they used to pick vegetables freely, as and when they required them. Obviously, with Makhoakhoeng being in the urban area, open land is scarce owing to population pressure, and many open areas are now being converted into residential sites. The replacement sites at Makhoakhoeng provide a typical example of this. Therefore, it is not always possible to find wild vegetables.

In terms of the households that own businesses, Table 6.3 shows 59% (n=10) of the respondents as having said that they now own businesses at Makhoakhoeng, while 29% (n=5) said they had owned businesses in Molika-Liko. The respondents were then asked to state the type of businesses they had owned in both locations. Their responses are reflected in Figure 6.6. Three of the respondents said that at Makhoakhoeng they now rent out rooms and another three said they sell beer, while two of the respondents said they own taxis. One respondent said she owns a hair salon and another one is a tailor. Regarding Molika-Liko, two of the respondents said they traded in dagga, while another respondent said their household owned a shop. Only one respondent said their household had engaged in the selling of handicrafts and another one said they had sold vegetables.

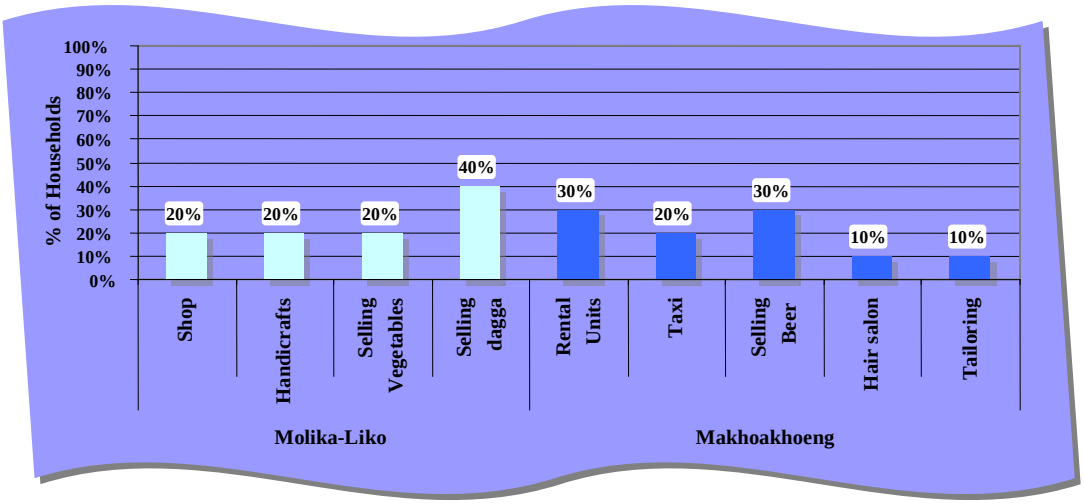


Figure 6.6: Types of businesses of households in Molika-Liko and at Makhoakhoeng

It is evident from Figure 6.6 that there are households who had had some experience regarding management of business while still living in Molika-Liko. Those who said they had owned businesses were then asked how they had raised capital to start their businesses in both Molika-Liko and at Makhoakhoeng. The results were as follows: 80% (n=4) said that in Molika-Liko they had used their own cash to start their business. Only one respondent said a loan had been used to start the business. Regarding Makhoakhoeng, 60% (n=6) said they had used LHDA compensation, while another 30% (n=3) of the respondents said they had used their own sources of cash as an initial capital to start their businesses. Only one respondent had used a loan to start the business (Figure 6.7).

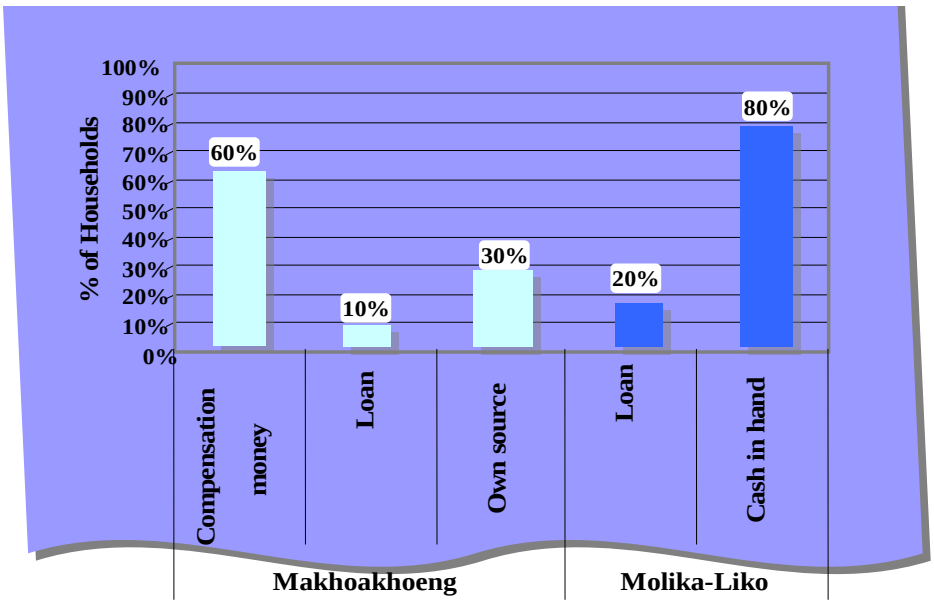


Figure 6.7: Sources of initial business capital

Those who had owned businesses both in Molika-Liko and at Makhoakhoeng were asked whether the businesses generated enough income to meet their household needs. Figure 6.8 depicts 40% (n=2) of the respondents from Molika-Liko and 60% (n=6) from Makhoakhoeng as having said that the income from their businesses was adequate to meet their household needs. Another 40% (n=2) of the respondents from Molika-Liko and 20% (n=2) from Makhoakhoeng said the income partially met their household needs, whilst 20% (n=1) from Molika-Liko and 20% (n=2) from Makhoakhoeng said the income earned from their businesses was inadequate to meet their household needs. These figures are reflected in Figure 6.8 below.

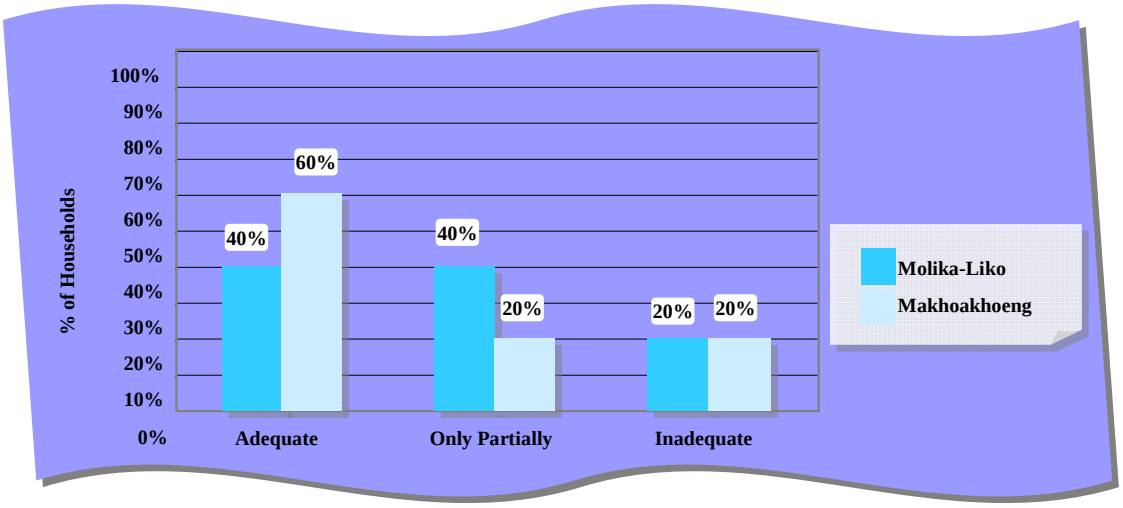


Figure 6.8: Views on the adequacy of the income earned from businesses to meet households' needs

Evidently, in terms of the assets owned, there has been a significant change, where prior to resettlement in Molika-Liko, most of the households had owned agricultural equipment and cattle. Obviously at Makhoakhoeng, the resettled households seem now to own luxurious assets like television sets, telephones and now more households have refrigerators, cars and businesses compared with what they had in Molika-Liko. However, when the respondents were asked how they felt about this change in assets owned, while they said they appreciate the fact that they now own assets which they did not have previously in Molika-Liko, some said: "we are lonely here" (*Re bolutu mona*). They said they miss their relatives and the support they had while they were living in Molika-Liko. A comparison of access to social services by the resettlees at Makhoakhoeng *versus* Molika-Liko is given in the section below.

6.6 Access to social services

Worldwide, experience has shown that in dealing with involuntary resettlement emanating from the construction of large dams, the tendency is to give prominence to the material aspects of resettlement (paragraph 3.5, Chapter Three). Nonetheless, it was necessary to find out whether there had been any change regarding access to social services such as health. Therefore, in this case, access to the social services discussed below, is used to assess whether the lives of those affected by resettlement had changed for the better or for the worse. In the process, the interviewees were asked questions pertaining to their access to social services both at Makhoakhoeng and in Molika-Liko.

6.6.1 Sources of water

Regarding sources of water at Makhoakhoeng, all the resettlees stated that they had their own water standpipes in their yards, which they used for all purposes, be it for drinking, cooking, bathing or washing clothes. Whilst in Molika-Liko, the respondents said that they had used different sources of water for different purposes; for instance, as indicated in Table 6.5 below, 82% (n=14) of the respondents said they had used water from a covered spring for drinking and cooking; and another 18% (n=3) said they had used water from an uncovered spring for the same purposes. But with regard to washing clothes, 18% (n=3) said they had used water from a covered spring, while 12% (n=2) said they had used water from uncovered springs, and 70% (n=12) said they had relied on the river. Seemingly, the river had been used exclusively for washing clothes. Similar observations were made by Hunting-Consult 4 Joint Venture (1995), namely that Mohale Basin was characterised by a lack or non-existence of water supply infrastructure, hence there was a total reliance on the springs and rivers. In terms of bathing, 82% (n=14) said they had relied on the water from the covered springs, whilst 18% (n=3) said they had used water from uncovered springs (see Table 6.5 below).

Table 6.5: Source of water by use in Molika-Liko prior to relocation in 1998

Source of water	Purpose					
	Drinking and cooking		Washing clothes		Bathing	
	%	(n)	%	(n)	%	(n)
Covered spring	82	14	18	3	82	14
Uncovered spring	18	3	12	2	18	3
River	0	0	70	12	0	0
Total	100	17	100	17	100	17

The interviewees were then asked how long it had taken them on foot to reach each source of water in Molika-Liko. Of the respondents, 94% (n=16) said it used to take them less than 30 minutes to reach all their water sources, whilst 6% (n=1) said it used to take between 1 -3 hours on foot to reach the nearest water source.

It thus seems that resettlement brought a definite improvement regarding access to safe drinking water at Makhoakhoeng. This reduced the risks of environmental health in the form of the spread of water-borne diseases, especially because some of the respondents said they used water from unprotected springs for drinking purposes in Molika-Liko. Now, at Makhoakhoeng, all the resettled households have standpipes in their yards, but they have to pay WASA for the units of water consumed. Yet, in Molika-Liko, although the water

was not very safe, it was free in that they did not have to pay any money for using it. After resettlement, the resettlees always have to find money to pay for water in the new location. In this way improved access to good water quality has come at a price, which means that a financial burden has been imposed on the resettlees.

6.6.2 Sanitary facilities

During the interviews, the researcher observed that all of the resettled households had VIP toilets in their yards. Resettlees said they were provided with the VIP toilets as part of their resettlement package irrespective of whether they had a toilet or not in Molika-Liko. When the respondents were asked whether they had had toilets in Molika-Liko, only one respondent reported to have had a pit latrine, while another one had a VIP toilet. As for the rest, 88% (n=15) had had no sanitary facilities, as reflected in Figure 6.9.

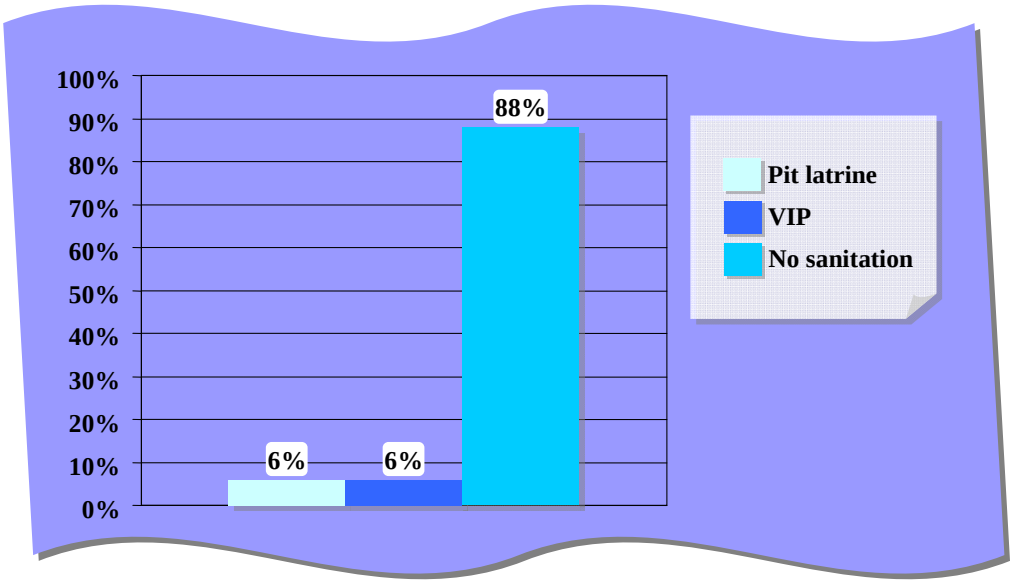


Figure 6.9: Type of sanitary facilities used by households in Molika-Liko

The fact that most of the respondents, 88% (15), had had no toilets, and their houses had been constructed on a higher elevation as shown in Photo 6.1, means that the human waste eventually ended up in a river system, thereby polluting water used for domestic purposes, as well as being used by animals. But with resettlement, since all of the households now have their own standpipe in their yards, this means there has been a major improvement in terms of access to safe water.

6.6.3 Sources of energy

Although the data shows that, in most cases, households use more than one energy source, the majority of the households at Makhoakhoeng, (88% / n=15) said they used

electricity as their main source of energy sourced from the urban centre, while 82% (n= 14) used gas sourced from a local shop. Another 53% (n=9) said that they used paraffin, while coal was least used by only one household. Both paraffin and coal were sourced from a local shop, as indicated in Table 6.6 below.

Table 6.6: Type of energy used by households at Makhoakhoeng by sources[73]

Energy type	% of HH	(n)	Source
Electricity	88	15	Urban centre
Gas	82	14	Local shop
Paraffin	53	9	Local shop
Coal	6	1	Local shop

When the respondents were asked how long it took them to reach each source at Makhoakhoeng, all of them, during the focus group discussions, said it takes about 10-15 minutes on foot to the nearest shop and between 1-3hours on foot to the nearest urban centre to source electricity, or 30 minutes using motor vehicles to buy electricity in the urban centre.

Regarding Molika-Liko, the respondents indicated that they had relied heavily on biomass as the main source of energy, as depicted in Table 6.7 below.

Table 6.7: Source of energy by use in Molika-Liko

Source of energy	Purpose							
	Cooking		Heating		Lighting		Entertainment	
	%	(n)	%	(n)	%	(n)	%	(n)
Paraffin	29	5	12	2	71	12	0	0
Cow dung	59	10	41	7	0	0	0	0
Firewood	71	12	71	12	18	3	0	0
Candles	0	0	0	0	41	7	0	0
Battery	0	0	0	0	0	0	82	14

Table 6.7 above depicts that households used more than one type of energy source for a particular purpose. For instance, for cooking 71% (n=12) of the respondents said they mostly used firewood, followed by 59% (n=10) who used cow dung, while only 29% (n=5) of the households used paraffin. A similar trend is observed for heating, where 71% (n=12) said they used firewood for heating and another 41% (n=7) said they used cow dung, while 12% (n=2) said they used paraffin. But for lighting, most of the respondents - 71% (n=12)

[73] Some of the households interviewed use/used more than one energy source for different household activities. The percentages of these households therefore do not add up to 100%.

- said they used paraffin, followed by 41% (n=7) who used candles, and only 18% (n=3) who used firewood for lighting. Those who had radios used batteries. This information is actually in line with the census data that was collected by LHDA in 1993 in the Mohale catchment area, which also showed that biomass was the most commonly used source of energy for cooking and heating, and paraffin was mostly used for lighting. These sources of energy supply are shown in Table 6.8.

Table 6.8: Rank ordering of specified sources of cooking, heating and lighting by households in Molika-Liko

Source	Cooking (%)			Heating (%)			Lighting (%)	
	First	Second	Third	First	Second	Third	First	Second
(Lengana) shrub	51.4	17.1	12.4	14.2	37.0	10.4	-	-
Cowdung	22.4	56.8	13.8	66.7	23.2	4.5	-	-
Wood	21.5	18.7	14.4	14.4	32.4	8.2	-	-
Paraffin	4.2	5.2	32.0	3.8	2.5	4.2	69.8	25.0
Coal	0.1	0.2	0.1	0.4	0.2	0	-	-
Crop residues	0.1	0.5	2.2	0.2	0.5	2.5	-	-
Gas	0	0.1	0.1	-	-	-	0.1	0
Candles	-	-	-	-	-	-	29.3	61.2

Source: LHDA, 1993

When the respondents were asked how long it took them to reach each source of energy in Molika-Liko, all the respondents said it took them less than an hour on foot to reach all of their energy sources which they obtained at the local shop, kraals, on the rangeland.

Resettlement has brought improvements in terms of the type of energy used. Now, at Makhoakhoeng resettlees have access to electricity which they did not have previously. Access to electricity after resettlement has resulted in improvements in the quality of life for those affected. An example is the fact that women have been saved time to source fuel wood, and electricity allows women who are responsible for household chores to perform multiple functions thereby making them more efficient in what they do. Use of electricity does, to a large extent, contribute to the reduction of air pollution when compared with the use of biomass. Alternatively cow dung can be used as fertiliser in order to improve the quality of soil and ultimately to improve food production.

Furthermore, the laws of the land do not permit people to keep livestock in the urban areas like at Makhoakhoeng, which obviously also affects the availability of cow dung. Regarding the issue of collection of shrubs as firewood, there is not much rangeland or unoccupied land for people to collect firewood in that most of the land in the urban area is

occupied. As a result, alternative energy sources like electricity, gas and paraffin would still be more appropriate for the current location, at Makhoakhoeng. This change in the types of energy used has also, as in the case of water, resulted in a financial burden being imposed on the resettled households; they will always need money to meet their energy needs in the new location, which was not the case with Molika-Liko where biomass was freely available, at no charge. As a result, the affected households feel that their lives are more difficult in the new location: '*Bophelo ba rona bo thatafetse mona Makhoakhoeng*' (Our life has become more difficult here at Makhoakhoeng).

6.6.4 Health services

The interviewees were asked how long it took them to reach the different health services in Molika-Liko and they unanimously said that it took two to three hours by vehicle or on foot to reach the nearest clinic which had been Likalaneng. All the respondents mentioned that to reach the nearest hospital, it took two to three hours of travelling in a motor vehicle, whilst it took them less than an hour on foot or using a donkey/horse to reach health services offered by traditional doctors. But the respondents mentioned that at Makhoakhoeng, it takes them less than thirty minutes to reach all the conventional health services using different modes of transport, i.e. on foot or using a motor vehicle (see Figure 6.10).

The implications of the findings are such that since Molika-Liko is located in the remote and mountainous region of the Lesotho, it is evident that it was underserviced with health services when compared with Makhoakhoeng in the urban area where it is much easier to access these health services. Therefore, moving to Makhoakhoeng has made access to health services much easier, which obviously has positive impacts on the lives of the resettlees.

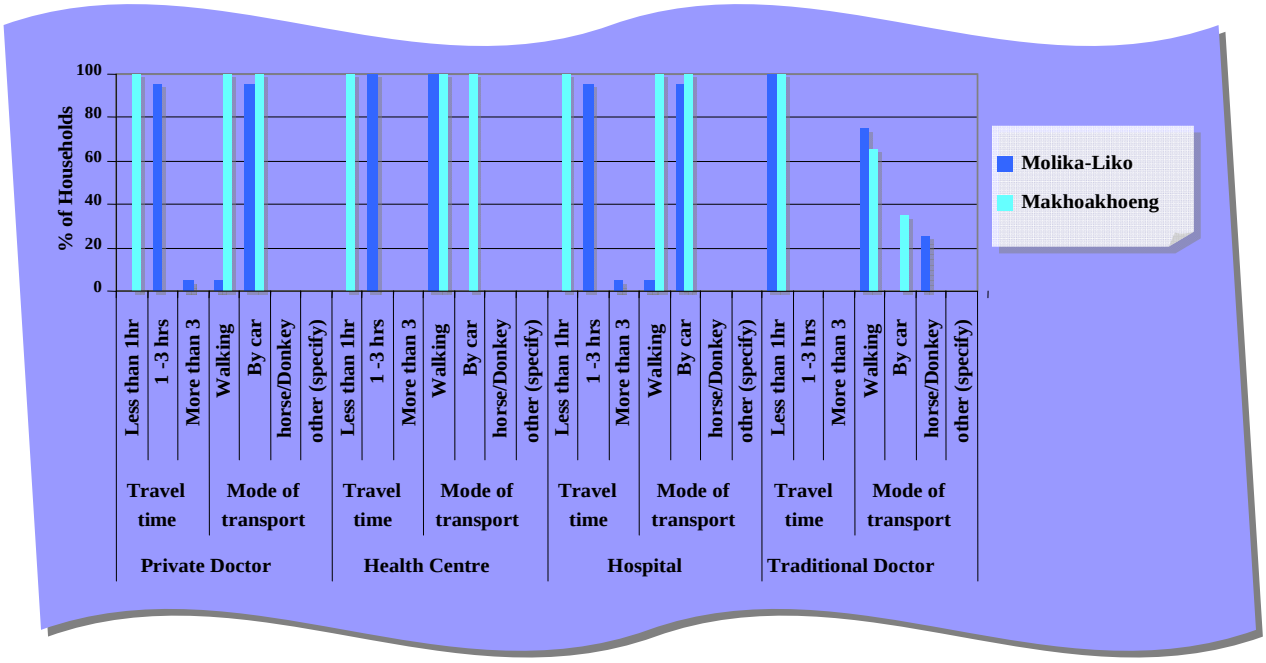


Figure 6.10: Time[74] spent travelling to the nearest health services using different modes of transport[75]

As mentioned earlier in paragraph 2.4.3 (Chapter Two), involuntary resettlement does expose those who are affected to new diseases in the new location. This experience was observed in the case of the Ethiopian state-sponsored involuntary resettlement, where one of the concerns identified was the prevalence of a range of diseases in the new location, which had been absent in the place of origin (paragraph 3.4.1, Chapter Three). A similar situation has also been observed in the case of Makhoakhoeng, where 76% (n=13) of the respondents said they now suffered from "new" illness symptoms like chest pains, stress, hypertension and headache, while 24% (n=4) said they had not suffered from any new diseases since their resettlement (see Table 6.9).

[74] Where the time taken to travel was more than 3hrs in Figures 6.10 & 6.11, it is only written as 3 due to limited graph space.

[75] Horse/Donkey only appears where it was mentioned under traditional doctor. It is not reflected in respect of other types of health services because it was not mentioned by the respondents as a mode of transport.

Table 6.9: Whether resettlees suffered from any new illness symptoms at Makhoakhoeng		
Answer	**%**	**(n)**
Yes	76	13
No	24	4
Total	100	17

6.6.5 Access to schools, shops and urban centres

As mentioned earlier, at Makhoakhoeng all the respondents said the shops and urban centre were located close to their communities and it takes less than 30 minutes on foot to reach them. In Molika-Liko however, it also took less than 30 minutes on foot to reach the shops that were located within the community; but to reach an urban centre, it took 1-3 hours using a motor vehicle. Regarding proximity to secondary and high schools, the respondents said that after having been resettled at Makhoakhoeng, they were now much closer to these services than when they still resided in Molika-Liko (Figure 6.5). After resettlement, the respondents now have access to a wider choice of goods and services than before resettlement when they had to travel in a motor vehicle for no less than 2 hours to reach these services.

Another interesting observation emerging from the study findings (see Figure 6.11) is that prior to resettlement, it took people of Molika-Liko between 1-3 hours on foot to reach the nearest high school, while it now takes less than 30 minutes on foot to reach the nearest high school at Makhoakhoeng. Using a motor vehicle, it takes about 10 minutes to reach the nearest high school.

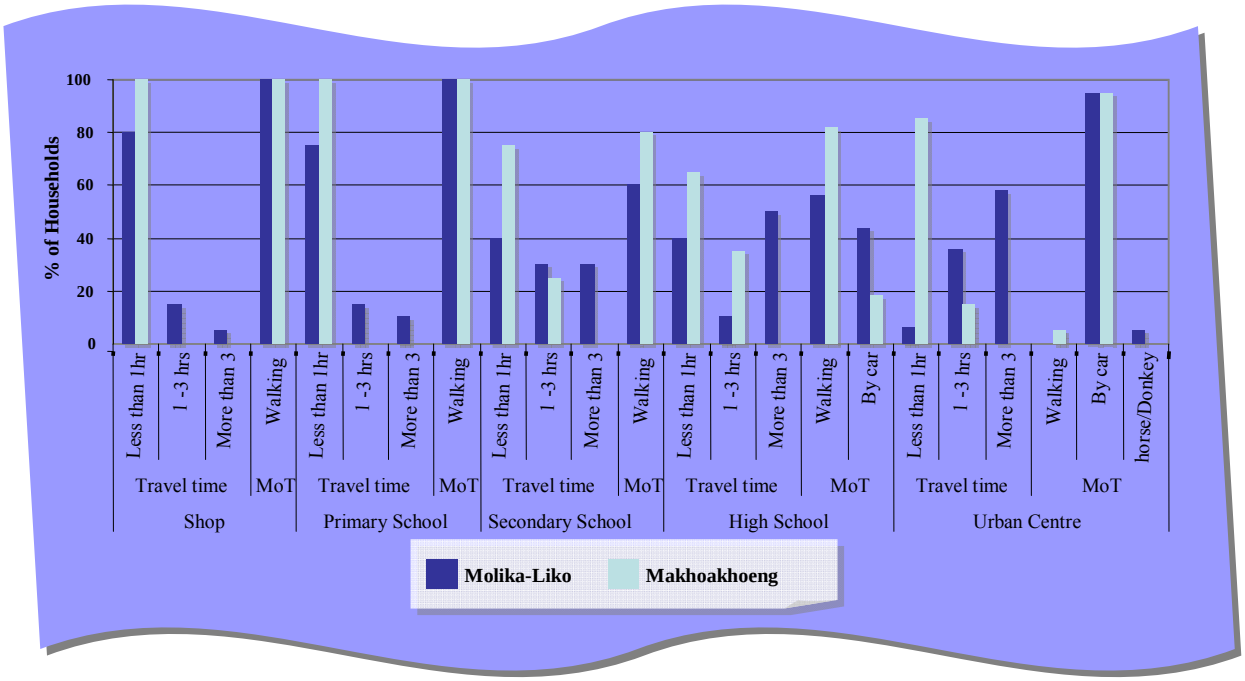


Figure 6.11: Access to schools, shops and urban centre[76]

Resettlement has thus brought positive changes in that the resettlees are now much closer to services like schools at all levels, shops and the urban centre, which previously required them to travel extensively and to pay for transport to reach these amenities.

6.6.6 Access to natural resources

As indicated in paragraphs 2.2.1 & 4.5, natural resources are vital in terms of sustaining livelihoods. Changes in the access to natural resources can thus result in deleterious consequences and endless dissatisfaction as has been the case with the resettlees at Makhoakhoeng, where 88% (15) of the respondents said they do not have access to natural resources as a result of the new location being in the built-up urban areas. Only 12% (n=2) said that they had some access to medicinal plants (Figure 6.12). Yet, they almost invariably said that in Molika-Liko they had had unlimited access to the natural resources like wild vegetables, fruits, medicinal plants and different types of grass, all of which sustained their livelihood. In the same vein, one of the respondents said: *'Re sokola lihloliloeng tse neng li re phelisa'* (It is difficult to access some of the natural resources that sustained our lives).

[76] MoT = Means of Transport.
Regarding Horse/Donkey as a mode of transport, please refer to footnote 75 above.

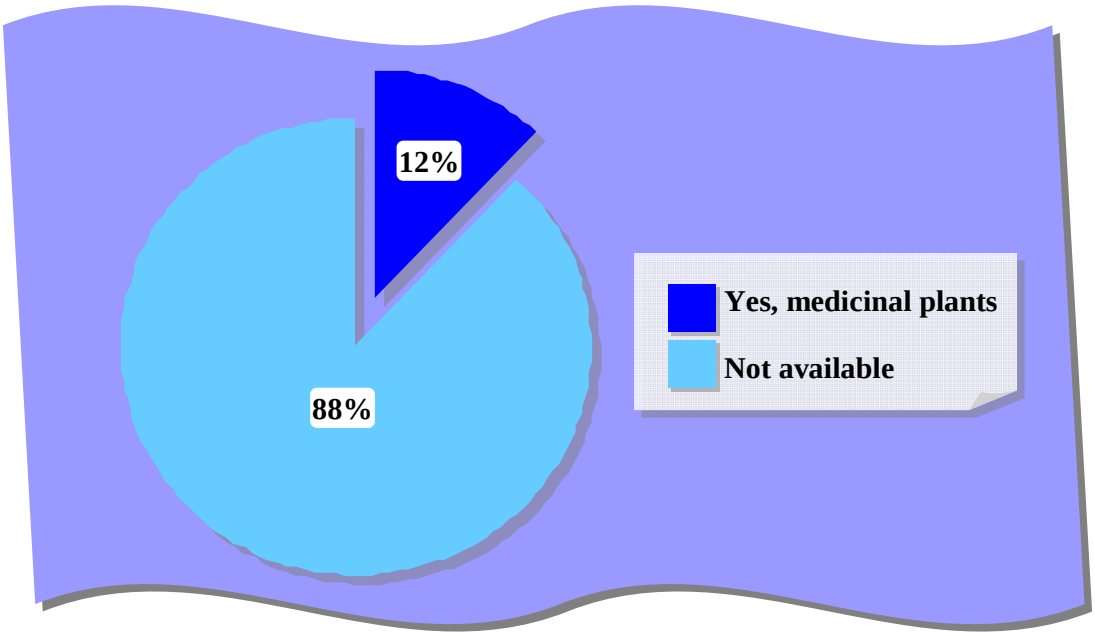


Figure 6.12: Access to natural resources at Makhoakhoeng

It is a known fact that wild vegetables contribute substantially to the nutritional status of people. Lack of access to these may therefore mean a loss of nutrients derived from wild fruits and vegetables. In rural areas, different types of grass that are found in the wilderness have different uses like making brooms - which is an income-generating activity - providing thatch grass for roofing the houses, and various others. Lack of access to these resources may thus mean loss of independence regarding their ability to take advantage of economic opportunities, thereby negatively affecting the sustainability of their livelihoods.

The change of locality to which the resettled households have been subjected has resulted in loss of access to some of the natural resources that had previously sustained the lives of resettlees while in Molika-Liko. Some of these natural resources, like medicinal pants, do affect the spiritual aspect of the lives of those who have been affected by resettlement, as is discussed below.

6.6.7 Performance of traditional rituals

The World Bank (1994) recognised that most large dams are usually constructed in the rural areas where culture plays an important role in the daily lives of the local communities (paragraph 3.5.2, Chapter Three). But, unfortunately, these cultural issues are hardly considered in the resettlement programmes, as was the case with the Tonga people who were affected by the construction of Kariba Dam. The Tonga people suffered enormous stress because of leaving behind their ancestors. Similar tendencies were observed in the

case of the resettlees who were affected by the construction of Mohale Dam in Lesotho. Although the LHWP resettlement programme at Makhoakhoeng *per se* did not address cultural issues, 65% (n=11) of the respondents said they still performed the traditional rituals, which they had performed while living in Molika-Liko. Another 18% (n=3) said they did not perform them, while a further 18% (n=3) of the respondents said they were not aware whether any rituals were being performed. Those who said they still performed the traditional rituals were asked to state reasons why they still perform them. The responses in Table 6.9 reveal that 55% (n=6) of the respondents said it was important for them to continue to observe their cultural practices, whilst 27% (n=3) said it was the right thing to do and another respondent said it provided them with a sense of spiritual security in the new location. Because the parents were not at home at the time of the interview, only one respondent could not substantiate why the family still performed the traditional rituals.

Those who said they no longer performed any traditional rituals at Makhoakhoeng were asked to give reasons why they were not performing them. One respondent said it had become too expensive to perform them in the urban areas as things were generally expensive, while the other two said they did not have access to the natural resources required to perform such rituals. They suggested that inability to perform these rituals caused them to feel unsafe *(Ha rea bolokeha*) as they were not able to deter some of the bad spirits from entering their property *(Ha rea thakhisa)*. This situation is reflected in Table 6.10 below.

Table 6.10: Reasons for performing or not performing the traditional rituals at Makhoakhoeng

Reasons	Results	
	%	(n)
Those who still perform rituals		
It is important to observe our cultural practices.	55	6
It is the right thing to do	27	3
It makes us feel much more secure	9	1
Do not know	9	1
Total	100	11
Those who do not perform rituals		
It is too expensive in town	33	1
We do not have access to the natural resources we require to perform some of the rituals	67	2
Total	100	3

6.6.8 A summary of changes experienced after resettlement

A synoptic overview of tangible changes experienced by the resettlees is given in Table 6.10, which reflects definite improvements in terms of access to social services at Makhoakhoeng when compared with the situation in Molika-Liko. Table 6.11 suggests that

the quality of life for those households affected by resettlement has improved. For instance, the resettled households now have better access to a wider choice of goods and services like health facilities and schools. They also now have access to clean water and electricity even though it means they now have to pay for their energy requirements, which was not the case in Molika-Liko.

Table 6.11: Comparison of services available at Makhoakhoeng *versus* those that were available in Molika-Liko

Available services/facilities	Life at Makhoakhoeng	
	Better	Worse
Access to safe drinking water	✓	
Sanitary facilities	✓	
Use of electricity as energy source	✓	
Access to health services	✓	
Access to schools	✓	
Access to shop (s)	✓	
Access to urban centre	✓	
Access to natural resources		×

Generally, the resettlement of households from Molika-Liko to Makhoakhoeng has resulted in improvements in the quality of life - especially in terms of access to services as reflected in Table 6.10. However, through resettlement, the resettlees no longer have access to those natural resources that provided them with a variety of wild vegetables, fruits and medicinal plants. These resources did not only contribute to their nutrition, but they were also used to perform some of the traditional rituals of the resettlees. These changes influence the perceptions of the resettlees in respect of the resettlement programme. These perceptions are discussed in the section below.

6.7 Perceptions in respect of the resettlement programme

As alluded to earlier by Rubin & Warren (1968), resettlement of people presents an exceptional opportunity to improve the quality of life of those affected by the construction of large dams, provided that a well-articulated resettlement programme is in place. However, worldwide experience has shown that, in most cases, the people affected by involuntary resettlement have been left deprived and impoverished. Such was the case in India where 75% of the affected people were left worse-off (WCD, 2000). This resulted in much bitterness and dissatisfaction amongst those affected. In the case of Makhoakhoeng, it was thus important to determine the perceptions of those households that have been resettled at Makhoakhoeng, regarding their resettlement. Therefore, this section deals with the issues of physical relocation of resettlees in terms of how they perceive their present

house(s) *vis a vis* what they had in Molika-Liko, specifically looking at the type of tenancy, number of rooms, size of the houses and the construction material used on the houses. The discussion continues by looking at additional compensation payments that were received other than the ones already mentioned, whether any other compensation promises were made, and whether such promises were actually fulfilled; and, generally, how the resettlees perceive the total resettlement programme. The section concludes with suggestions from the respondents regarding improvements for future resettlement programmes.

6.7.1 Housing

The respondents were asked to state their tenancy status at Makhoakhoeng and 88% (n=15) of the respondents said they were the owners of the compensation houses, whilst 12% (n=2) said they were the caretakers of the houses as their parents still lived in the Mohale catchment area. Regarding Molika-Liko, 76% (n=13) of the respondents said they owned the houses they lived in, while 24 % (n=4) neither owned nor rented the house because they were either children or were caretakers of their relatives' property. If 76% (n=13) owned the houses in Molika-Liko and now 88% (n=15) at Makhoakhoeng own the compensation houses, this increase could be attributable to the fact that there has been a change in the ownership probably through inheritance.

In terms of the construction material used on the replacement houses, all of the replacement houses at Makhoakhoeng are constructed using cement blocks and roofed with corrugated iron sheets as shown in Photo 5.3. But with regard to the houses they had owned in Molika-Liko, the structures were constructed using packed stones, masonry blocks or stone walls with thatched or corrugated iron sheets (LHDA, 1993). For instance, the Mohale census data shows 82% of the respondents as having said that they had roofed their houses with thatch grass and only 18% said they had used corrugated iron sheets for roofing in Molika-Liko as shown below.

Photo 6.2: An example of replaced houses

Source: Mope Lepelesane, 1996.

In terms of the number of structures owned, at Makhoakhoeng, 49% (n=8) of the respondents said they owned a house with four rooms. This was followed by 27% (n=5) of the respondents who said they owned a three-room house, while those with single rooms were 18% (n=3). Only one respondent (6%) owned a two-room house.

Photo 6.2 portrays a typical traditional settlement where as already mentioned, a household would inhabit a kraal comprising 2 or more huts, each having a specific function like for cooking, sleeping or a guest facility. Nonetheless, when the respondents were asked to state the number of structures they had owned in Molika-Liko, 35% (n=6) of the respondents said they had had three independent single-house units, followed by 29% (n=5) of the respondents who said they had owned two houses. Those who said they had had four independent single house units were 24% (n=4), while those respondents who had had a single-room house were 12% (n=2). Resettlement has however brought about observable changes in that these independent house units belonging to a household have been combined into a single house unit with multiple rooms. Obviously the previous arrangement suited the lifestyle in the rural areas where one of the rondavels would be used for cooking, which was done on the floor using shrubs. At Makhoakhoeng, however, the residential plots are smaller than those in Molika-Liko. Therefore the size of the plot itself would be a restriction in terms of constructing multiple structures.

As pointed out by Sello (2006), all compensation houses constructed at Makhoakhoeng are provided with prepayment meters for electricity, which the resettlees did not have prior to resettlement. Sello further mentioned that LHDA bought these resettled households' electricity units from the Lesotho Electricity Corporation (LEC) for the first six months after their relocation. This was confirmed by the resettlees. Thereafter, the households were each expected to start buying their own electricity units.

Sello (2006) further mentioned that the resettlees were given an opportunity to salvage building material from their original houses in Molika-Liko. To the question as to whether the respondents actually salvaged any of the construction material prior to their physical relocation, 59% (n=10) of them confirmed that they had managed to salvage some of the construction material like window frames, window panes and doors. Another 18% (n=3) of the respondents said the construction material had been destroyed by the LHDA for those who did not salvage it on time in order to facilitate the flooding of the dam. One respondent (6%) believes that the house was still there because the inhabitants had not salvaged anything, while 17% (n=3) said they did not know what had happened to the material (see Figure 6.13).

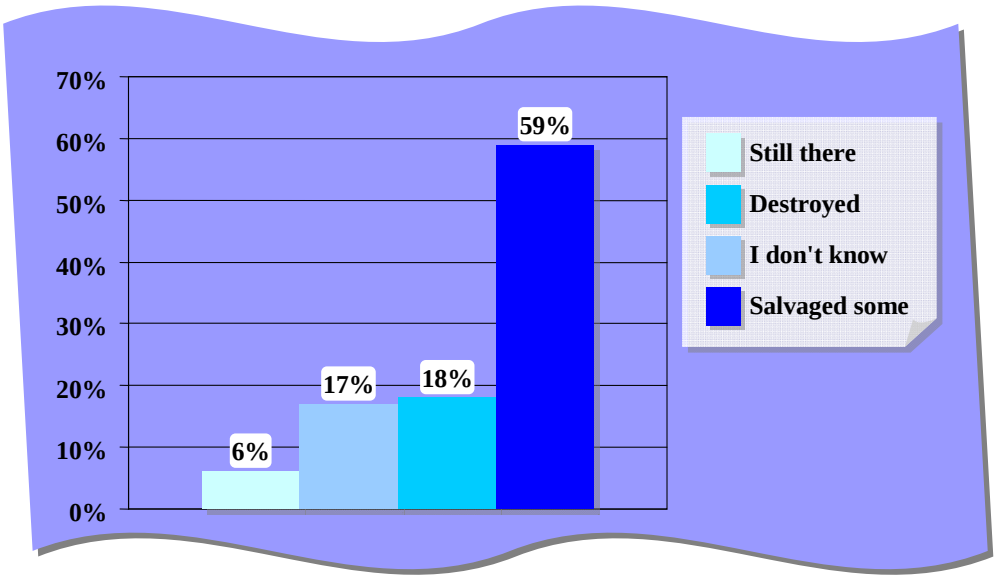


Figure 6.13: What happened to construction material of the previous house in Molika-Liko

The respondents were asked whether the internal surface area of their compensation house is smaller, bigger or the same size as the original house before relocation. The responses are provided in Figure 6.14.

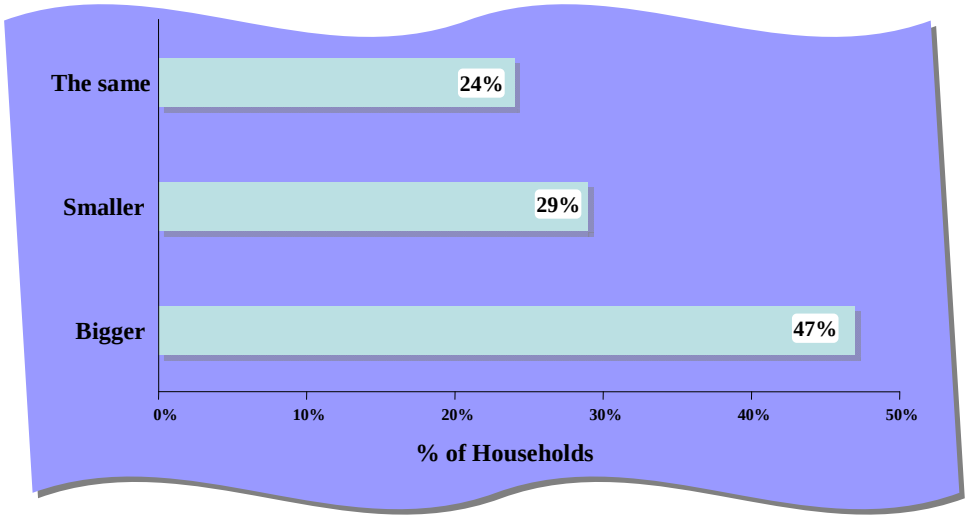


Figure 6.14: Size of the replacement houses compared with the previous houses

Evidently, from Figure 6.14, most of the respondents (47%/n=8) said their replacement houses were bigger than their original houses, while 29% (n=5) said the new houses were smaller; and another 24% (n=4) said the new houses were of the same size as the old houses.

6.7.2 Physical relocation

According to Ramoeletsi (2007), the date for impounding the Mohale Reservoir was critical in terms of ensuring that all those households to be resettled had indeed been physically moved out of the reservoir area before that date. In doing this, LHDA had to ensure that all the compensation houses were completed prior to the physical relocation of the affected households. The respondents were thus asked whether their compensation houses had been completed by the time they were physically relocated, and 88% (n=15) of the respondents said that the replacement houses had indeed been completed at the time of physical relocation. One respondent (6%) indicated that the structures had been completed but that windows had not been fitted. Another respondent (6%) said the structures had been completed but the electricity had not been connected and therefore it became difficult for them to cook or do anything that required electricity.

The respondents were also asked whether they had encountered any problems concerning issues of transport, labour, finances or on any other issue during their physical relocation from Molika-Liko to Makhoakhoeng. As reflected in Figure 6.15 below, all of the respondents reported not to have had any transport problems. The LHDA actually provided transport to move their belongings. One household encountered problems with labour and another reported as having encountered problems with finances resulting from having to

hire labour locally to assist them during their physical relocation. Otherwise no other problems were encountered.

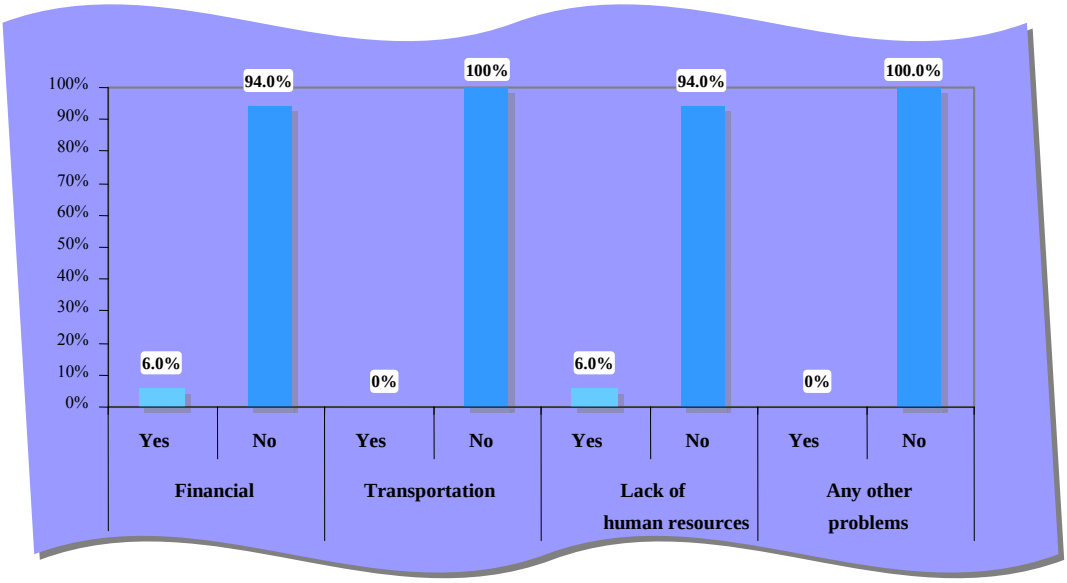


Figure 6.15: Problems encountered during the process of physical relocation

As part of the resettlement package, the affected households also received a disturbance allowance in order to meet the demands of the new locality. How the amount of the disturbance allowance was arrived at is not very clear, but the implementing agency, in giving the allowance, made a distinction between relocation and resettlement. They defined relocation as when the affected people are physically moved out of the critical area but still remaining within their communities, whilst resettlement is where people move out of Mohale Basin to a completely new environment, which was the case with those who had moved to Makhoakhoeng (Sefeane, 2006). Therefore, those who had been resettled received double the amount received by those who had merely been relocated. The following is a breakdown of the disturbance allowances received by the affected households at Makhoakhoeng:

Year 1	M6 000 = (R6 000)
Year 2	M4 000 = (R4 000)
Year 3	M2 000 = (R2 000)

This disturbance allowance also compensates for the inconvenience caused to those households resettled in that it ensures that the money is used to assist them to settle in the

new environment. After three years this payment is discontinued on the basis that the resettled households will by then have acclimatised to the new location (Ramoeletsi, 2007).

6.7.3 Summary of compensation payments paid to households resettled at Makhoakhoeng

Based on the interviews and observation, it became apparent that 100% of the resettled households at Makhoakhoeng received compensation houses, toilets, piped water and their houses had electricity connected. In addition, all of the resettled households received cash - either as annual compensation or as a lump-sum payment (Figure 6.16).

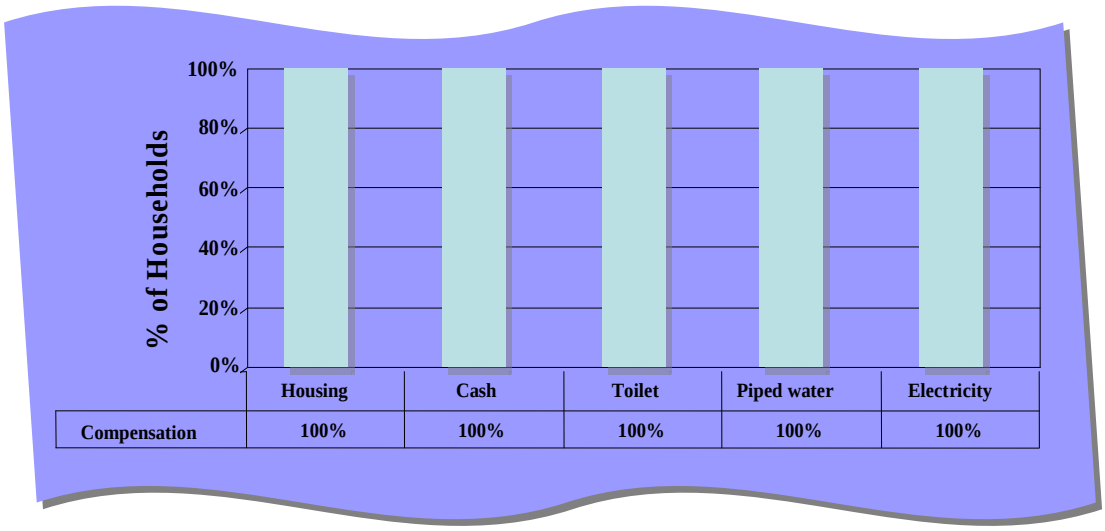


Figure 6.16: Summary of compensation payments

6.7.4 Fulfilment of the compensation promises made

As observed in the case of the Pantabangan Dam in Brazil, the government made promises to those households affected by the project that all losses incurred would be compensated, but very few of such promises were apparently fulfilled (Goldsmith & Hildyard, 1984). In like manner, those resettled at Makhoakhoeng were asked if any compensation promises were made other than the ones received. Table 6.12 shows that 76% (n=13) said Yes, while 12% (n=2) said No; and another 12% (n=2) said they did not know as this information had been handled by their parents.

Table 6.12: Any compensation promises made other than the ones received?

Promises made	%	(n)
Yes	76	13
No	12	2
Do not know	12	2
Total	100	17

The 13 respondents who confirmed that compensation promises had indeed been made were then asked to give more information about the actual promises made by the LHDA. Table 6.13 reveals that 77% (n=10) said that they had been promised compensation for the natural resources lost, while 23% (n=3) said they had been promised an increase in the compensation cash payments. It seems that those who had opted for a lump sum were also under the impression that they were again going to receive annual compensation. This could have resulted from a misunderstanding between the affected households and the LHDA.

Table 6.13: Type of compensation promises made

Types of promises	%	(n)
Compensation for natural resources	77	10
Increase in the compensation cash payments	23	3
Total	100	13

Those respondents who said promises were made, were asked whether such promises were fulfilled, and, as shown in Table 6.14, 85% (n=11) of the respondents indicated that the compensation promises were not fulfilled. Only two of the respondents said the promises were fulfilled.

Table 6.14: Fulfilment of compensation promises

Promises fullfilled	%	(n)
Yes	15	2
No	85	11
Total	100	13

Evidently the results in Table 6.14 show two respondents as having had their promises fulfilled whilst 85% (n=11) of the respondents had not had their promises fulfilled by LHDA, and said they were still waiting to receive compensation for natural resources.

Obviously this has a direct bearing on how the affected households view the overall resettlement package, an issue that is discussed below.

6.7.5 Views on received resettlement package

The respondents were asked how they perceive the resettlement package. As shown in Figure 6.17, 59% (n=10) of the respondents said they were dissatisfied with the compensation payments received. Twenty nine percent (29% /n=5) said they were happy with these payments. The remaining two respondents said they were uncertain (perhaps it is because they were children at the time when compensation negotiations took place between their family and the LHDA).

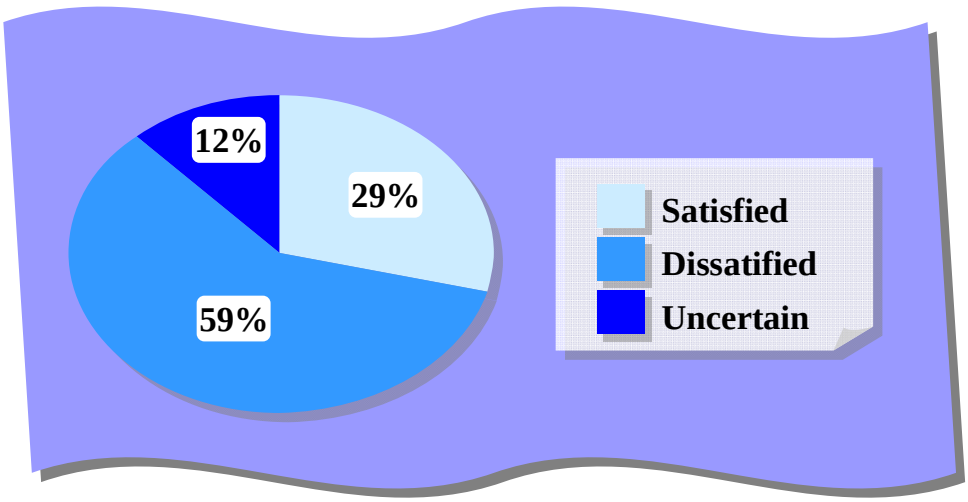


Figure 6.17: Views on received compensation package

Both those who were satisfied and those who were dissatisfied were asked to give reasons for their responses. Amongst those who said they were satisfied with the compensation, 60% (n=3) said it was because they had received all the compensation payments agreed upon with the LHDA, while one respondent reported having wanted to move to the urban areas anyway. Another respondent reported being satisfied because of having been given an opportunity to choose the resettlement site (Table 6.15). Those who held the opposite view of being dissatisfied, 70% (n=7) said it was because of not receiving all of their compensation as promised, while 30% (n=3) said they were not satisfied with the compensation because now they were burdened with having to pay for services like water, which had not been the case in their previous location in Molika-Liko.

Table 6.15: Reasons for attitude towards compensation payments received

Reasons	%	(n)
Those who were satisfied with the compensation payments received		
Having been given the opportunity to choose the resettlement site	20	1
Having wanted to move to the urban areas anyway	20	1
Having received compensation as promised	60	3
Total	100	5
Those who were dissatisfied with the compensation payments received		
Having to pay for services at Makhoakhoeng	30	3
Not having received all of the compensation as discussed	70	7
Total	100	10

Those who were dissatisfied with the compensation payments were asked to state some of the actions they took to express their dissatisfaction. Here, 80% (n=8) of the respondents said they had lodged a case with the Ombudsman to mediate against LHDA on the issue of lack of fulfilling promises they made to the resettled households. One respondent said this issue of LHDA not honouring its promises was discussed with the rest of the community members to solicit support, and another one said nothing was done (Table 6.16).

Table 6.16: Steps taken to express dissatisfaction with the compensation payments

Steps taken	%	(n)
Lodged a case with Ombudsman	80	8
Held community meetings with the affected households	10	1
Did nothing	10	1
Total	100	10

In an interview with the Ombudsman (2006), the latter confirmed that letters of complaint had been received by his office from the affected communities. The concerns had included (i) late payment of compensation; (ii) even when compensation was paid late, LHDA did not pay interest; and (iii) no compensation was paid for loss of natural resources, despite promises having been made in this regard. The Ombudsman said that after having received these letters of complaint, his office had made the first inquiry in February 2003, at which time he had established that the claims by the affected communities had indeed been valid. According to the Ombudsman, the root cause of the problems was poor management of the resettlement programme due to the poor attitude of the LHDA's officers, inadequate consultations and communication with all the stakeholders, and a lack of follow-ups.

The inquiry made by the Ombudsman culminated in a report tabled by the Office of the Ombudsman in 2003. The report recommended *inter alia* that the LHDA should ensure that compensation payments are paid on time so as to avoid interest, which otherwise would increase the overall costs of the project. Although the Ombudsman said that his Office was also monitoring the implementation of the recommendations, 63% (n=5) of the respondents said there had not been any outcome of their steps, while two respondents (25%) said the decision had been ruled in their favour. One respondent claimed not to be aware of the outcome.

6.7.6 Comparison of life circumstances at Makhoakhoeng with life circumstances in Molika-Liko

The respondents were asked to give their views regarding their present life circumstances at Makhoakhoeng and compare it with their life circumstances in Molika-Liko. Table 6.14 shows 24% (n=4) of the respondents as having said that their circumstances had improved after being resettled at Makhoakhoeng. Another 18% (n=3) said their life circumstances had remained the same, while 59% (n=10) said their life circumstances had actually deteriorated.

Disaggregating the information by gender, 71% (n=5) female respondents said their life circumstances had deteriorated after being resettled at Makhoakhoeng; and only one female respondent (14%) said life circumstances had actually improved (Table 6.17). Of those who indicated that their life circumstances had improved at Makhoakhoeng, three were males and one female. Despite the small sample, the data does suggest that females might be more inclined than males to believe that their life circumstances have deteriorated (72% versus 50% respectively), after resettlement. This may be partly due to the fact that, during public participation, women's issues were not necessarily part of the agenda (paragraph 6.4.3, Chapter Six). Furthermore, women have more social responsibility than the men within the household in terms of bringing up the children and taking care of the household chores than the men. These responsibilities have rendered women, especially those from the rural areas, more dependent on the social support from the members of their extended families and friends for their daily living, where they draw on such support in times of need. In the new urban environment, there is more individualism and people have to be more self-reliant.

Table 6.17: Perceptions of life at Makhoakhoeng compared with that in Molika-Liko

Responses	Females		Males		Total	
	%	(n)	%	(n)	%	(n)
Improved	14	1	30	3	~24[77]	4
Remained the same	14	1	20	2	18	3
Deteriorated	71	5	50	5	59	10
Total	~100	7	100	10	100	17

Although most of the male respondents, too, allude to fact that their life circumstances have deteriorated, some of the respondents 38% (n=3) still appreciate the physical improvements like water supply and installed electricity, which they did not have in Molika-Liko. During the focus group discussions, they confirmed such improvements. Furthermore, those respondents who said their life circumstances had improved at Makhoakhoeng justified their opinion by pointing out that, in the new location, they were now much closer to goods and services.

Regarding those who said that their life circumstances had deteriorated at Makhoakhoeng, the male respondents said that they had a better life in Molika-Liko because they had owned livestock, which in Sesotho culture is a sign of wealth (paragraph 6.5.3, Chapter Six). Two of the male respondents said that living at Makhoakhoeng was expensive. Three of the female respondents moreover also alluded to fact that they had had a better life in Molika-Liko, owing to the fact that they had owned livestock and had free access to clean water. Another female respondent said that in Molika-Liko they had had access to everything they needed, including food, without having to pay money. Another female respondent said that living at Makhoakhoeng was too expensive.

In assessing how the resettlees view their life circumstances at Makhoakhoeng, they were asked to rate the services they had or had access to at Makhoakhoeng against what they had previously had in Molika-Liko. Most of the respondents admitted that their housing had improved in terms of the quality of the structure and the house in general (Figure 6.18).

[77] ~ refers to approximately 24% as a result of the rounding up of figures. In this case for instance, the actual figure is 23.5%.

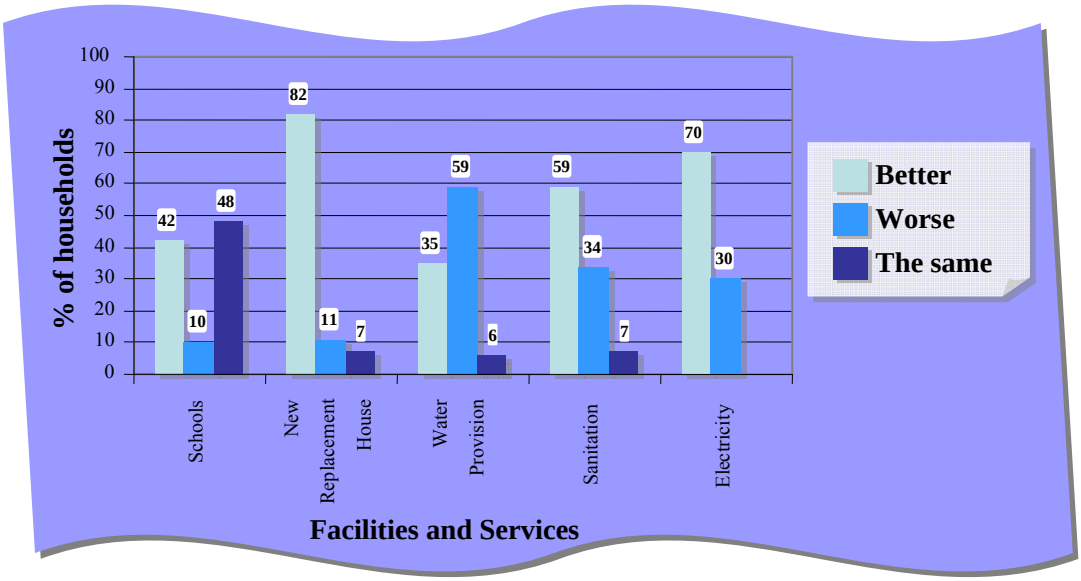


Figure 6.18: An evaluation of the services at Makhoakhoeng

As shown in Figure 6.18, most of the respondents said that, at Makhoakhoeng, they now have VIP toilets and electricity which they did not have in Molika-Liko. However, regarding water provision, the majority said that water in Molika-Liko was much better in terms of taste, reliability and the fact that it was free. But, as far as schools were concerned most of the respondents said that there had been no change, followed by those who said there was now better access to schools at Makhoakhoeng.

The quality of life is not only assessed in terms of improved tangible aspects of resettlement as was the case with the Mahweli resettlement programme in Sri Lanka (paragraph 3.5, Chapter Three). Much emphasis was placed on the physical aspects of the Mahweli resettlement programme, with hardly any attention being paid to other social issues (Adams, 2000). Similarly, the Mahweli case study has revealed that in resettlement, intangible aspects are extremely significant in that even when improvements are noted in terms of availability of services, as has been the case with the resettlement programme at Makhoakhoeng, most of the resettlees still feel that their standard of living has deteriorated. For instance, the fact the women feel that their issues were not specifically addressed during the planning of the resettlement programme, has resulted in dissatisfaction. Furthermore, the study findings also reveal the importance attached to access to natural resources which, because of their unavailability, have deterred some of the resettled households from performing their traditional rituals.

In probing further to find out why the resettlees felt that their standard of living had deteriorated after being resettled at Makhoakhoeng, the respondents were asked whether they had encountered any problems with the host community. As reflected in Figure 6.19, 59% (n=10) of the respondents confirmed that they had encountered problems with the host community, while 41% (n=7) said they had never encountered any problems with the host community.

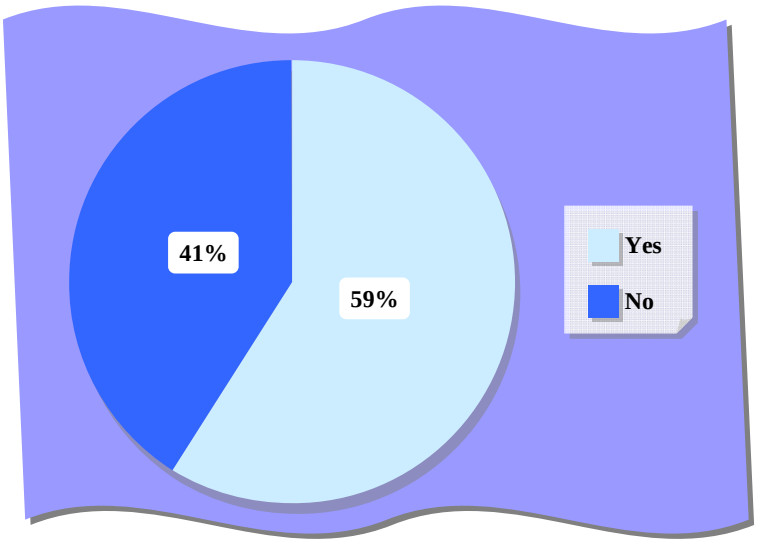


Figure 6.19: Whether conflicts were experienced with the host communities

Makhetha (2006) confirmed that there had indeed been a conflict between the resettlees and the host population. The host population alleged that they had never been consulted on the coming of the resettlees. Yet, when the resettlees arrived, they used the resources of the host community including their burial grounds. This resulted in the resettlees being barred by the host community from burying their dead in the graveyard at Makhoakhoeng. The feud between the two groups became so strong that at some stage the implementing agency even considered resettling these people yet another time. The feud intensified to the level where women were confined to their homes as they did not feel safe to move freely in the village. One woman articulated it as follows: '*Re ne re tšaba le ho tsamaea motseng mona*' (We were scared to move around in the village). Similarly, in the case of the Tarbela Dam resettlement programme, because of women's issues not being considered, the women ended up also being confined to their homes because they were scared to move around (see 3.5.1, Chapter Three). It was at this time when the Office of the Ombudsman was apparently invited to mediate the conflict (Makhetha, 2006). Similar conflicts have been experienced in other resettlement programmes, like Mpamu, where there were problems

both of conflict with the authorities, and of inter-ethnic relationships (paragraph 3.2.1, Chapter Three).

A compounding factor to the apparent conflict between the host community and the resettlees was the fact that the compensation sites were actually purchased from LHLDC on the willing buyer willing seller principle in the open market. Therefore, since the LHLDC had purchased the land from the field owners at Makhoakhoeng as mentioned earlier (paragraph 6.4.1, Chapter Six), in terms of the legal title to the land the host population no longer had claims on the land, which was probably the angle that was taken by LHDA in approaching the resettlement of these people from Molika-Liko. Nonetheless, according to Sefeane (Sello, 2006), the LHDA did consult with the host community on the relocation of people from Molika-Liko to Makhoakhoeng. The question could therefore be whether the consultations had been adequate or not.

On the issues of conflict and other issues mentioned above, the respondents were asked whether any of their household members had migrated after resettlement, and 12% (n=2) of them said Yes, while 88% (n=15) said No. The anticipation was that, with such levels of conflict, one would expect that the resettlees would voluntarily move out and not wait to be resettled a second time, which was generally not the case. Those who moved out, moved because, they wanted to be closer to work and/or as a result of getting married.

Since most of the respondents were of the opinion that their life circumstances had deteriorated at Makhoakhoeng despite the improved access to the stated social services which they now had in the new location, they were asked to suggest ways in which future resettlement programmes could be handled. These suggestions are discussed in the section below.

6.7.7 Suggestions on how to improve resettlement programmes

Respondents were asked to suggest ways in which resettlement programmes could be improved in future. Based on the responses in Table 6.18 below, 29% (n=5) of the respondents suggested that whenever compensation promises are made by the implementing agency, then such promises should be fulfiled in order to build trust.

Table 6.18: Suggestions on the improvement of resettlement programmes

Suggestion	%	(n)
Implementing agency must fulfill promises	29	5
There should be participation of stakeholders in major decision making like the construction of dams	29	5
Affected people should not be moved far from their places of origin	18	3
Affected people should be provided with adequate information to enable informed decision making.	12	2
No suggestions, fine as it is.	12	2
Total	100	17

Another 18% (n=3) of the respondents said that it was important for the affected households not to be moved far from their place of origin - as had been the case with those resettled at Makhoakhoeng. The affected households said they attached great importance to family cohesion in that, as far as possible, family members should not be separated by involuntary resettlement as had been the case of the households from Molika-Liko where some still remained in the Mohale Basin, whilst others went to different areas like Ha Thetsane and Makhoakhoeng. This is in line with the recommendations of the panel of experts (LHDA, 2003) that those affected households who wish to remain in the Mohale Basin area where the dam was to be constructed - especially those who engaged in income-generating activities and those owning livestock - should be given the opportunity to do so. Two respondents said they did not have any suggestions to make as the resettlement programme was fine as it was. Another two respondents said they should be provided with enough information about the resettlement so as to enable them to take meaningful decisions. Five respondents (29%) alluded to the importance of stakeholder participation in major decisions like option assessments for dam construction. This is also in line with suggestions of the Ombudsman that during stakeholder participation, the communities, especially those affected, should be provided with clearly written messages in order to avoid conflicting word-of-mouth messages that confuse people. The Ombudsman also mentioned the importance of respect for law, involvement of the affected communities in the development of the compensation policy, and also the importance of forging partnerships with the affected communities.

Although the respondents are generally pleased with the replacement houses, this does not mean that there is no room for improvement for future similar projects. Therefore, the respondents were specifically asked to suggest ways in which the construction of compensation houses should be undertaken in future. Six of the respondents (35%) said that in designing and constructing the houses, the needs of the users should be taken into account. Obviously this suggestion deviated from what had happened at Makhoakhoeng

where the LHDA had produced prototype designs from which the affected people made their choices. This approach limited the choice of the resettlees in terms of their preferred house designs. One respondent (6%) suggested that red bricks should be used in the construction of the compensation houses, as they felt that cement blocks were porous and therefore not durable. Four of the respondents (24%) were satisfied with the current approach, while 35% (n=6) said they had no suggestions (Figure 6.20).

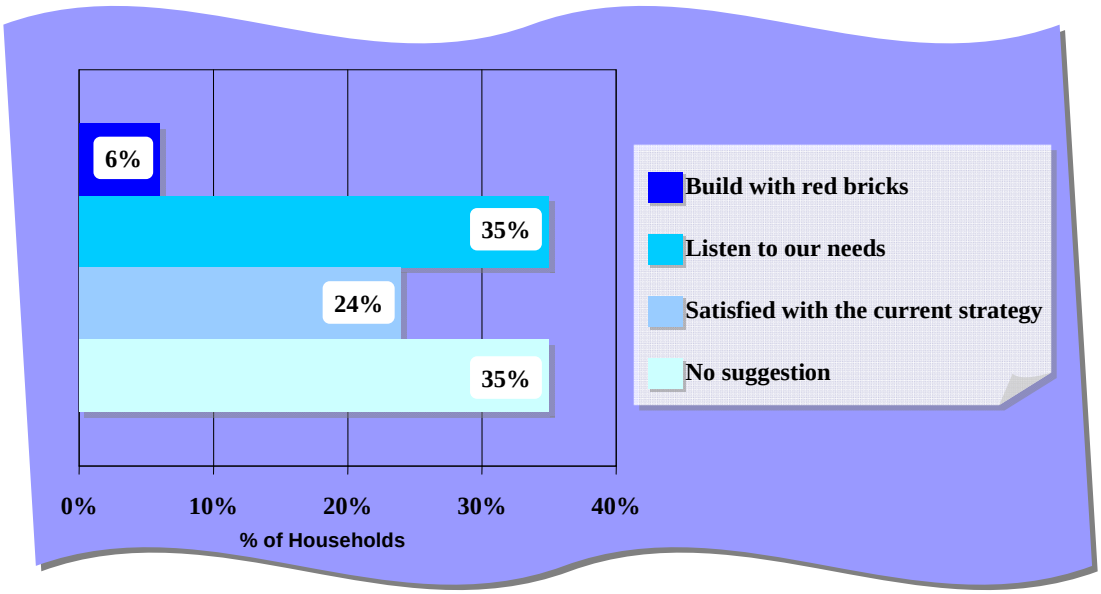


Figure 6.20: Suggestions on the construction of replacement houses

6.8 Conclusions

In terms of public participation in the decision-making process, it is important to understand the project within the political environment that was then prevailing in Lesotho. The decision to implement the LHWP was taken during the era of military rule (1986-1992) where decisions were taken by government, with hardly any public participation. As expected, the implementing agency (the LHDA) which was also established during this time of military rule, had to ensure that the decision to implement the project was actually put into practice. In spite of the prevailing political environment, the affected households were at least provided with an opportunity to select compensation sites from those areas identified by the LHDA. They were also given an opportunity to select the type of houses from the prototype designs provided by the LHDA.

In terms of participation, the study has also revealed that proportionately more men than women participated in the public participation forums (CLCs) established by LHDA. This could partly be due to the fact that Lesotho is a patriarchial society where male domination

is still very much prevalent in the decision-making processes, especially on critical issues like household property. In terms of satisfaction regarding the level of participation in these forums, both the females and the males expressed dissatisfaction, with some even alleging that they had to work around the decisions that were taken by the LHDA. Furthermore, the study findings seem also to indicate that women, especially those who were *de facto* heads of households because their husbands were away for various reasons, presented only those views as instructed by their husbands.

The study has also revealed that there is much dissatisfaction with the resettlement package despite the fact that, through resettlement, there are improvements in the physical aspects such as the better structures of compensation houses, and being provided with toilets and electricity irrespective of whether those households had previously had toilets or not, and also despite the fact that they are now closer to social services like health facilities and schools. This dissatisfaction could partly be attributed to unfulfilled promises made by the LHDA or the apparent conflict that existed between the host population and the resettlees. Again the study findings show that the females were more dissatisfied with the resettlement programme than were the male respondents. Obviously issues of social capital might here have played a role in that, in Molika-Liko, there had been a wider network of social support- in the form of extended family and friends - on which the women could draw in times of need, unlike in the new location where there is more individualism.

Nevertheless, the fact that resettlees now have access to toilets and safe drinking water means that issues of environmental health have been to a large extent improved.

The Makhoakhoeng resettlement programme has had major impacts in that the means of livelihood have changed, not only in terms of sustaining the daily living, but also in terms of the assets owned. Therefore, how these affected households are able to cope with the changes differs from household to household. This is probably why most of the respondents view public participation of stakeholders as critical to the success of future resettlement programmes. The conclusions of the study are dealt with in much greater detail in Chapter Seven.

CHAPTER SEVEN

CONCLUSIONS AND RECOMMENDATIONS

7.1 Introduction

As outlined in Chapter Six, the resettlement programme at Makhoakhoeng has resulted in definite changes in the lives of the resettlees, some being positive whilst others are negative. This chapter therefore starts by providing the summarised positive and negative impacts of the overall experience with the resettlement programme at Makhoakhoeng. Thereafter, the specific conclusions are discussed. The final section of the chapter contains the recommendations.

In terms of the summary of the overall experience with the resettlement at Makhoakhoeng, Table 7.1 is a synoptic overview of both the positive and the negative impacts that provide a context for the conclusions that follow.

The Makhoakhoeng case study confirms that the challenge still remains of ensuring that resettlement programmes result in satisfying outcomes. In terms of the tangible physical aspects of resettlement, this has largely been adequately addressed in the resettlement programme at Makhoakhoeng. However, what still remains as a challenge is to address adequately the intangible aspects of resettlement and the reinstatement of the income-generating capacities of those affected by resettlement. This is partly attributed to the fact that, when LHWP was appraised in the 1980s, considerations then were mostly economic with hardly any concern for either the social or the cultural costs. Furthermore, the standard manuals for appraising projects like the LHWP in the Third World did not adequately consider social issues in the CBA. Hence Makhoakhoeng, like other resettlement programmes, addressed mainly the physical aspects that are easily quantifiable and can thus be expressed in monetary value terms with hardly any consideration for issues of social networks and cultural issues (Come, 2004).

Table 7.1: A synoptic overview of positive and negative impacts of the LHWP resettlement programme at Makhoakhoeng

Positive impacts and experiences	Negative impacts and experiences
i) The resettlement of the affected households at Makhoakhoeng has resulted in improvements on the overall quality of housing in terms of the construction material used in the replacement houses and, in some cases, the internal surface area of the houses are bigger than the houses they originally had in Molika-Liko. Furthermore, the resettlees also had an opportunity to select their replacement sites and the house type from the prototype house designs provided by the LHDA. **ii) The resettlement programme provided planners with an opportunity to undertake proper planning in terms of ensuring that the affected households are now provided with serviced sites that have clean water, sanitation facilities and electricity - unlike the situation at the previous sites. This supply of safe water and toilets contributes to the improvement of health conditions for those households affected by the resettlement by reducing environmental health risks like waterborne diseases. Furthermore, the use of electricity reduces air pollution when compared with the use of biomass that emits harmful substances into the atmosphere.** **iii) Through resettlement at Makhoakhoeng, the resettlees are now closer to a wider choice of goods and services like health facilities, schools, shops, etc. This has, amongst others, saved them transport costs.** **iv) Resettlees now own household durables like telephones, TV sets, and more households now own cars that have improved communication and contact with the rest of the world.** **v) All the resettlees now have legitimate means of livelihood, whereas some of the affected households previously relied on illegal trading of dagga.** **vi) Generally speaking, the average income earned by the affected households at Makhoakhoeng has improved when compared with when they were still residing in Molika-Liko. This could partly be due to the fact that all of the households received compensation money, which has enabled some to start businesses like a hair salon, a taxi business or tailoring. Therefore, the compensation money has brought financial security for a larger number of households than would have been the case in Molika-Liko.**	**i) The fact that, through displacement, resettlees no longer live in a familiar environment and are now forced to live at Makhoakhoeng, which has its own demands, placed enormous stress on those affected because they now have to find new coping strategies in the new environment.** **ii) Loss of social support networks, especially for women from extended family members and friends, has increased the social burden on the women. Furthermore, the fact that the affected households lived with or close to members of the extended family caused them not to feel lonely, but now at Makhoakhoeng, there is more individualism and less reliance on neighbours and relatives.** **iii) The fact that during the public participation process, the issues of subgroups were not addressed in the resettlement programme, created much dissatisfaction amongst the women. The resettlees were treated as one homogeneous group. A lack of differentiation between the resettlees assumed that different subgroup did not have specific needs that required to be taken into account when developing a resettlement programme. The consequences are that women and children in most cases are exposed to high levels of vulnerability, because men as the heads of households are the ones who make decisions in terms of how the resettlement package is ultimately used.** **iv) The fact that resettlement forced the affected households to switch from farming to cash-based means of livelihood can be devastating to some, especially if they do not have the necessary skills to compete for job opportunities in the new area.** **v) The fact that compensation money is the main source of income for some of the households, without other sustainable strategies, means that the dependency syndrome has been promoted.** **vi) At Makhoakhoeng, some of the resettlees no longer perform their traditional rituals that used to provide them with a sense of security, as they now have no access to some of the natural resources they require to perform these cultural practices. Moreover, prior to resettlement, the affected households had unlimited access to natural resources like wild fruits and medicinal plants, which has now been lost, implies that the nutritional status of those affected has been negatively affected. Furthermore, the fact that the resettlees have small vegetable gardens does not mean that they have the same access to the variety and quantity of wild fruits, vegetables and medicinal plants as they used to when they were still in Molika-Liko.** **vii) Some resettlees at Makhoakhoeng suffered from stress-related illnesses from which they had never suffered prior to resettlement.** **viii) Some promises made by the LHDA were not fulfilled, for instance compensation for loss of natural resources had not yet been compensated at the time of the interviews.** **ix) The affected households were exposed to social distress owing to the apparent conflict between themselves and the host community at Makhoakhoeng.** **x) The cultural aspects of the resettlement have not been adequately addressed, thereby creating a sense of fear or insecurity amongst the resettlees. This can partly be attributed to failure to conduct an SIA.**

The lack of adequately addressing the social and cultural issues in resettlement programmes has had devastating consequences on the resettlees where irreversible losses,

like loss of access to the natural stock, have been experienced by people resettled at Makhoakhoeng. This lack of factoring social and cultural issues into the resettlement programme may be attributed to a number of factors. These include the tendency to either relegate such issues to a subordinate position or are regarded by decision makers as factors that can be discounted because they are not immediately quantifiable and therefore can either be ignored or mitigated later - after the project has been completed.

7.2 Main conclusions emerging from the study

This section deals in some detail with the specific conclusions of the study. These conclusions include issues pertaining to participation of the affected households in the resettlement programme: whether resettlees have sustainable means of livelihood, and access to social services, whether promises had been honoured, and whether intangible aspects have been adequately addressed within resettlement programmes.

7.2.1 Conclusion 1: Inadequate public participation by the affected households

The study findings have revealed the need to engage with all the stakeholders affected by involuntary resettlement through an open and transparent public participation process right from the inception phase to the post-implementation phase of a resettlement programme. This increases chances of having a resettlement programme that has satisfying results, especially amongst the marginalised and vulnerable groups such as the women. Inadequate engagement with the stakeholders, in this case the host community, resulted in devastating consequences, where there was conflict between the host and resettled households (see paragraph 6.7.5). There is thus a need to bring all parties to the table and then openly and transparently to engage in discussions. However, this is only possible where the civil rights of people are well protected by national constitutions and political systems. Unfortunately, in the case of the LHWP, the decision to proceed with the construction of the project was taken during the era of military rule in Lesotho. Obviously, this type of governance limits civil rights and therefore public participation will accordingly emulate the prevalent political system, which resulted in a high level of dissatisfaction with the public participation process.

The Makhoakhoeng case study can be seen as providing a sterling example of the worldwide experience where the risk bearers have little or no say in the decisions regarding water development and their consequences (see Chapter Three). One of the reasons for the non-participation of the local communities in the decisions making regarding dam projects, especially in cases where the political system limits people's civil rights, is the fact that the

affected people are usually not regarded as equal partners in these developments. The resettlement programme at Makhoakhoeng has been no exception in this regard. Inadequate participation of people affected by the resettlement programme at Makhoakhoeng contradicts some of the international instruments like the San Francisco Declaration of 1988, which states that people affected by dam projects should participate in the decision-making processes right from the pre-feasibility stage (Chapter Four).

The need for a well-articulated and properly executable public participation plan cannot be overemphasised, as it would also, amongst others, assist with the identification of sustainable means of livelihoods and ways of compensating for the loss of access to some of the valuable natural resources that sustain livelihoods.

7.2.2 Conclusion 2: A need for an alternative sustainable means of livelihood

The findings point to the need to pay attention to the identification of more sustainable means of livelihoods for people affected by resettlement. This issue is critical, especially because the treaty on the LHWP and the LHDA Order, both of 1986, allude to the need to reinstate the standard of living of those people who are affected by the project activities. This is because, through resettlement at Makhoakhoeng, those affected households have undergone drastic changes in terms of both the means of livelihood and of the social disruption, where social networks have been broken. Again, there is observable dependency on compensation payments, which has resulted in the abandonment of agriculture production.

Lack of putting in place sustainable means of livelihoods that would reinstate the income-generating capacities of the affected households, can be partly attributed to a lack of consensus on the conceptual definition of what the policy means by 'reinstatement of the standard of living' of those affected by the project. This becomes even more necessary in cases where standards of measurement are required to assess whether such policy objectives as for example the maintenance of living standards have been attained or not, especially after people were subjected to drastic transformation as in the case of the households that have been resettled at Makhoakhoeng. In order to clearly guide strategies for implementation, it is thus always necessary to define, debate and clarify some of the key policy statements like, for instance, what is meant by 'reinstatement of the living standards'.

7.2.3 Conclusion 3: Improved access to social services comes at a cost

Although the resettlement programme at Makhoakhoeng has brought improvements in terms of access to social services such as clean water supply and electricity, these have come at a cost, which seems to have caused much dissatisfaction amongst the resettlees. Therefore, there is a need to ensure that when people are presented with resettlement options, they are also given information on the costs and benefits associated with each of the options so as to enable them to make informed decisions. For example, if people choose to have electricity as an energy option, then they should be provided with information that shows its benefits and costs. For instance, the study has shown that having electricity allows women to perform multiple functions simultaneously, and that electricity contributes to the reduction of air pollution when compared with the use of either biomass or fossil fuel. However, regarding the costs, the study has shown that having electricity means that monthly bills will need to be paid depending on how much electricity has been used. In this way, the paying of water bills or the buying of electricity will not be seen as an imposed cost burden in that people will have made informed decisions.

Furthermore, study findings point to the need to provide people affected by resettlement adequate time to internalise the implications associated with being resettled. For instance, whether the resettlees fully understand the pros and cons of being closer to health services, shops, urban centres, schools; and the fact that the means of livelihood will change after being resettled. In this case, some of the households had approximately two years to prepare for relocation. Although more time may be considered as an opportunity lost, this would give the affected households extra time to gather more information prior to relocation so that informed decisions are made. This would reduce some of the physical illnesses experienced during post-relocation, like stress, hypertension and so forth, as people would then have been more prepared.

7.2.4 Conclusion 4: The importance of honouring compensation promises

The importance of honouring promises made by those charged with the implementation of resettlement programmes is fundamental in that it builds trust between the implementing agency and the resettlees. Once this does not happen, as seen in the case of Makhoakhoeng, where promises to compensate for the loss of access to natural resources were not kept - the outcome of the resettlement, in the eyes of those affected, is not satisfying. This resulted in bitterness and violation of human rights.

7.2.5 Conclusion 5: Absence of a comprehensive SIA affects the outcome of resettlement programme.

Adequate information is a prerequisite for a successful resettlement programme. The need to conduct SIAs cannot therefore be overemphasised. As seen in the case of Makhoakhoeng, where baseline information in the form of census was collected without conducting an SIA, this resulted in insufficient information to inform the resettlement programme, especially on the socio-cultural issues, hence there were high levels of discontent with the resettlement programme. This is because an SIA should have pointed to the need to consider a more stratified approach in respect of engaging with the affected communities, and of including the host community as an important stakeholder in the group of the interested and affected parties.

7.2.6 Conclusion 6: The importance of the intangible aspects within resettlement programme

There is a need to ensure that the intangible aspects of resettlement are adequately addressed. The alternative is a high level of dissatisfaction, despite the availability of the tangible aspects like providing good compensation houses with adequate services. For instance, in the case of Makhoakhoeng, most of the women said that their lives had deteriorated when compared with the situation in Molika-Liko because of the loss of a social support system (social capital) that they had shared with extended family members and friends. They also mentioned the fact that some of the respondents were not feeling safe as they had not performed some of their traditional rituals because they no longer had access to some of the natural resources. The foregoing are typical examples of not paying attention to the intangible aspects of resettlement. All these have contributed to the expressed dissatisfaction with the resettlement package. This goes to show that the intangible aspects of resettlement - like social capital - are equally as important - if not more important - as the physical aspects of resettlement.

7.2.7 Conclusion 7: The importance of a properly functioning appeal system

People affected by resettlement are becoming increasingly resentful owing to bitter experiences resulting from their resettlement. There is thus a need to put in place an appeal system that is affordable and accessible to people who are dissatisfied with the resettlement package. Makhoakhoeng provides a sterling example of where the resettlees lodged their case with the Ombudsman at no cost to them as complainants. In this way, the affected

people had access to the legal system in cases where they felt that their rights were being violated. Otherwise, the inability to account adequately for the injustices caused by involuntary resettlement emanating from the construction of large dams do not only result in the impoverishment and suffering of millions, but also give rise to growing opposition to dams amongst affected communities, their leadership, and civil society organisations worldwide. However, the affected people are not always in a position to challenge the construction of large dams owing to meager resources at their disposal, which ultimately undermines their efforts (WCD, 2000).

7.3 Recommendations

The recommendations contained herein are intended to ensure that, when approaching resettlement programmes in future, pertinent issues surrounding such programmes should be well thought out and provided with a clearly articulated plan of action in order to have satisfying outcomes. For this to happen, there is a need to change the mindset of all concerned, and especially of those charged with the responsibility of implementing resettlement programmes.

7.3.1 Recommendation 1: Change the mindset of those managing resettlement programmes

Change of the mindset of those charged with the responsibility of managing resettlement plans is vital, but not as an end in itself. In managing resettlement programmes, those concerned have to be empathetic, particularly because involuntary resettlement is a painful process that does not need to be further aggravated by negative attitudes of the implementing agencies. It was also confirmed by the Lesotho Ombudsman that some of the problems that were encountered by the resettlees at Makhoakhoeng were compounded by the negative attitudes of some of the LHDA officers.

7.3.2 Recommendation 2: Reform institutions within the water sector

Institutional reforms within the water sector are also required for those institutions associated with dam construction, be they financiers, large corporations, political institutions or implementing agencies at the national level. These reforms can be in the form of instruments like legislation and policies propagating for the protection of the human rights of those affected by resettlement. These instruments should propose the following:

i) People affected by dam construction through resettlement should give their consent prior to the design and construction of dams so that they are better able to deal with the consequences emanating from such design and construction. Obviously this was not the case with the Mohale Dam where the affected people were informed that they would have to be relocated on a certain date, without giving them any other option. The issue of prior consent has been raised by Rivers for Life (2003) and the WCD (2000), with both saying that it should actually form the basis for supporting future construction of dams.

ii) Another issue for consideration is that the financiers should have in place a system of penalties and sanctions for the non-compliance of those who do not comply with the proposed framework by the WCD (2000) for dam construction. This framework recognises the importance of having the prior consent of the affected people, it recognises their rights, and it moreover assesses the risks of all stakeholders. Since the financial institutions have the choice of supporting a dam project or not, they have the upper hand in terms of ensuring adherence to the framework for decision making, particularly because when things go wrong with dam construction, criticism is usually levelled against them. One way of ensuring compliance is by giving incentives to those who comply; and those who do not comply should receive penalties. This approach is usually referred to as 'carrot and stick' (Scudder, 2005).

iii) Moreover, there should be clear and consistent criteria and guidelines at the national level, based on the best practices as contained in the report of the WCD (2000) that will be binding, and that will guide the planning and the execution of resettlement programmes so as to ensure satisfactory outcomes.

7.3.3 Recommendation 3: Adopt a multidisciplinary approach in resettlement programmes

In managing resettlement programmes, it is essential to adopt a multidisciplinary approach specifically because resettlement itself, as seen in the case of Makhoakhoeng, required inputs from different experts. For instance, civil and electrical engineers would obviously have to be part of the team to ensure that infrastructure services like water, waste-water disposal system, access roads, etc. are provided in the new location. Other specialists may include:

- Architects and quantity surveyors are required for design and supervision of constructing the new replacement houses

- Town planners, through working with the engineers, to plan the resettlement area

- Sociologists and social anthropologists and development experts to conduct public participation (see recommendation 7.3.4), social impact assessments (see recommendation 7.3.5) and to monitor the implementation of the resettlement plan

- Economists, to work closely with the sociologists in terms of not only assisting with the budgeting of the resettlement programme, but also to assist with the identification of economic opportunities in the resettlement area so that the resettlees are assisted with reinstatement of their income-generation capacities.

Although a multidisciplinary approach is being proposed, it is important to be mindful of the fact that each resettlement programme may have different requirements of expert input.

In promoting a multidisciplinary approach in handling resettlement, a continual interdisciplinary dialogue across the full range of technical, economic, social, environmental and other core developmental issues is essential to ensure that all are kept well abreast of both the current and the future thinking in these fields. This will help to avoid an information gap and a lack of capacity of national governments to manage large dam projects with a resettlement component.

7.3.4 Recommendation 4: Differentiate resettlees into subgroups

In reinstating the income-generation capacities of people affected by resettlement, it is important not to treat resettlees as one homogeneous group as was the case with the resettlement programme at Makhoakhoeng. Going by this view, it is therefore important to have in place strategies that address the needs of each of the cohorts such as the elderly, the women and the children within the resettlement programme. This enables the implementing agency to attend to the needs of each group, especially of those classified as vulnerable. Examples of groups that can be classified as vulnerable are:

- Heads of households over the age of 65 years

- Heads of households who are ill or disabled

- Female heads of households
- Child heads of households
- Children resident in the homestead showing signs of clinical malnutrition.

Once these groups are clearly identified, it becomes easier to design programmes that address their specific needs, which would hopefully ease the trauma of resettlement on them through special considerations such as:

- Allowing them the first priority in site selection in the host area
- Attempting, where feasible, to locate them near kin and neighbours
- Arranging contractor-built replacement houses if the resettlees are agreeable
- Assistance with the dismantling of salvageable materials
- Maintaining of nutritional and health status
- Assistance in preparing a vegetable garden
- Annual monitoring to determine whether a top-up payment is still applicable given changes in the level of income and standard of living
- Training resettlees in income-generation programmes and assisting them to take advantage of the economic opportunities provided by the project.

7.3.5 Recommendation 5: Engage in an open and transparent public participation process

Public participation is important for gaining public acceptance of any programme, including resettlement. It is therefore necessary in designing a public participation programme, to plan in terms of who the stakeholders are, and what their stake is, so that appropriate means of engaging with each interest group and affected group are appropriately identified. It is, however, important to be cognisant of the fact that stakeholders differ from project to project, in respect of some of the following:

- Affected people either as individuals or in groups (both resettlees and host communities) - women, men, children, elderly and so forth

- Local leadership of both the host communities and the resettlees
- Civil society groups
- Financiers
- Representation of the central government
- Implementing agency
- Private sector: consultants and contractors.

Each of the mentioned groups can table their issues of concern regarding resettlement and possible solutions. All of these can be facilitated through a public participation process. Even if separate means of engaging with each of the stakeholders are identified and implemented, joint meetings with all of them in participation forums like CLCs are crucial. These joint meetings will facilitate exchange of information that can be used in the development and refinement of a resettlement programme with clearly articulated mitigation measures. Such joint meetings will also enable the resettlees to make informed decisions regarding their relocation.

In the identification of the impacts and appropriate mitigation measures at these joint meetings, it is important for facilitators, particularly when dealing with resettlement of people, to find a middle field between the use of indigenous knowledge - that can be sought through a public participation process - and technical knowledge, as both should be complementary rather than work against each other. In this way, all sides would listen and take into account the knowledge coming from other parties, thereby ensuring mutual enforcement (Al-Jayyousi, 2003). As already mentioned, engaging with the stakeholders on some of these issues would go a long way towards providing sustainable joint solutions on how to deal with some of the problems experienced in the resettlement programmes. This is important, particularly because indigenous knowledge is key to the reinstatement of the livelihoods of people who are affected by dam construction and are subsequently resettled. The construction of dams should thus in future only proceed after open and transparent participatory decision making has been reached by all concerned. If, after the assessment, there are no viable options other than the construction of a dam, the following strategic priorities and core values suggested by the WCD (2000) should always be considered. This would hopefully ensure universal approval of the proposed development.

- Recognition of the rights and assessment of risks forms the basis for the identification and inclusion of stakeholders in the decision making on energy and water resources development.

- Access to information, legal and other support is available to all stakeholders, particularly indigenous and tribal peoples, women and other vulnerable groups, to enable their informed participation in the decision-making processes.

- Demonstrable public acceptance of all key decisions is achieved through agreements negotiated in an open and transparent process conducted in good faith and with the informed participation of all stakeholders.

- Decision on projects affecting indigenous and tribal peoples are guided by their free, prior and informed consent, achieved through formal and informal representative bodies.

7.3.6 Recommendation 6: Conduct Social Impact Assessments with a monitoring and evaluation component.

SIAs are closely linked with the public participation process. However, in Lesotho SIAs are an integral part of the EIA process which aims at protecting both the natural environment and people. Before any dam project is implemented, it is therefore crucial that proper SIAs are conducted to, amongst others, determine the following:

- Who is likely to be affected by the construction of the dam? This can be done through a public participation process as well as conducting comprehensive baseline studies both at the construction site and in the host community so as to determine the likely impacts.

- What are the likely positive and negative impacts on people, and what would be the extent of the impacts if the project was not being implemented, or being implemented in one or more different ways? Here, SIA as a tool becomes useful in assisting in the selection of the best option even when it comes to the mitigation measures in order to have satisfactory results.

- What steps need to be taken to mitigate the negative impacts of each alternative option and enhance the positive ones? It is however important to be aware of the fact that there are unintended impacts that are both difficult to detect and to mitigate.

Recommendations coming out of the SIA should be implemented, and this requires political support to ensure that such assessments do not simply become a paper exercise but can actually be used to inform decision-making processes.

Therefore, once a decision is reached on the preferred project option, it is recommended that the detailed feasibility studies, including socio-economic studies, should proceed immediately. This is crucial because, in the case of Molika-Liko, census data was conducted in the Mohale Basin without doing the same for Makhoakhoeng, where it thus became difficult for the implementing agency to anticipate the impacts that would be experienced in the new location by both the host population and the incoming population. This is necessary because experience has shown that adequate information is a prerequisite for a successfully planned resettlement programme. Although the collection of socio-economic baseline information is an absolute necessity - in that it informs the design of a resettlement programme - the WCD (2000) also suggests that, in developing a resettlement policy, law and plan, the proponent should:

- In conducting the impact assessment, include all people in the reservoir, upstream, downstream and catchment areas whose properties, livelihoods and non-material resources are affected. The assessment should also include those affected by dam-related infrastructure such as canals, transmission lines and resettlement developments.

- Negotiate mutually agreed, formal and legally enforceable mitigation, resettlement and development entitlements with all of those affected.

- Recognise the adversely affected people as the first among the beneficiaries of the project, and also implement mutually agreed and legally protected benefit-sharing mechanisms with them.

Furthermore, follow-ups in the form of monitoring and evaluation are a necessity and have to be an integral part of a resettlement programme so as to obtain feedback on the effectiveness of the programme. This is because decisions on the mitigation measures are made within an environment that is dynamic and this therefore requires plans to be adjusted so that they continue to remain relevant. Hence the importance of flexibility in the resettlement programme cannot be over emphasised.

7.3.7 Recommendation 7: Identify sustainable means of livelihoods for the resettlees

Identification of sustainable means of livelihood is fundamental to the success of any resettlement programme. Once the decision has been taken to construct a dam at a specific location and the people likely to be affected by resettlement have been identified, plans for sustainable livelihoods should proceed immediately. Obviously this entails a number of activities to be undertaken, like: the identification of projects and economic opportunities in the area earmarked for resettlement; market and economic surveys in the new locality; and, the design of sustainable livelihood programmes and capacity-building programmes for the resettlees. All these should be completed well ahead of the physical relocation of the resettlees, so that when the affected households move to the new location, plans and resources are already in place to enable them to generate their own income. In other words, a well-articulated policy should mostly focus on the reinstatement of livelihoods and use the compensation cash payments as a safety net while new means of livelihood are being introduced. Therefore, the compensation policy should amongst others, address issues of compensation that pertain to farming and non-farming activities. This means that, in appraising the dam projects, resettlement policies should also be assessed in terms of their comprehensiveness, so that those countries with shoddy policies are denied access to international financing (Scudder, 2005).

One way to ensure that the resettlees have financial resources to support their sustainable livelihoods projects is by incorporating them as co-project managers of the resettlement programme. This approach was used in the case of Brazil's Ita Dam, where the affected communities were allocated a certain amount of funding that enabled them to build larger houses. Another way is by entering into shareholding arrangements with the proponent or the implementing agency. This approach was also pioneered in Canada where Hydro-Quebec and the Band Council of the Montagnais of Lac Saint Jean formed a limited partnership where they owned 49.9% of the company shares and 50.1 % of the shares were owned by the Native Americans (Scudder, 2005). The shareholding between the two parties was based on equity principles that - through the land owned by the natives, and other associated sacrifices made by them to have the project implemented - made them the majority shareholders. Both of the above approaches afford the resettlees an opportunity to be active partners in the resettlement programmes. These approaches offer a point of departure from most resettlement programmes and also that of Makhoakhoeng, where participation of the resettlees in the decision-making processes was limited. At

Makhoakhoeng the resettlees were not active partners in development with the LHDA, but were more of subservient recipients of the resettlement package.

7.3.8 Recommendation 8: Compensate affected people for loss of access to common property

Another issue that requires to be addressed at the policy level is compensation for common property such as rangeland that sustains livelihoods through providing the communities with natural stock, for example, wild vegetables, fruits, medicinal plants and different types of grasses used for various income-generating activities. It is here where a consideration could be given to land-for-land compensation as a viable compensation option, although arable land in Lesotho is continuously shrinking, making this option quite difficult. However, owing to a high unemployment rate, some of the households with arable land are not able to use their land for agricultural farming, because they cannot afford to buy the required land inputs. Therefore these are the people who can receive compensation, while the unused arable land in question can be reallocated to those resettlees who are still able and willing to venture into agricultural farming.

Moreover, dams are constructed on rivers and the created reservoirs more often than not inundate public property, like a river or rangeland, for which the communities had various uses. Because they are no longer able to use the common property, compensation will have to be paid to such affected communities. One of the ways to compensate for this type of loss would be to commit a certain percentage of the overall project money to developing the new resettlement area. But before proceeding with such decisions, it is important to subject such a decision to a public participation process in terms of determining what such compensation should entail, and how can it be used. This will hopefully instill a sense of ownership in the final outcome of the resettlement and compensation package.

7.4 Conclusions

People affected by involuntary resettlement have in most cases had bitter experiences, owing to a number of reasons like insensitivity towards project affected people and poor implementation of the resettlement programmes. Yet, that does not justify a blind opposition to each large dam, because it would deny people an appreciation of the fact that development and environment can be complementary in the agenda to eradicate poverty and to improve the standard of living of the world's poor. Thus a mindset change in respect of ways of doing things is of paramount importance (Ahmad, 2003).

Irrespective of unpleasant past failures with regard to involuntary resettlement, it is possible, with skilful participatory planning and sufficient funding, to avoid some of the past mistakes. Goodland (1995) also observed that improvements have been achieved over the last few decades in the way resettlement schemes are handled. It has now become an acceptable practice to treat resettlement costs as an integral part of the overall engineering projects. The work of the WCD (2000), which provided a new framework for decision making in respect of dam construction, and other initiatives from civil society, provide hope for the future in terms of how resettlement programmes are handled, and as such, the future in as far as resettlement programmes are concerned, is not as bleak as it was two decades ago.

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Appendix A:
Key informants: interview guide for the implementing agency

1. What is your position within the organisation?

   ……

   …….....

   .....

2. What are your responsibilities within the organisation?.....

   ……

   ……

   ……

3. What was your role in the Makhoakhoeng resettlement programme upto 1998[79]?

   ……

   ……

   ……

4. When did you start being involved with the resettlement programme at Makhoakhoeng? (Year) ……

5. Within the resettlement programme at Makhohoeng, what were the key issues that you specifically dealt with?

   ……

   ……

   ……

6. How did the key issues that you dealt with, edify the resettlement programme at Makhoakhoeng?

   ……

   ……

   ……

[79] In 1998, the physical relocation from Molika-Liko to Makhoakhoeng actually took place.

7. In your own words, can you describe the process that was followed from the beginning of the resettlement programme at Makhoakhoeng to where it is now?

   ……
   ……
   ……
   ……

8. Do you think all relevant stakeholders were engaged adequately in the resettlement programme at Makhoakhoeng?……
   ……
   ……

9. Do you think the compensation package paid is adequate to date?

   ……
   ……

10. If not, why not?

   ……
……
……
……

11. If yes, substantiate your answer……
   ……
   ……..

12. Is it always been paid timeously?

   ……
   ……

If no, why not?

……
……

13. Can you list the compensation payments received by the resettlees at Makhoakhoeng?

   ……
   ……
   ……

14. Do you know how the compensation and the resettlement package was developed?

……

……

……

15. Do you think the process of developing the resettlement package was participatory?

If yes, explain how

……

……

If no, why not?

……

……

16. If yes, in your opinion do you think the resettlement project has achieved its goals of either reinstating or improving livelihoods? Substantiate.

……

……

Appendix B:
A checklist of questions for LHLDC and the office of Ombudsman

1. Name of organization:

   …….....

2. Position Held:

   ……

3. What is the responsibility of your position within the organisation that you work for?

   ……

4. When did you first here about the LHWP resettlement programme at Makhoakhoeng?.....

   .....

   ...../.

5. How did you know about the LHWP resettlement programme at Makhoakhoeng?

   ……

   ……

6. What has been your involvement with the LHWP resettlement programme?

   ……

   ……

   …….....

   .....

7. In your opinion, do you think the resettlement programme was handled well?

Yes ☐

No ☐

Substantiate:

……

……

……

……

……..

8. Do you think the lives of those affected has been improved? Please give reasons.

   ……

   ……

   ……

   …….

9. Any suggestions for managing future resettlement programmes?

   ……

   ……

Appendix C: Questionnaire for households resettled at Makhoakhoeng

A. DEALS WITH INFORMATION AFTER RESETTLEMENT

(Interviewer, it is important in your introduction to assure the respondent of the anonymity and that information will be treated with confidentiality). If there are official documents on compensation payments, they should be availed for cross referencing).

A.1 Gender of Respondent:

A.2 Age of Respondent:

A.3 Relationship to HH[80]:

(It is important to inform the respondent that part A of the questionnaire focuses only on the information <u>after</u> resettlement at* Makhoakhoeng*).

A.4 Information on the household members ***(Interviewer: fill in the correct code in each of the cells)***

Age	Sex	Employment status	Employable skills

Codes:

Employment Status	Age	Employable skills		Gender
00. not working	1. 0-9	1. None	13. Police/security	1. Female
01. self employed	2. 10-19	2. Handicrafts	14. Teacher	2. Male
02. employed in RSA mines	3. 20-29	3. Construction labour	15. Doctor/nurse	
03. employed elsewhere in Lesotho	4. 30-39	4. Mine labourer	16. Herbalist/traditional doctor.	
04. employed elsewhere in RSA	5. 40-49	5. Machine/plant operator	17. Electrician	
05. other specify	6. 50-59	6. Driver	18. Unknown	
06. unknown	7. 60-69	7. Mechanic	19. Other specify.	
	8. 70+	8. Carpenter/Painter		

A.5 What is your household's main source of income?

---

[80] Household Head (HH) refers to a person who is responsible for the daily decision-making of a household, which comprises a single person or group of people sharing living accommodation and food (Abercrombie *et al.*, 2000).

A.5-(i) How often do you get income from this source and how much do you get?

Frequency **Amount**

--- ---

Codes:

Frequency	**Amount**
1. Daily	0-M1500
2. Every two weeks	1-M1501-M3000
3. Monthly	2. M3000-M6000
4. Every three Months	3. Other (specify)
5. Twice a year	
6. Once a year	
7. Other specify------	

A.6 Type of tenancy at Makhoakhoeng (Interviewer: put an x in the box next to the correct answer):

Rented ☐

Owned ☐

Other ☐

A.6-(i) If rented: how much is paid per month? …….

A.6-(ii) If owned: answer the following by putting an appropriate code in each cell:-

No. of House(s)	**Type of house**	**Construction material**	**Roofing material**	**No. of rooms**
House 1				
House 2				
House 3				
House 4				

CODES:

Type of houses	**Construction material**	**Roofing**
1. rondavel	1. stone	1. thatched grass
2. heisi	2. burnt bricks	2. corrugated iron sheet
3. malaene	3. concrete bricks	3. corrugated iron
4. optaka	4. sticks & mud	4. brick tiles
5. apartments	5. wooden poles	5. Asbestos sheets
6. polata	6. other (specify)	6. Other (specify)
7. other (specify)		

A.6-(iii) Is your replacement house at Makhoakhoeng bigger or smaller than the house you had at Molika-Liko? ***(Interviewer: put an x against the appropriate response).***

1. Bigger --------. 2. Smaller ---------. 3. The same ---------. 4. I am uncertain--------.

A.7 What are your household water sources at Makhoakhoeng for the following ***(Interviewer: fill in the correct code against each question)***

i) Drinking and cooking :----------

ii) Washing clothes :----------

iii) Bathing :----------

Code:

1. Covered spring 2. Uncovered spring 3. Well 4. Public stand pipe 5. Own standpipe 6. Inside piping 7. Buying from neighbours

A.7-(i) Here at Makhoakhoeng, how long does it take you or members of your household to fetch water walking to the nearest water source? ----------

A.8 What energy sources does your household use for the following?

i) Cooking :----------

ii) Heating :----------

iii) Lighting :----------

iv) Entertainment :----------

A.8-(i) Where do you get the different types of energy mentioned above and how long does it take you travelling? ***(Interviewer: indicate the correct code against each answer given in the table below)***

Type of energy source used	Source	Time taken to travel	Using what mode of transport

Codes:

Types of energy sources:
1. Electricity
2. Gas
3. Paraffin
4. Coal
5. Lisu- cow dung
6. Firewood
7. Diesel
8: Candles
9. Solar Power
10. Other specify--------

Source:
1. Local shops
2. Urban Centre
3. Home grown trees
4. Community owned trees
5. Own Kraal
6. Neighbours Kraal
7. Nearest Filling station
8. Other Specify-----

Travel time:
1. less than 1hr
2. 1-3 hrs
3. More than 3hrs

Mode of transport:
1. Walking
2. By car
3: By horse/donkey
4. Other Specify----

A.9 How far is your household from the following health services**? *(Interviewer: fill in the correct code against each question).***

		Travel time	Mode of transport
a).	Private Doctor	: ----------	----------
b).	Health Centre	: ----------	----------
c).	Hospital	: ----------	----------
d).	Traditional Doctor	: ----------	----------

Code:

Travel Time:
1. Less than 1hr
2. 1-3 hrs
3 More than 3hrs.

Mode of transport:
1. Walking
2. By car
3. By horse/donkey
4. Other (specify)

A.9-(i). Since your arrival at Makhoakhoeng, have you or members of your family suffered from any disease(s)? ***(Interviewer, tick the correct answer. If the answer is no, skip (ii) and (iii))***

1. **Yes**------ **No**-----

A.9-(ii). If yes, what disease(s) have you or members of your family suffered from?

A.9-(iii). Was it the first time that you suffered from these disease(s) or had you suffered from the same while you were at Molika-Liko?

A.9-(iv). Where do you go when you are sick? ----------

A.10 What type of sanitary facilities do you use in your household? ***(Interviewer: put an x next to the appropriate answer).***

No toilet

Bucket toilet

Pit latrine

VIP

Sewerage system

A.11 How far is your household from the nearest? ***(Interviewer: fill in the correct code against each answer).***

	Travel time	**Mode of transport**
a). Shop	:----------	----------
b). Primary school	:----------	----------
c). Secondary School	:----------	----------
d). High School	:----------	----------
e). Urban centre	:---------- -	----------

Code:

Travel Time:	**Mode of transport:**
1. Less than 1hr	1. Walking
2. 1-3 hrs	2. By car
3 More than 3hrs.	3. By horse/donkey
	4. Other specify----------

A.12 Which of the following does your household own or have free access to? ***(Interviewer: mark all appropriate items with an x).***

	OWNED	FREE ACCESS
Radio		
Television		
Telephone		
Video camera		
Motor car		
Refrigerator/freezer		
Wheel barrow		
Scotchcart		
Fields		
Cattle		
Sheep		
Goats		
Poultry		
Horse		
Donkey		
Yoke/chain		
Hoe		
Ox-implement		
Motor vehicle, excluding cars		
Bicycles		
Sewing machine		
Business		
Arable Land *		
Other specify		

(***Interviewer: if they own or have free access to land, then go to i; ii; and iii.)If not proceed to A-13.***

A.12-(i). If you have arable land, have you grown any crops in the last two years? ***(Interviewer: tick the correct answer with an x).***

1.**Yes**------ 2. **No** ------- 3. **Not Applicable**----------

A.12-(ii). If no, why not?----------

A.12-(iii).Where is this land located? ***(Interviewer: tick the correct answer).***

a. In the resettlement area (*Makhoakhoeng*)

b. In the Mohale Basin (where they originate from)

c. Elsewhere (specify)----------

A.13 Does the household own any business? ***(Interviewer: put an x next to the correct answer).***

1. Yes ---------- **2. No.**----------

A.13-(i) If yes, what type of business is owned? (specify)----------
---

A.13-(ii) How did you raise capital for the business? ***(Interviewer: put an x next to the correct answer)***

Compensation money : ----------
Loan : ----------
Other sources specify :----------

A.13-(iii) Does the business generate enough income to meet your household needs? ***(Interviewer: put an x next to the correct answer).***

1. **Yes**---------- 2. **Only partially**---------- 3. **No**---------- 4. **Other specify**----------

A.14 What compensation payments have you received as part of your resettlement package? ***(Interviewer: tick next to those compensation items received)***.

Compensation type	**What was compensation paid for?**
a. Grain	----------
b. Cash on annual basis	----------
c. Replacement housing	----------
d. Toilets	----------
e. Piped Water	----------
f. Water tanks	----------
g. Lump sum cash	----------
h. Electricity connection	----------
i. Replacement arable land	----------
j. Other (specify)----------	----------

(Interviewer: where supporting documentation exists, please verify the above information against it).

A.14-(i) What have you used the compensation received for?----------
---

A.14-(ii). Other than the compensation received were there any other compensation promises made to your household? ***(Interviewer: tick the correct response).***

1. **Yes**---------- 2. **No**----------

A.14-(iii). If yes, what were they?

A.14-(iv). Were the promises fulfilled? ***(Interviewer: mark response with an x).***

1. **Yes**---------- 2. **No**----------

A.14-(v). If no, do you know why not?----------

A.15 In general are you satisfied or dissatisfied with your compensation payments and resettlement at Makhoakhoeng? ***(Interviewer: put an x next to the correct answer).***

1. Satisfied---------- 2. Dissatisfied----------

A.15-(i) If satisfied, why?

A.15-(ii) If dissatisfied, why?

A.15-(iii). If you are dissatisfied, what steps have you taken to express your dissatisfaction?

A.15-(iv). What has been the outcome of these steps?

A.16 Since resettlement at Makhoakhoeng, are there any members of the household who have migrated elsewhere? ***(Interviewer: mark response with an x).***

1**. Yes** ☐

2**. No** ☐

A.16-(i). Why do you think they moved away from Makhoakhoeng?----------

---

A.17 In general, how good or bad is life here at Makhoakhoeng? ***(Interviewer: mark response with an x).***

1 – Bad

2- Average

3 – Good

4 – Very Good

A.17-(i). Why do you say so?: ----------

A.18 In your opinion, has life improved/ remained the same/ or deteriorated for most households in your village, after resettlement? ***(Interviewer: mark response with an x).***

1. Improved
2. Remained the same
3. Deteriorated

A.18-(i) If life has improved, why do you say so?----------

A.18-(ii) If life has deteriorated, why do you say so?----------

---

A.19 In your opinion, how would you rate the following facilities at Makhoakhoeng compared to those in Molika-Liko? ***(Interviewer: mark appropriate column with an x for each facility depending on the response).***

Facilities	Better than Molika-Liko	Worse Molika-Liko	The same as Molika-Liko	Not available in Molika-Liko
Schools				
Roads				
Safe drinking water				
Electricity				
Clinics				

A.19-(i) Why----------

A.20 Are there any specific problems that you have encountered since your arrival at Makhoakhoeng?

1. **Yes**---------- **No**----------

A.20-(i) If yes, please explain ----------

A-20-(ii). Have you (as part of the resettled community) experienced any conflict with the host community? ***(Interviewer, tick the correct response. If no, skip the next questionA.20-(ii.)***

1. **Yes**-------- 2. **No**----------

A.20-(iii). If yes, explain?----------

A.20-(iv). Do the women and elderly members of your household feel safe here at Makhoakhoeng? ***(Interviewer, tick the correct response.)***

1. **Yes**-------- **No**----------

A.20-(v) Explain----------

A.20-(vi). Do you have access to natural resources as was in the previous location (Molika-Liko)? ***(Interviewer, tick the correct response.)***

1. **Yes**-------- 2. **No**----------

A.20-(vii). Explain?----------

A.20-(viii). Do you still perform the same rituals that you used to perform at Molika-Liko?
(Interviewer, tick the correct response.)

1. **Yes**-------- 2. **No**----------

A.20-(ix). Substantiate your response?----------

A.21 If you had an opportunity to change any aspect(s) of resettlement programme, which aspect(s) would you change to improve similar resettlement programmes in future?----------
---

B. THIS SECTION IS ABOUT INFORMATION PRIOR TO RESETTLEMENT

(Interviewer: please remind the respondent that, this section deals only with information prior to resettlement, so there will be heavy reliance on memory recall. If there are existing official documents, for instance on the notification of eviction, then those should be made available for cross referencing).

B.1 At Molika-Liko, what was the main source of income for your household?----------
---

B.2 Type of tenancy at Molika-Liko ***(Interviewer: put an x against a correct answer).***

Rented ☐

Owned ☐

Other ☐

B.2-(i). If rented, how much was paid per month? ……

B.2-(ii).If owned answer the following answer the following by putting an appropriate code in each cell:-

No. of House(s)	Type of house	Construction material	Roofing material	No. of rooms
House 1				
House 2				
House 3				
House 4				

CODES:

Type of houses	Construction material	Roofing
1. Rondavel	1. Stone	1. Thatched grass
2. Heisi	2. Burnt bricks	2. Corrugated iron sheet
3. Malaene	3. Concrete bricks	3. Corrugated iron
4. Optaka	4. Sticks & mud	4. brick tiles
5. Apartments	5. Wooden poles	5. Asbestos sheets
6. Polata	6. Other specify	6. Other specify
7. Other specify		

B.3 At Molika-Liko, what were your main sources of water for the following ***(Interviewer: fill in the correct code against each question):***

a) Drinking and cooking :----------

b) Washing clothes :----------

c) Bathing :----------

Code:
1. Covered spring 2. Uncovered spring 3. Well 4. Public stand pipe 5. Own standpipe 6. Inside piping 7.Buying from neighbours

B.3-(i). How long did it take you walking to the nearest water source in Molika-Liko?----------

B.4 At Molika-Liko, what energy types did your household use for the following?

a) Cooking :----------

b) Heating :----------

c) Lighting :----------

d) Entertainment :----------

B.4-(i) Where did you get the different types of energy mentioned above and how long did it take you travelling to the source? ***(Interviewer: indicate the correct code against each answer given in the table below).***

Type of fuel used	Source	Time taken to travel to the source	Using what mode of transport

Code:

Types of energy sources:
1. Electricity
2. Gas
3. Paraffin
4. Coal
5. Lisu- cow dung
6. Firewood
7. Diesel
8: Candles
9. Solar Power
10. Other specify--------

Source:
1. Local shops
2. Urban Centre
3. Home grown trees
4. Community owned trees
5. Own Kraal
6. Neighbours Kraal
7. Nearest Filling station
8. Other Specify-----

Travel time:
1. less than 1hr
2. 1-3 hrs
3. More than 3hrs
4. Other Specify----

Mode of transport:
1. Walking
2. By car
3: By horse/donkey

B.5 How far was your household from the different health services? **(*Interviewer: fill in the correct code against each question*)**:

		Travelled time	Mode of transport used?
Private Doctor	:	----------	----------
Health Centre	:	----------	----------
Hospital	:	----------	----------
Traditional Doctor	:	----------	----------

Code:

Travel Time:
1. Less than 1hr
2. 1-3 hrs
3 More than 3hrs.

Mode of transport:
1. Walking
2. By car
3. By horse/donkey
4. Other specify----------

B.5-(i) At Molika-Liko, where did you go when you were sick? ----------

B.6 What type of sanitary facilities did you use in your household ***(Interviewer: put an x next to the appropriate answer).***

1. No toilet
2. Bucket toilet
3. Pit latrine
4. VIP
5. Sewerage system
6. No sanitation facilities

B.7 At Molika-Liko, how far was your household from the nearest: ***(Interviewer: fill in the correct code against each answer).***

		Travel time	Mode of transport
Shop	:	----------	----------
Primary school	:	----------	----------
Secondary School	:	----------	----------
High School	:	----------	----------
Urban centre	:	----------	----------

Code:

Travel Time:	Mode of transport:
1. Less than 1hr	1. Walking
2. 1-3 hrs	2. By car
3 More than 3hrs.	3. By horse/donkey
	4. Other (specify)

B.8 Which of the following did your household own or had free access to? ***(tick a correct response).***

	OWNED	**FREE ACCESS**
Radio		
Television		
Telephone		
Video camera		
Motor car		
Refrigerator/freezer		
Wheel barrow		
Scotchcart		
Fields		
Cattle		
Sheep		
Goats		
Poultry		
Horse		
Donkey		
Yoke/chain		
Hoe		
Ox-implement		
Motor vehicle, excluding cars		
Bicycles		
Sewing machine		
Business**		
Arable Land *		
Other specify		

(If they own or have free access to land, then go to i.)If not proceed to ii.

B.8-(i) What was the land used for?----------

B.8-(ii). If your household owned business, what type was it? (specify)----------
---

B.8-(iii). How did you raise capital for the business? ----------
---

B.8-(iv). Did the business generate enough income to meet your household needs? ***(Interviewer: put an x next to the correct answer).***

1. **Yes**---------- 2. **Only partially**---------- 3. **No**---------- 4. **Other specify**----------

B.9 When did you first know that you were going to move?

.....
.....

B.9-(i) When you first heard that your family was going to move, how were your future plans affected?

B.10 Did your household members want to move? (***Interviewer: mark response with an x).***

1. Yes…… **2.** No……

B.10-(i) Why?----------

B.11 What was the reaction from your household members when they first heard that your family was going to move?

B.11-(i).What did your household members do?

B.12 Was your replacement house constructed before or after moving to Makhoakhoeng?

B.13 Did you (or any of your household members) have a choice of selecting the location of your replacement site? ***(Interviewer: mark response with an x)***

1. **Yes**---------- 2. **No**----------

B.13-(i) Explain what actually happened regarding the selection of your replacement site? ----------

---

B.14 Was your new replacement house complete at the time of physical relocation? ***(Interviewer: mark response with an x).***

1. **Yes**---------- 2. **No**----------

B.14-(i) If no, explain ----------

B.15 Did you (or any of your household members) participate in the choice of selecting the type of housing? ***(Interviewer: mark response with an x)***

1. **Yes**---------- 2. **No**----------

B.15-(i) How?----------

B.16 Did you (or any of your household members) participate in the selection of the contractor who built your house? ***(Interviewer: mark response with an x).***

1. **Yes**---------- 2. **No**----------

B.17 What could have been the best way of approaching construction of your replacement house?-
---

B.18 What happened to the construction material of your house at Molika-Liko?

B.19 Did you get any assistance during the physical moving from Molika-Liko to Makhoakhoeng ***(Interviewer: mark response with an x).***

1. **Yes**---------- 2. **No**----------

B.19-(i) If yes, what type of assistance did you get?

B.19-(ii) If no, do you know the reason why you did not get any assistance?----------
---

B.20 During the process of physical relocation, did your household face any problem with regard to each of the following? ***(Interviewer: read out each category and mark response with an x).***

Problems encountered	Yes	No
1. Financial		
2. Transportation		
3. Lack of manpower		
4. Any other problem		

B.20-(i) Explain:----------

B.21 Did any of your family members participate in the decision-making processes on issues of resettlement and compensation? ***(Interviewer: mark response with an x).***

1. **Yes**---------- 2. **No**----------

B.21- (i) Explain (if yes, how & if no why)?

B.21-(ii) If you had family members who participated, can you list in which areas they participated?

Household member	**Area of participation**
1. ----------	1.----------
2. ----------	2. ----------
3. ----------	3. ----------
4. ----------	4. ----------
5. ----------	5. ----------

B.22 Did you (or any of your household members) have an opportunity to raise concerns and needs during the resettlement programme? ***(Interviewer: mark response with an x).***

1. **Yes**---------- 2. **No**----------

B.22-(i) If no why not?----------

B.22-(ii) If yes, how?----------

B.23 In general, were you satisfied with the opportunities given to your household to participate in the resettlement programme *(Interviewer: mark the response with an x).*

1. **Yes**------- 2. **No**---------

B.23-(i). If no, why not? ----------

B.24 How would you rate the facilities and services at Makhoakhoeng with those at Molika-Liko? (***This information pertains to facilities at Makhoakhoeng although they are here being compared with those at Molika-Liko. Interviewer: put an x in the correct cell)***.

	Better	**Worse**	**The same**
Schools			
New replacement house			
Water provision			
Sanitation			
Electricity			

B.25 If you compare life at Molika-Liko with life at Makhoakhoeng, which is better? ***(Interviewer: mark response with an x).***

1. Molika-Liko---------- 2. Makhoakhoeng----------

B.25-(i) Why?----------

Appendix D:
Focus group discussions

A. REACTION

1. When did you know that you were going to move?
2. How did you feel about having to resettle elsewhere?
3. Those who had difficulties with being resettled, how did they deal with the problem?

B. PUBLIC PARTICIPATION PROCESS

1. Were all people from Molika-Liko resettled at Makhoakhoeng?
2. If no, where were the others resettled?
3. Are you still in touch with them? If yes how?
4. Are any of you separated with your kinsmen through resettlement?
5. How do you feel about being separated with your kinsmen?
6. If separation with kinsmen is a bad thing, what should be done in future when similar situations arise? ***(ask women group)***
7. Did you, in your view participate adequately in the decisions regarding your relocation?
8. Were there any participation forums? How were those forums structured in terms of membership?
9. How often were meetings convened in these forums?
10. Were they useful and why?
11. If yes how did you participate - provide the steps followed from the day you heard that you were going to participate in these forums to the day of the actual relocation.
12. In your view, were you satisfied with the way in which you participated- substantiate your answer.
13. ***(Only for women)*** were you satisfied with ways in which you participated in the resettlement programme and why?
14. If things were to be done differently, how can participation process be improved?

C. INCOME SOURCES

1. In Molika-Liko there was over reliance on agriculture as the main source of income when compared to Mokhoakhoeng. So what happened to your fields and livestock that were left in Molika-Liko? Are they still benefiting you in any way? If yes how?
2. How do you feel about the changes in the means of livelihood? Has it improved or worsened? and why? Now that you also have the luxurious items like TVs, electricity and so forth, how do you feel about owning such items?
3. Although some of you have started your own businesses, is it fair to say that compensation money was used as a start up capital?

4. Those who still own hoes and yoke at Makhoakhoeng, do you still derive benefits from owning such agricultural equipment?

D. COMPENSATION PAYMENTS

1. Although they said that electricity & water has imposed a financial burden on you, has access to them improved your lives in any way? Please substantiate your response.
2. Were there any compensation promises made to you? Were the promises fulfilled?
3. What does lack of access to natural resources mean to you?
4. How significant are the rituals that you perform? If you do not perform them how do you feel?
5. In terms of safety, when you first moved, did you feel safe in the new environment ***(especially women)***? How do you feel now?
6. Did you actually get free electricity units in the first 6months? Are you now paying for your own electricity units?
7. What happened to your previous houses?
8. What has been the outcome of your case with the Ombudsman?
9. Since the verdict of your case with the Ombudsman, what has been the outcome of the case?

11. How can resettlement programmes be handled better in future projects?

Appendix E: Examples of reservoir induced seismicity

Dam Name	Location	Height of dam (m)	Volume of reservoir ($.10^8$ m^3)	Year of impounding	Year of largest earthquake	Magnitude or intensity
Major induced earthquakes						
Koyna	India	103	2780	1964	1967	6.5
Kremasta	Greece	165	4750	1965	1966	6.3
Hsinfengkiang	China	105	10500	1959	1962	6.1
Oroville**	U.S.A (Calif.)	236	4295	1968	1975	5.9
Kariba	Rhodesia	128	160368	1959	1963	5.8
Hoover	U.S.A (Ariz)	221	36703	1936	1939	5.0
Marathon	Greece	63	41	1930	1938	5.0
Minor induced earthquakes						
Benmore	New Zealand	118	2100	1965	1966	5.0
Monteynard	France	155	240	1962	1963	4.9
Kurobe	Japan	186	199	1960	1961	4.9
Bajina-Basta	Yugoslavia	89	340	1966	1967	4.5-5.0
Nurek	U.S.S.R	317	10400	1969	1972	4.5
Clark Hill	U.S.A (S.C.)	67	2500	1952	1974	4.3
Talbingo	Australia	162	921	1971	1972	3.5
Keban	Turkey	207	31000	1973	1974	3.5
Jocassee	U.S.A (S.C.)	133	1430	1972	1975	3.2
Vajont	Italy	261	61	1961	1963	
Gramdval	France	88	292	1959	1963	V
Canalles	Spain	150	678	1960	1962	V
Changes in micro-earthquake activity						
Kamafusa	Japan	46	45	1970		2.5
Pieve de cadore	Italy	112	68	1949		2.0
Grancarevo	Yugoslavia	123	1280	1967		1.0-2.0
Hendrik-Verwoerd	S. Africa	88	5954	1970		2.0
Schlegeis	Austria	130	129	1971		0.0
Transient changes in seismicity						
Oued Fodda	Algeria	101	228	1932		
Camarilles	Spain	44	40	1960	1961	3.5
Piasta	Italy	93	13	1965	1966	VI-VII
Vouglans	France	130	605	1968	1971	4.5
Contra	Switzerland	220	86	1965	1965	
Decreased activity						
Tarbela	Pakistan	143	13687	1974		
Flaming Gorge	U.S.A. (Utah)	153	4647	1964		
Glen Canyon	U.S.A. (Ariz.)	216	33305	1964		
Anderson	U.S.A. (Calif.)	72	110	1950		

Source: (Goldsmith & Hildyard, 1984)

* The relationship between the Oroville earthquake and the filling of the reservoir is not as clear as for the other major induced earthquakes. See further comment.

Appendix F:
Dams involving forced resettlement

Dam/ Project	River	State/ province	Country	No. displaced	Res. Area (ha)	Dam height (m)	Installed cap. (MW)	Completion year	Primary purpose	Ref.
E1 Chocon	Limay	Neuquen	Argentina	700	83.000	86	1.200	1973	P	1
Piedra del Aguila	Limay	Neuquen/ Rio Negro	Argentina	400	29.200	173	1.400	1991	P	2
Salto Grande	Uruguay		Argentina / Uruguay	20.000	78.300	65	1.890	1979	P	2
Yacyreta	Parana		Argentina / Paraguay	68,000	172.000	43	3.100	1998	P	2
Mingechaur	Kura		Azerbaijan	4,600	63.500	80	360	1955	P	3
Kaptai (karnafuli)	Karnafuli	Chittagong Hill Tracts	Bangladesh	100,000	65.600	46	230	1962	P	4
Avila	Avila	Rondonia	Brazil	100		38	28	1990	P	5
Balbina	Uatuma	Amazonas	Brazil	1.100	314.700	33	250	1989	P	6
Cana Brava	Cana Brava	Minas cerais	Brazil	500		25	480	1983	P	5
Furnas	Grande	Minas Cerais	Brazil	8.500	144.000	127	1.216	1963	P	7
Ita	Uruguay	Rio Grande do Sul/ Santa Catarina	Brazil	12.000	10.300	125	1.620	1999	P	8
Itaparica	Sao Francisco	Bahia / Pernambuco	Brazil	40.100	83.400	105	2.500	1988	P	9
Itumbiara	Paranaiba	Goias/Minas Gerais	Brazil	3.700	76.000	106	960	1982	P	1
Moxoto	Sao Francisco	Alagoas/ Bahia/ Pernambuco	Brazil	1.000	8.800	34	2.440	1977	P	10
Nova Ponte	Araguari	Minas Gerais	Brazil	5.000	44.300	142	510	1994	P	11
Pedra do Cavalo	Paraguacu	Bahia	Brazil	4.400		142	600	1985	P	5
Porto primavera	Parana	Mato Grosso do Sul/ Sao Paulo	Brazil	10.500	225.000	38	1.815	1998	P	12
Salto Santiago	Iguacu	Parana	Brazil	1.500	22.500	39	2.000	1980	P	7
Samuel	Jamari	Rondonia	Brazil	1.800	57.900	60	216	1989	P	5
Sao Simao	Paranaiba	Minas Gerais /Goias	Brazil	14.000	67.400	128	1.635	1978	P	1
Segredo	Iguac	Parana	Brazil	2.700	8.200	140	1.260	1993	P	7
Serra da Mesa	tocantins	Goias	Brazil	6.800		144	1.200	1998	P	5
Sobradinho	Sao Francisco	Bahia / Pernambuco	Brazil	70.000	412.400	33	1.050	1982	P	1
Taquarucu	Paranapanema	Parana	Brazil	200		58	500	1985	P	5
Tres Irmaos	Tiete	Sao Paulo/ Mato	Brazil	1.600	82.000	62	1.292	1990	p	5

Dam/ Project	River	State/ province	Country	No. displaced	Res. Area (ha)	Dam height (m)	Installed cap. (MW)	Completion year	Primary purpose	Ref.
		Grosso do Sul								
Tucurui (Raul G. Lhano)	Tocantins	Parap	Brazil	30.000	243.000	93	4.200	1984	P	13
Xingo	Sao Francisco	Akagoas / Sergipe	Brazil	150	6.000	140	3.000	1996	P	5
Itaipu	Parana	Parana	Brazil / Paraguay	42.400	135.000	196	12.600	1982	P	14
Ka Grande Project (4 dams)	La Grande	Quebec	Canada	1.900	1.590.000		15.719	1996	P	7
M'bali (Boali3)	M'bali		Cent. African Rep.	700		30		1991	M	15
Bapanxia	Yellow	Gansu	China	2.250				1975	P	16
Daguangba	Changhua	Hainan	China	23.800	9.900	56	240	1995	P	7
Danjiangkou	Hanjiang	Hubei	China	383.000		97	900	1974	M	17
Dongjiang	Laishui	Hunan	China	53.000	16.000	157	500	1989	P	7
Ertan	Yellow	Shandong	China	278.000				1958	P	17
Geheyan	Qingjiang	Hubei	China	35.000	10.100	245	3.300	1999	P	7
Gezhouba	Yangtze	Hubei	China	26.700	7.200	151	1.200	1995	P	18
Jiangya	Lishui	Hunan	China	26.000		47	2.715	1988	P	19
Jinzhai / Tuanshan	Jianhe	Anhui	China	12.000	3.580	128	300	1999	M	20
Lubuge 1	Huangni	Yunnan	China	100.000		41			P	16
Liujiaxia/ Yanguoxia	Yellow	Gansu	China	2.320	400	100	600	1984	P	1
Sanmenxia	Yellow	Henna	China	41.600					P	21
Shuikou	Minjiang	Fujian	China	410.000		106	250	1960	P	21
Tianshengqiao	Nanpanjiang	Guangxi	China	84.000	9.300	101	1.400	1996	P	20
Tianshengqiao	Nanpanjiang	Guangxi	China	48.800	17.000	178	1.200	1999	P	18
Wuqiangxi	Yuanshul	Hunan	China	84.800		87	1.200	1995	P	7
Xijin	Yu Jiang	Guangxi	China	89.300		41	234	1964		18
Xinanjiang	Xinanjiang	Zhejiang	China	280.000		105	663	1960		21
Xinfeng	Xinfeng	Guangdong	China	293.00		105		1961	I	16
Yantan	Hongshui	Guangxi	China	62.400	10.800	110	1.210	1995	P	1
Zhaxi (Zhenxi)	Zi Shui	Hunan	China	141.000		104		1961		17
Chivor (La Esmeralda)	Bata	Boyaca	Colombia	1.500	1.200	237	1.008	1982	P	1
Guavio	Guavio	Gundinamarca	Colombia	5.500	1.440	243	1.600	1990	P	7
Playas	Guatape	Boyaca	Colombia	1.000	1.100	65	204	1986	P	1
Rio Grande	Rio Grande	Boyaca	Colombia	1.200	1.000		324	1993	M	7
Salvajina	Cauca	Cauca	Colombia	10.000	2.200	160		1985	P	23
San carlos		Antioquia	Colombia	520	300	77	1.145	1987	P	1
Santa Rita (Guatape)	Nare	Antioquia	Colombia	3.000		60		1978		23
Urra 1	Sinu	Cordoba	Colombia	7.300	7.000	74	340	2000	P	24
Arenal	San Carlos		Costa Rica	2.500	8.300	70	157	1980	M	7
Kossou	Bandama		Cote d Ivore	85.000	178.000	58	174	1972	P	7
High Aswan	Nile	Aswan	Egypt /Sudan	113.000	400.000	111	2.100	1970	M	25
Cerron Grande	Lempa		E1 Salvador	10.000	13.500	80	135	1978	P	26

Dam/ Project	River	State/ province	Country	No. displaced	Res. Area (ha)	Dam height (m)	Installed cap. (MW)	Completion year	Primary purpose	Ref.
(Silencio)										
Awash Project (3 dams)	Awash		Ethiopia	20.000				1960s	M	27
Inguri	Inguri		Georgia	200	2.100	272		1980	M	3
Akosombo	Volta		Ghana	80.000	848.200	134	793	1965	P	1
Kpong	Volta		Ghana	7.000	3.500	20	160	1982	P	7
Weija	Densu		Ghana	2.000		16		1978		26
Chixoy (Pueblo Viejo)	Chixoy		Guatemela	3.400	1.400	108	300	1985	P	1
E1 Cajon (Francisco Morazan)	Humuya		Honduras	3.600	9.400	238	300	1985	P	1
Aamaya		Karnataka	India	4.500	600				I	28
Aji 111	Aji	Gujarat	India	3.500	1.440	25		1980s	I	26
Amarja	Amarja	Karnataka	India	1.560	600	640			I	29
Amli (Ver 11)	Ver	Gujarat	India	2.300	600	29		1984	I	26
Anjunem	Gululeli	Goa	India	1.800	300	45			I	28
Arunavati		Maharashtra	India	12.900	3.900				I	28
Arunavati		Gujarat	India	6.600	2.000				I	28
ASI – 3		Gujarat	India	1.400	3.900				I	29
Bagh (Sirpur)	Bagh	Maharashtra	India	60.000	16.900	70	360	1977	M	29
Balimela	Sileru	Orissa	India	113.600	80.900	69	105	1990	M	30
Bargi	Narmada	Madhya Pradesh	India	3.000	3.100				I	29
Bariarpur	Ken	Madhya Pradesh	India	15.300	7.700	48		1976	I	28
Barna	Barna	Madhya Pradesh	India	3.000	3.100					28
Belpara		Maharashtra	India	15.300	7.700				I	29
Bennithora	Bennithora	Karnataka	India	3.000						23
Bhakra	Sutjei	Punjab	India	3.000	2.100	31			I	29
Bhima (Ujjani)	Bhima	Maharashtra	India	36.000	16.600	226	1.204	1963	M	28
Chaktra	Chaktra	Karmataka	India	35.100	33.700	56	12	1980	I	29
Chandil	Subarnarekha	Bihar	India	1.400	1.150	84		1985		26
Chandil	subarnarekha	Bihar	India	48.500	17.400	56		1995	I	29
Chandoli (Warna)	Warna	Maharashtra	India	49.000		91		1990s	I	28
Damanganga	Damanganga	Gujarat	India	11.800	4.400	59		1989	I	28
Deorajan		Maharashtra	India	1.100	400				I	28
Dham	Wardha	Maharashtra	India	19.700	2.400	32			I	28
Dhomo (Dhon)	Krishna	Maharashtra	India	39.000	2.500	51		1978	I	31
Dimbhe	Ghod	Maharashtra	India	18.000	2.300	70			M	29
Dudhganga	Dudhgang	Maharashtra	India	7.800	4.500	74				28
Gandhi Sagar	Chambal	Madhya	India	51.500	72.300	64	115	1960	M	29

Dam/ Project	River	State/ province	Country	No. displaced	Res. Area (ha)	Dam height (m)	Installed cap. (MW)	Completion year	Primary purpose	Ref.
		Pradesh								
Gohira	Brahmani	Orissa	India	42.000	35.300	69	60		M	28
Gos! Khurd	Wainganga	Maharashtra	India	65.200						28
Guhai	Guhai	Gujarat	India	6.200	1.500	36			I	28
Halali	Halali	Madhya Pradesh	India	5.300	6.200	30		1976	I	28
Hemavathy	Hemavathy	Karnataka	India	11.600	8.500	59		1983	I	29
Hidkal	Ghataprabha	Karnataka	India	31.100	7.100	62	28	1979	I	29
Hirakud	Mahanadi	Orisaa /Madhya Pradesh	India	110.000	72.700	59	270	1957	M	28
Ibadoh /itiodoh	Gargi	Maharashtra	India	2.300	6.000	34		1977	I	29
Isapur (Upper Penganga)	Penganga	Maharashtra	India	16.900	9.800	57			I	29
Jamrani	Gola	Uttar Pradesh	India	1.500	500	140		1990	M	29
Jhuj	Kaveri	Gujarat	India	1.100	272	97		1980s	I	26
Kabini	Kabini	Karnataka	India	11.300	6.100	58	32	1974	M	29
Kadana	Mahi	Gujarat	India	45.200	16.600	65	240	1978	M	26
Kalinadi Storage	Kalinadi	Karnataka	India	8.500	15.500				P	28
Kamthi Kheri	Pench	Maharashtra	India	28.500	2.300	44		1977	I	28
Kangsabati Kumari	Kangsabati	West Bengal	India	125.000	13.500	41		1965	I	28
Kanher (Krishna	Venna	Maharashtra	India	12.900	2.400	49			I	28
Karanjwan (Upper	Kadwa	Maharashtra	India	1.600	1.800	43		1975	I	29
Karijan (lower)	Karijan	Gujarat	India	11.600	4.000	100			I	28
Kayadhu			India	8.900	7.500					29
Kelo		Madhya Pradesh	India	7.300	3.100				I	29
Kodar		Madhya Pradesh	India	1.400	3.800					28
Konar (Damodar	Konar	Bihar	India	5.700	2.800	58		1955	M	29
Koyna	Koyna	Maharashtra	India	30.000	11.500	103	540	1964	P	29
Krishnaraja Sagar	Cauvery	Karnataka	India	15.000	12.900	43		1932	M	29
Lower Bhavani	Bhavani	Tamil Nadu	India	5.300	7.900	62		1955	I	28
Lower Manair	Manair	Andhra Pradesh	India	78.000	8.100	42		1980s	I	32
Lower Mullamari	Mullamari	Karnataka	India	5.700	900					28
Lower Pus	Pus	Maharashtra	India	4.800	1.600	43		1972	I	28
Lower Terna	Terna	Maharashtra	India	8.500	3.200					28
Lower Wunna	Wunna	Maharashtra	India	12.700	6.300	30		1968	I	29

Dam/ Project	River	State/ province	Country	No. displaced	Res. Area (ha)	Dam height (m)	Installed cap. (MW)	Completion year	Primary purpose	Ref.
Machhanada	**Machhan**	**Gujarat**	**India**	2.100	800	32		1982	I	26
Machkunda	**Duduma**	**Orissa**	**India**	16.200	6.500					28,33
Mahi	**Mahi**	**Madhya Pradesh**	**India**	3.300	2.900				S	28
Mahi Bajaj Sagar	**Mahi**	**Rajasthan**	**India**	34.900	13.300	68			M	29
Maithon (Domador	**Barakar**	**Bihar**	**India**	28.000	10.700	56	60	1957	M	29
Majalgaon (Jayakwadi	**Sidhphona**	**Maharashtra**	**India**	65.300	8.100	32			I	29
Majam		**Gujarat**	**India**	2.900	1.300					28
Malaprabha	**Malaprabha**	**Karnataka**	**India**	41.000	13.600	56		1973	I	28
Manas		**Bihar**	**India**	3.700						33
Manchanabele	**Arkavati**	**Karnataka**	**India**	1.400	400	34			I	28
Manimuthar	**Manimuthar**	**Tamil Nadu**	**India**	4.300	900				I	28
Masan	**Masan**	**Bihar**	**India**	20.000					M	29
Matatila	**Betwa**	**Uttar Pradesh**	**India**	7.500	14.200	46	30	1958	S	29
Middle Vaitarna	**Vaitarna**	**Maharashtra**	**India**	72.000	700	82		1955	M	29
Nagarjunasagar	**Krishna**	**Andhra Pradesh**	**India**	24.400	28.500	125	810	1974	M	29
Nizamsagar	**Manjira**	**Andhra Pradesh**	**India**	67.400	13.000	48		1931	I	29
Ozarkhed (Upper	**Unanda**	**Maharashtra**	**India**	1.400	700	36				
Palkhed		**Maharashtra**	**India**	1.700	600					29
Panam	**Panam**	**Gujarat**	**India**	16.600	9.200	56		1977	I	28
Panchet Hill	**Damodar**	**Bihar**	**India**	41.500	15.300	49	40	1959	M	29
Parapar (Kallada	**Kallada**	**Kerala**	**India**	2.000	2.300	85			M	28
Pong	**Beas**	**HP/Rajasthan**	**India**	150.000	29.000	133	360	1974	M	34
Rajghat	**Betwa**	**Madhya Pradesh / Uttar Pradesh**	**India**	19.000	22.400	44		1980s	I	35
Rana Pratap Sagar	**Chambal**	**Rajasthan**	**India**	12.500	19.800	58		1567	M	29
Rengali	**Brahmani**	**Orissa**	**India**	80.000	41.400	69	60	1985	M	36
Rihand (Singrauli)	**Rihand**	**Uttar Pradesh**	**India**	55.000	46.600	93	300	1962	M	29
Salandi	**Salandi**	**Orissa**	**India**	2.900	1.200	52		1976	I	28
Samal	**Brahmani**	**Orissa**	**India**	4.100	2.900					28
Saravathi	**Talakalale**	**Karnataka**	**India**	12.500	5.900	62	510	1964	M	37
Shetrunji	**Shetrunji**	**Gujarat**	**India**	8.200	6.700	36		1964	I	29
Simdhani		**Gujarat**	**India**	2.700	500				I	28
Sipu	**Sipu**	**Gujarat**	**India**	10.400	2.900	40		1968	I	26
Sohira			**India**	42.000	42.000					29
Somasila	**Pennar**	**Andhra Pradesh**	**India**	100.000	22.500	54			I	28
Sondur	**Sondur**	**Madhya**	**India**	1.500	2.400	38		1989	I	29

Dam/ Project	River	State/ province	Country	No. displaced	Res. Area (ha)	Dam height (m)	Installed cap. (MW)	Completion year	Primary purpose	Ref.
		Pradesh								
Sri Rama Sagar	Godavari	Andhra Pradesh	India	75.100	56.000	43	36	1985	M	29
Srisailam	Krishna	Andhra Pradesh	India	100.000	60.600	143	440	1984	M	7
Sukhbhadar	Sukhbhadar		India	24.000		20		1980s	I	26.28
Sukhi (Suki)	Sukhi	Gujarat	India	11.200	2.900	38		1980s	I	26
Tawa	Tawa	Madhya Pradesh	India	3.100	20.200	58		1975	I	29
Tilaiya (Damodar	Barakar	Bihar	India	13.500	7.500		4	1953	M	29
Tuttuli		Maharashtra	India	13.600						29
Tungabhadra	Tungabhadar	Karnataka	India	54.500	37.800		126	1953	M	29
Uben	Uban	Gujarat	India	1.400	500	19		1982	I	26
Ukai	Tapi	Gujarat	India	80.000	60.100	81	300	1972	M	29
Und	Und	Gujarat	India	6.500	2.500	25		1990s	I	26.28
Upper Indravati	Intravati	Orissa	India	26.500	12.800	65	600	2000	M	28
Upper Jonk	Jonk	Orissa	India	15.500	1.100					28
Upper Kolab	Kolab	Orissa	India	15.000	12.400		95	1986	M	28
Upper Mullamari	Mullamari	Karnataka	India	80.000	60.100	33			I	28
Upper Tapi	Tapi	Maharashtra	India	30.500	4.800					28
Upper Wainganga	Wainganga	Madhya Pradesh	India	6.400	5.600	43		1990	I	29
Upper Wardha	Wardha	Maharashtra	India	11.800	11.400	52			I	29
Uri	Jhelum	Jammu & Kashmir	India	1.000	300		480	1998	P	29
Vartu II		Gujarat	India	3.100	700				I	28
Venu II	Venu	Gujarat	India	3.300	625	13		1980s	I	26
Vir	Nira	Maharashtra	India	6.000	400	65		1965	M	29
Waghur	Kolwan	Maharashtra	India	1.200	3.100				M	29
Watrack	Watrack	Gujarat	India	29.300	2.900	89		1994	I	28
Elleru		Andhra Pradesh	India	16.000		43		1990s	I	26
Zankhari	Zankhari	Gujarat	India	10.100	6.000				P	28
Cirata	Citarum	Western Java	Indonesia	2.900		30		1980s	M	26
Kedung Ombo	Serang	Java	Indonesia	34.800	6.100	125	500	1991	P	1
Saguling	Citarum	Western Java	Indonesia	27.00	4.600	66	30	1993	M	1
Dez	Dez		Iran	16.700	5.600	99	700	1986	P	1
Bukhtarma	Irtysh		Kazakhstan	17.000	6.500	203	520	1978	P	1.39
Chardarin	Syr Darya		Kazakhstan	27.000	549.000	90	675	1960	P	3
Iriklin	Ural		Kazakhstan	2.000	90.000			1970	P	3
Kiambere	Tana		Kenya	3.000	26.000	35		1960	P	3
Thika	Thika		Kenya	7.500	2.500	112	150	1988	P	1
Toktogul	Naryn		Kyrghyzstan	500	500		2	1990s	M	7

Dam/ Project	River	State/ province	Country	No. displaced	Res. Area (ha)	Dam height (m)	Installed cap. (MW)	Completion year	Primary purpose	Ref.
Houay Ho	Houay Ho	Champassak	Laos	4.000	28.400	215		1975	M	3
Nam Ngum	Nam Ngum		Loas	3.200	37.000	80	150	1998	P	40
Katse (LHWP IA)	Malibamatso		Lesotho	21.700*	3.600	185		1996	W	41
Muela (LHWP IA)	Ngoe		Lesotho	2.700*		55	72	2003	P	4
Batang Ai	Batang Ai	Sarawak	Malaysia	3.000	8.500	85	92	1985	P	7
Temengor	Perak	Perak	Malaysia	1.500	15.000	115	348	1977	P	42
Manantali	Bafing		Mali	11.100	48.000	70	200	1988	M	15
Selingue	Sankarani		Mali	12.500	40.900	35	44	1980	M	43
Foum Gleita	Gorgol		Mauritania	3.000				1980s	I	15
Aguamilpa	Santiago	Nayarit	Mexico	1.000	13.000	187	960	1995	P	44
La Angostura	Grijalva	Chiapas	Mexico	15.500	64.400	146	900	1973	P	44
Bajo Candelaria			Mexico	5.800				1982		44
Caracol (Carlos	Balsas	Cuerrero	Mexico	7.000		126	600	1986	P	44
Cerro de Oro	Santo Domingo	Oaxaca	Mexico	18.000	17.000	56		1989	M	44
Chicoasen (Manuel	Girjalva	Chaipas	Mexico	300	2.700	261	1.500	1980	P	45
Chilatan (apatzingan	Apatzingan		Mexico	400	3.000	106		1995	M	1
Colorado (E1 Tapiro)	Cerro Colarado		Mexico	13.300	300	38		1982	I	44
Culiacan		Sinaloa	Mexico	25.200				1967		44
Bacurato	Sinaloa	Sinaloa	Mexico	2.900	7.600	116		1982	I	1
Falcon	Bravo	Tamaulipa/ Texas	Mexico/ USA	4.000	31.200	50		1953	M	45
Huites (Luis Donaldo	Fuerte	Sinaloa	Mexico	325	10.300	152		1994	P	45
Netzahaulcoyotl	Grijalva	Chiapas	Mexico	1.500	29.200	138	1.080	1964	P	46
E1 Novillo (Plutarco	E1 Yaqui	Sonora	Mexico	10.000	10.000	133	135	1961	P	45
Penitas	Grijalva	Chiapas	Mexico	10.800		46	420	1986	P	45
Pujal-Coy I			Mexico	5.000				1982		44
Pujal-Coy II			Mexico	22.000				1982		44
Solis	Lerma	Guanajuato	Mexico	2.500	84.800	57		1949	I	45
Temascal (Pdte	Tonto	Oaxaca	Mexico	5.500	31.500	76	354	1957	M	45
Zimapan	Tula	Hidalgo	Mexico	25.000	2.300	207		1994	P	44
A1 Massira (Sidi	Oum Er R'bia	Settat	Morocco	2.500	13.700	83		1979	M	26
Cahora Bassa	Zambesi	Mozambique	Mozambique	3.000	380.00	171	2.250	1974	P	7
Kulekhani	Kulekhani		Nepal	280	200	114	60	1982	P	1
Marsayangdi	Marsayangdi		Nepal	13.000	60	24	69	1989	P	7
Clyde	Clutha	Otago	New Zealand	26.000	20.000	75	430	1979	P	7
Bakolori	Sokoto	Sokoto	Nigeria	44.000	8.000	48		1978	I	47
Dadin Kowa	Gongola	Bauchi	Nigeria	19.000	53.000			1980s	P	15
Kainji	Niger	Kwara /Niger	Nigeria	82.000	140.000	68	760	1964	I	1

Dam/ Project	River	State/ province	Country	No. displaced	Res. Area (ha)	Dam height (m)	Installed cap. (MW)	Completion year	Primary purpose	Ref.
Kiri	Gongola	Gongola	Nigeria	96.000	13.000	20		1982	M	15
Mangla	Jhelum	Punjab	Pakistan	4.100	25.900	138	1.000	1967	M	1
Tarbela	Indus	NWFP	Pakistan	600	26.000	143	3.478	1976	P	1
Bayano	Bayono		Panama	1.000	35.000	75	150	1976	P	1
Fortuna	Chiriqui	Chiriqui	Panama	500	1.000	110	300	1982	P	1
Ambuklao	Agno	Benguet	Philippines	1.500	68.600	129	75	1956	P	48
Binga	Agno	Benguet	Philippines	13.000	79.000	107	100	1960	M	48
Magat	Magat	Luzon	Philippines	23.000	4.500	105	360	1986	M	1
Pantabangan	Papanga	Nueva Ecjia	Philippines	12.200	8.900	107		1977	P	1
Portile de Fier	Danube		Romania/ Serbia	67.400	5.200	60	2.100	1972	M	7
Boguchany	Angara	Krasnoyarsk	Russia	42.000	232.600	79	4.000	1989	M	3
Bratsk	Angara	Irkutsk	Russia	48.000	547.000	125		1965	M	3
Cheboksary	Angara	Chuvashiya	Russia	18.000	105.500	42	815	1980	M	3
Ivan'kov	Volga		Russia	30.000	157.000	17		1955	P	3
Kamaskaya	Kama	Perm	Russia	48.000	146.600	44		1960	P	3
Kolymaskaya	Kolyma	Magadan	Russia	300	32.700	28		1940	M	3
Krasnoyarskaya	Enisei	Krasnoyarsk	Russia	56.000	191.500	37		1955	P	3
Kuibyshev	Volga	Samara	Russia	150.000	44.100	130		1990	M	3
Kuma	Kuma		Russia	1.000	200.000	124		1970	M	3
Nizhne – Kamskaya	Kama		Russia	44.000	644.800	45		1960	P	3
Novosibrisk	Ob		Russia	37.000	191.000	33		1965	M	3
Onezhsk	Svir		Russia	6.200	155.000	36		1980	P	3
Pavlovskaya	Ufa	Bashfirtostan	Russia	2.800	107.000	20		1960	P	3
Rybinsk	Volga	Yaroslavi	Russia	117.000	93.300	17		1955	M	3
Saratovskaya	Volga	Saratov	Russia	25.000	12.000	53		1960	M	3
Sayano-Shushnskaya	Enisei	Khakassiya	Russia	9.700	455.000	30		1950	M	3
Serebrianka	Voroniya	Murmansk	Russia	200	183.100	40	1.360	1970	M	3
Sheksna	Sheksna	Yooslavl	Russia	16.300	62.100	245		1980	M	3
Uglich	Volga		Russia	25.000	55.600	65		1970	P	3
Ust'Ilim	Angara	Irkutsk	Russia	14.200	167.000	15		1965	M	3
Verkne Tulomskaya	Tuloma	Murmansk	Russia	500	24.900	64		1940		3
Vilyui	Vilyui	Sakha Yakutha	Russia	400	217.000	47	2.500	1965	P	3
Volzhkaya	Volga		Russia	111.000	311.000	44		1965	P	3
Votkinsk	Kama	Udmurtia	Russia	61.000	112.000	115		1975	M	3
Zeya	Zeia	Amur	Russia	4.500	241.900	18		1986	M	3
Diama	Senegal		Senegal /Mauritania	3.400		108	34	1984	I	49
Gazivode	Ibar		Serbia /kosovo	230	1.000	88	360	1971	M	1
Gariep	Orange	Free state	South Africa	1.150	36.000	108	240	1977	I	50
Vanderkloof	Orange	Free State	South Africa	230	13.300	98	412	1984	I	50
Chung Ju	Namhan		South Korea	38.700	9.500	98		1987	M	1
Riano	Esia	Leon	Spain	3.100	2.000	87	200	1988	I	51
Kotmale	Kotmale Oya		Sri Lanka	13.000	950	122	210	1984	M	7
Victoria	Mahaweli		Sri Lanka	45.000	2.300	60	130	1965	M	7

Dam/ Project	River	State/ province	Country	No. displaced	Res. Area (ha)	Dam height (m)	Installed cap. (MW)	Completion year	Primary purpose	Ref.
Roseires	Blue Nile		Sudan	19.000		66	30	1965	P	1
Brokopondo	Suriname		Surinam	5.000	150.000	66	20	1984	M	23
Lupohlo	Lusutshwana		Swaziland	300	120	45	800	1976	P	7
Tabqua (Thawra	Euphrates		Syria	60.000	60.000	60	2.700	1975	P	15
Nurek	Vakhsh		Tadjikistan	1.800	9.800	300	234	1975	M	3
Techi	Tachia		Taiwan	200	400	180	280	1988	M	1
Mtera	Great Ruaha		Tanzania	3.000	65.000	45		1981	Mp	7
Bang Lang (Pattani)	Pattani		Thailand	20.000	30.000	85		1964	P	26
Bgumibol	Ping		Thailand	2.110	18.500	154	710	1987	P	52
Chiew Larn	Khlong Saeng		Thailand	7.700	38.800	94	240	1985	M	1
Khao Laem	Kwae		Thailand	30.000	40.000	92	300	1970	M	1
Lam Pao	Lam Pao		Thailand	225	4.500	33		2000	M	53
Lam Takhong	Lam Takhong	Nakhon Ratchsasima	Thailand	9.800		91	135	1980s	P	7
Lang Suan			Thailand	30.000	2.000	40		1965	M	54
Nam Pong	Nam Pong		Thailand	8.500	6.000	17	136	1994	P	55
Pak Mun	Mun	Ratchathani	Thailand	3.000	10.000	9		1994	I	56
Rasi Salai	Mun	Sri Sa Ket	Thailand	1.650	26.000	114	500	1972	M	57
Sirikit	Nan	Uttaradit	Thailand	5.300	41.900	140	720	1980	M	1
Srinakharian	Kwae Yai	Kanchanaburi	Thailand	30.000	41.000	32	25	1965	M	1
Ubolratana	Nam Pong		Thailand	12.000	18.000	44	63	1987	P	58
Nangbeto	Mono		Togo/Benin	1.400	4.300	70	36	1984	M	15
Sidi Salem	Medjerda		Tunisia	5.000	4.900	78	138	1984	M	11
Aslantas	Ceyhan		Turkey	60.000	81.700	184	2.400	1992	M	1
Ataturk	Euphrates		Turkey	45.000	29.800	178	1.800	1989	P	59
Karakaya	Euphrates		Turkey	30.000	67.500	207	1.330	1974	M	7
Keban	Euphrates		Turkey	4.950	4.100	120	315	1991	P	7
Sir	Ceyhan		Turkey	45.000	56.700	34		1965	P	1
Dneprodzerzhyns'k	Dnepr		Ukraine	45.000	225.500	37		1955	P	3
Kahov	Dnepr		Ukraine	40.000	92.200	68		1960	P	3
Kievsk	Dnepr		Ukraine	132.000	225.200	33		1950s	P	3
Kremenchug	Dnepr		Ukraine	445	5.900	29		1952	P	3
Big Bend	Missouri	S. Dakota	USA	2.500	12.140	52		1952	M	60
Conemaugh	Conemaugh	Pennyslvania	USA	680	38.500	50		1952	M	61
Fort Randall	Missouri	S. Dakota	USA	1.800	38.000	64		1952	M	60
Garrison	Missouri	N. Dakota	USA	1.800	149.00	64		1953	M	62
Grand Coulee	Columbia	Washington	USA	5.700	33.300	168	6.800	1942	P	63
Kinzua	Allegheny	Pennyslvania	USA	700	4.900	70		1996	F	12
Navajo	San Juan	New Mexico	USA	1.250	3.000	123		1963	M	64
Norris	Clinch/Powell	Tennessee	USA	17.500	55.400	81		1937	M	65

Dam/ Project	River	State/ province	Country	No. displaced	Res. Area (ha)	Dam height (m)	Installed cap. (MW)	Completion year	Primary purpose	Ref.
Oahe	Missouri	S. Dakota	USA	900	145.300	75		1958	M	60
Tuttle Greek	Big Blue	Kansas	USA	4.000	6.400	41		1962	M	61
Youghiogheny	Youghiogheny	Pennysylvania	USA	300	1.150	57		1948	M	61
Charvak	Chirchik		Uzbekistan	2.000	4.000	168		1970	M	3
Guri	Garoni	Bolivar	Venezuela	3.600	425.000	162	8.935	1986	P	1
Dau Tieng	Saigon		Vietnam	500		27		1980s		26
Hoa binh	Song Da		Vietnam	58.000	517.000	128	1.192	1993	P	7
Thac Mo	Song Be		Vietnam	1.600		42	150	1995	P	66
Yali Falls	Se San		Vietnam	7.400		65	720		P	66
Ruzzi II	Ruzizi		Zaire/ Rwanda/ Burundi	15.000			40	1980s	P	15
Kariba	Zambesi		Zambia / Zimbabwe	57.000	558.000	128	1.266	1959	P	1
Under construction										
Machadinho	Uruguay	Rio Grande do Sul/	Brazil	15.700	25.200		1.200		P	14
Ralco	Bio Bio		Chile	700	3.400	155	570		P	67
Three Gorges	Yangtze	Hubei	China	1,300.000	110.000	175	18.200	2009	M	68
Xiaolangdi	Yellow	Henna	China	181.600	27.200	154	1.800	2001	M	7
Garafiri	Konkowe		Guinea	1.500	8.800		75		P	7
Almatti (Upper	Krishna	Karnataka	India	200.000	79.000	48	150	2001	I	29
Bansagar	Sone	Madhya Pradesh	India	142.000	51.600	63			M	28.33
Bisalpur	Banas	Rajasthan	India	66.000	21.800				S	29
Chukinala		Karnataka	India	2.900	700					28
Chataprabha (III)	Ghataprabha	Karnataka	India	18.500	7.900				I	28
Hippargi (upper	Krisma	Karnataka	India	62.500	3.000	26			I	28
Hasdeo Bango	Hasdeo	Madhya Pradesh	India	13.600	21.300	88		1992	I	29
Icha (Subarnarekha	Kharkai	Bihar /Orissa	India	30.000	12.700				M	69
Karanja	Godavari	Karnataka	India	7.200	5.700				I	28
Kishau	Tons	Uttar Pradesh	India	4.000	3.000	236			M	28
Maheshwar	Narmada	Gujarat	India	40.000	5.500	23	400	2002	P	70
Narayanpur	Krishna	Andhra Pradesh	India	80.000	13.200	30		1990s	I	15
Narmada Sagar	Narmada	Madhya Pradesh	India	200.000	90.800	84			M	28
North Koel	North Koel	Bihar	India	3.400	7.100	68			M	28
Priyadarshini Jurala	Krishma	Andhra Pradesh	India	8.600	4.700		221		M	28
Sardar Sarovar	Narmada	Gujarat	India	320.000	37.600	163	1.450		M	71
Selaulim	Selaulim	Goa	India	3.200		42			I	72
Teesta		Sikkim	India	1.000	70				P	29
Tehri	Bhagirathi	Uttar Pradesh	India	105.000	4.200	261	2.000		M	28
Thoubal	Thoubal	Manipur	India	1.300		66		2003	M	28

Dam/ Project	River	State/ province	Country	No. displaced	Res. Area (ha)	Dam height (m)	Installed cap. (MW)	Completion year	Primary purpose	Ref.
Tillari	Tillari	Maharashtra /Goa	India	50.000	1.700	71		2002	I	28.72
Upper Krishna	Krishna	Karnataka	Thailand	32.000	24.200				I	28
Pasak	Pasak	Lop Buri	Turkey	23.000					I	73
Berke	Ceyhan			140	780	200	510		P	7
Caruachi	Caroni	Bolivar	Venezuela	1.000	23.800		2.076	2003	P	74
Suspended / Stopped										
Bedthi	Tathihalla	Karnataka	India	3.700						
Bhopalpatnam	Indravati	Maharashtra	India	8.800	20.000				H	28
Bodhghat	Indravati	Madhya Pradesh	India	12.700					P	28
Heran / Lalpur	Heran	Gujarat	India	21.200	17.700				P	29
Ichampalli	Godavari	Andhra Pradesh	India	38.100	71.000	45			I	29
Koel karo	Koel / karo	Jharkhand	India	66.000	63.700				M	28.29
Polavaram	Godavari	Andhra Pradesh/ Madhya Pradesh	India	154.500	38.000	163	360		P	75
Epupa	Kunene	Kaokoveld	Namibia	1.000		335	3.600		M	3
Rogum	Vakhsh		Tadjikistan	28.200		187	580		M	76
Nam choan	Khwe	Kanchanaburi /Tak	Thailand	2.000	14.700					
Planned										
Itati Itacora	Parana		Argentina	3.000			1.000		P	46
Cachoeira Parteira	Trombetas	Para	Brazil	8.000	91.100		1.400		P	9
Castanhao	Jaguaribe	Ceara	Brazil	12.000	22.900		75		M	9
Ji Parana	Ji Parana	Rondonia	Brazil	2.700			612	2002	P	9
Carabi	Uruguay		Brazil/ Argentina	5.100	88.000	63	3.300		P	7
Sambor	Mekong		Cambodia	9.200	64.000	31	980		P	7
Stung Treng	Mekong		Cambodia	12.000						78
Jiangya	Yangtze		China	5.800	9.500		3.200		P	7
Jingping			China	73.000	37.000	192	4.200	2005	P	7
Longtan	Hongshui	Guangxi	China	1.100	5.000	148	240		P	28
Poyamkutty	Idamakayar	Kerala	India	1.400	16.000		440		P	7
Nam Ngiep 1			Laos	4.000	11.000		320		P	7
Nam Ngum 2			Laos	4.400	5.870		400		P	7
Nam Ngum 3			Laos	5.700	26.500		230		P	7
Nam Tha 1			Laos	4.500	45.000	50	681		P	7
Nam theum	Nam Theum		Laos	22.000	14.000		620		P	79
San Juan tetelecingo	Balsas	Guerrero	Mexico	60.000	34.100	270	3.000		P	80
Karnali *Chisapani)	Karnali		Nepal	60.000	12.100	315	7.200		P	7
Panchwswar	Mahakali		Nepal	124.000	55.000	93	2.400		M	81
Kalabagh	Indus		Pakistan	78.000	31.300	135	1.200	2006	P	82
Ilisu	Tigris	Batman	Turkey	10.000	13.300	199	420		P	83

Dam/ Project	River	State/ province	Country	No. displaced	Res. Area (ha)	Dam height (m)	Installed cap. (MW)	Completion year	Primary purpose	Ref.
Kayraktepe	**Goksu**		**Turkey**	820	390	22	290		P	84
Bujagali Falls	**Nile**		**Uganda**	10.800			116		P	66
An Khe	**Ba**		**Vietnam**	15.000			450		P	66
Ban Mai	**Ca**		**Vietnam**	3.600			81		P	66
Buon Koup	**Sre Pok**		**Vietnam**	14.100			300		P	66
Dai Ninh	**Dong Nai**		**Vietnam**	20.600					P	66
So La (Ta Bu)	**Song Da**		**Vietnam**	112.00		181	3.600		P	66
Source: McCully, 2001										

Notes:

Key M = Multipurpose; P= Power; I = Irrigation; S = Water Supply

Turbines still under installation

* Figure includes 'affected' people who lose land and livelihood but are not displaced.

Figure includes oustees from canals.

Note: 2.5 million people were displaced by 193 completed dams for which data could be found in countries excluding India and China (6.2 million displaced by 334 dams including India and China)

Appendix G:
San Francisco Declaration

Box 4: The San Francisco Declaration of the International Rivers Network - The Position of Citizens' Organisations on Large dams and Water Resource Management

- The specific goals of the dam project must be clearly stated, providing a clear basis for measuring the future success or failure of the project.
- During project planning, all alternatives to the project goals, both structural and non-structural, must be clearly analysed.
- Any governmental or international agency that funds big dam projects must allow free access to information on the project to citizens of both lending and recipient countries.
- A full assessment of the short and long-term environmental, social and economic effects of the project must be carried out, and an adequate opportunity provided for review and critique by independent experts.
- All people affected by the dam, both in the reservoir area and downstream, must be notified of the probable effect on their livelihood, must be consulted in the planning process, and must have effective political means for vetoing the project.
- All people who lose homes, land or livelihood to a dam project must be fully compensated by accountable agencies.
- The threat to public safety due to potential collapse of the dam must be investigated and the analysis be made freely available to anyone living in the area potentially affected by the flood wave.
- Any irrigation project associated with a large dam must include a fully integrated program to prevent waterlogging and salinization in order to allow the sustainable use of irrigated land.
- The dam project must be demonstrated to have no significant adverse impact (such as those caused by loss of nutrients and soil salinisation) on the food supply or livelihood of people dependent on floodplain agriculture downstream.
- The dam project must be demonstrated to pose no threat to the water quality and water supplies of those living downstream.
- The project must improve public health, and must not threaten to increase the incidence of waterborne disease.
- The environmental impacts of industrial users dependent on electricity generated by the dam must be included in the project planning.
- The dam project must be demonstrated to have no significant adverse effect on downstream riverine, estuarine, or coastal fisheries.
- The dam project must not adversely affect any national park, heritage site, designated area of scientific and educational importance or any area inhabited by threatened or endangered species.
- An adequate program for reforesting or erosion control in the reservoir watershed must be fully integrated into the project design.
- The plan for the dam project must identify whether or not the project is sustainable. It should specifically address reservoir sedimentation, soil salinization and changes in reservoir inflow due to watershed degradation and changes in reservoir inflow due to watershed degradation. If the project is not sustainable a restoration program should be included as part of the project design.
- Projected economic costs must include all the economic costs of environmental damage, and all the costs associated with construction, preparation, maintenance, and decommissioning.
- The economic analysis for a dam project must identify the range of uncertainty in the estimates of costs and benefits.
- Projected economic benefits and costs of the dam project must be based on demonstrated benefits and costs of prior projects.
- Plans for hydroelectric dams must present an analysis of the relative benefit and costs of alternative means of electricity generation and energy conservation.
- There must be an effective means to ensure that the operation and maintenance of the dam and associated facilities will actually be carried out to achieve the promised benefits.

Source: McCully, 2001

Appendix H: Manibeli Declaration

Box 5: Manibeli Declaration

Calling for a moratorium on World Bank Funding of large Dams (June 1994)

Whereas:

1. The World Bank is the greatest single source of funds for large dam construction, having provided more than U$50 billion (1992 dollars) for construction of more than 500 large dams in 92 countries. Despite this enormous investment, no independent analysis or evidence exists to demonstrate that the financial, social and environmental costs were justified by the benefits realized;
2. Since 1948, the World Bank has financed large dam projects, which have forcibly displaced in the order of ten million people from their homes and lands. The Bank's own 1994 'Resettlement and development review admits that the vast majority of women, men and children evicted by Bank-funded projects never regained their former incomes nor received any direct benefits from the dams for which they were forced to sacrifice their homes and lands. The bank has consistently failed to implement and enforce its own policy on forced resettlement, first established in 1980, and despite several policy reviews the Bank has no plans to fundamentally change its approach to forced resettlement;
3. The World Bank is planning to fund over the next three years 18 large dam projects which will forcibly displace another 450,000 people, without any credible guarantee that its policy on resettlement will be enforced. Meanwhile the Bank has no plans to properly compensate and rehabilitate the millions displaced by past Bank-funded dam projects, including populations displaced since 1980 in violation of the Bank's policy;
4. World Bank – funded large dams have had extensive negative environmental impacts, destroying forests, wetlands, fisheries, and habitat for threatened and endangered species, and increasing the spread of waterborne diseases;
5. the environmental and social costs of World Bank funded large dams, in terms of people forced from their homes, destruction of forests and fisheries, and spread of waterborne diseases, have fallen disproportionately on women, indigenous communities, tribal peoples and the poorest and most marginalised sectors of the population. This is in direct contradiction to the World Bank's often-stated 'overarching objective of alleviating poverty';
6. The World Bank has prioritised lending for large dams which provide electricity to transnational industry and to urban elites, and irrigation water supply for export-oriented agriculture, neglecting the most pressing needs of the rural poor and other disadvantaged groups. The Bank has provided $8.3 billion (1992 dollars) for large dams through the International Development Association (IDA), the 'soft' credit window which is supposed to aid the poorest populations in developing countries;
7. The World Bank has tolerated and thus contributed to gross violations of human rights by governments in the process of implementing Bank-funded large dams, including arbitrary arrests, beatings, rapes and shootings of peaceful demonstrators. Many Bank-funded large dam projects cannot be implemented without gross violations of human rights because affected communities inevitably resist the imposition of projects so harmful to their interests;
8. The World Bank plans, designs, funds, and monitors the construction of large dams in a secretive and unaccountable manner, imposing projects without meaningful consultation or participation by the communities affected, often denying access to information even to local governments in the areas affected;
9. The World Bank has consistently ignored cost-effective and environmentally and socially sound alternatives to large dams, including wind, solar and biomass energy sources, energy demand management, irrigation rehabilitation, efficiency improvements and rainwater harvesting, and non-structural flood management. The Bank has even convinced governments to accept loans for large dams when more cost-effective and less destructive alternative plans existed, as may be the case again with the Arun III project in Nepal;
10. The economic analysis on which the World Bank bases its decisions to fund large dams fail to apply the lessons learned from the poor record of past Bank-funded dams, underestimating the potential for delays and cost overruns. Project appraisals are typically based on unrealistically optimistic assumptions about project performance, and fail to account for the direct and indirect costs of negative environmental and social impacts. The Bank's own 1992 portfolio review admits that project appraisals are treated as 'marketing devices' which fail to establish that projects are in the public interest;
11. The primary beneficiaries of procurement contracts for World Bank-funded large dams have been consultants, manufacturers and contractors based in the donor countries, who profit while citizens of the

borrowing countries are burdened by debt and the destructive economic, environmental and social impacts of the large dams themselves. The Bank has consistently failed to build local capacity and expertise, promoting dependency instead;

12. World Bank-funded large dams have flooded cultural monuments, religious and sacred sites, and national parks and other wildlife sanctuaries;
13. In its lending for large dams the World Bank has tolerated and condoned theft of funds supplied by the Bank, often by corrupt military and undemocratic regimes, and has often made additional loans to cover cost overruns brought on by what the Bank refers to as 'rent seeking behaviour.' Examples include Yacyreta Dam in Argentina and Chixoy in Guatemala;
14. The World Bank has consistently violated its policy on environmental assessment, and has allowed environmental assessments to be produced by the project promoters and used to justify prior decisions to proceed with destructive large dam projects;
15. The World Bank has never addressed in policy, research, or project planning documents, the decommissioning of large dams after their useful lifetime has expired due to reservoir sedimentation and physical deterioration;
16. The World Bank has never properly assessed its record of funding large dams and has no mechanism for measuring the actual long-term costs and benefits of the large dams it funds;
17. Throughout its involvement in the Sardar Sarovar Dam in the Narmada Valley, a worldwide symbol of destructive development, the World Bank has consistently ignored its own policy guidelines regarding resettlement and environmental assessment, and attempted to cover up the conclusions of the severely critical official independent review, the Morse Report. With the ongoing forcible evictions and flooding of tribal lands, the Bank bears direct legal and moral responsibility for the human rights abuses taking place in the Narmada valley.

Source: McCully, 2001

Appendix I:
Watershed Management Declaration

Box 6: Watershed Management Declaration

International efforts must be increased to bring back the vegetation that once acted as groundcover for the river catchment areas. The loss of this groundcover in the last century is a major reason for the depletion of groundwater, soil erosion, droughts and floods in many countries.
Groundwater must be considered a renewable resources and its use should not exceed its natural recharge.
The need for the explicit identification of users and beneficiaries. Solutions must be appropriate to indigenous resource-use patterns.
local productions systems should be strengthened by phasing out use of capital-intensive, agricultural chemicals, fossil fuel derivatives, and excessive water in favour of low-cost, ecologically safe alternatives.
the timetable of a water project should not be determined by donor driven funding cycles. Appropriate development is an economic solution for the long term. Therefore, its planning and implementation must be determined by the cultural and economic aspects of the community in question.
Reinstitute traditional methods of water preservation and use. Rather than building reservoirs bring back methods, such as those used in India where forested buffer zones around catchment systems, ponds, water tanks, and wells helped protect water supplies.
Rainforest preservation of the earth's great watersheds, such as those of the Amazon and Congo regions, requires our most urgent attention. Rainforests play a crucial role of maintaining the health of the biosphere.
Legal and political rights to protect the environment are simply not recognised in many countries. Therefore we request that all countries
Create and strengthen environmental regulation for water management;

- Democratize and decentralise decision making for environmental protection and natural resource management. This includes a public-hearings process for all project proposals;
- Uphold the human rights of environmentalists and water project critics.

Create an International Code of Water Resource Management that would provide the legal guidelines for water development and for public interest groups to challenge violations of the law.
A compilation of successful sustainable water programs should be prepared and published by member organisations of IRN. This can help encourage the academic community and development experts to re-examine the traditional systems and help rebuild the self respect and self reliance of indigenous peoples.

Source: McCully, 2001

Appendix J
Declaration of Curitiba

Box 7: Declaration of Curitiba

Declaration of Curitiba: Affirming the right to Life and Livelihood of People Affected by Dams. *14 March 1997*

This was approved at the First International Meeting of people Affected by Dams, Curitiba, Brazi, which agreed on the following:-

-We, the people from 20 countries gathered in Curitiba, Brazil, representing organisations of dam affected people and of opponents of destructive dams, have shared our experience of the losses we have suffered and the threats we face because of dams. Although our experiences reflect our diverse cultural, social, political and environmental realities, our struggles are one.

-Our struggles are one because everywhere dams force people from their homes, submerge fertile farmlands, forests and sacred places, destroy fisheries and supplies of clean water, and cause the social and cultural disintegration and economic impoverishment of our communities.

-Our struggles are one because everywhere there is a wide gulf between the economic and social benefits promised by dam builders and the reality of what has happened after dam construction. Dams have almost always cost more than was projected, even before including environmental and social costs. Dams have produced less electricity and irrigated less land than was promised. They have made floods even more destructive. Dams have benefited large landholders, agribusiness corporations and speculators. They have dispossessed small farmers; rural workers; fishers; tribal, indigenous and traditional communities.

-Our struggles are one because we are fighting against similar powerful interests, the same international lenders, the same multilateral and bilateral aid and credit agencies, the same dam construction and equipment companies, the same engineering and environmental consultants, and the same corporations involved in heavily subsidised energy-intensive industries.

-Our struggles are one because everywhere the people who suffer most from dams are excluded from decision-making. Decisions are instead taken by technocrats, politicians and business elites who increase their own power and wealth through building dams.

-Our common struggles convince us that it is both necessary and possible to bring an end to the era of destructive dams. It is also both necessary and possible to implement alternative ways of providing energy and managing our freshwaters which are equitable, sustainable and effective.

-For this to happen, we demand genuine democracy which includes public participation and transparency in the development and implementation of energy and water policies, along with the decentralisation of political power and empowerment of local communities. We must reduce inequality through measures including equitable access to land. We also insist on the inalienable rights of communities to control and manage their water, land, forests and other resources and the right of every person to a healthy environment.

-We must advance to a society where human beings and nature are no longer reduced to the logic of the market where the only value is that of commodities and the only goal profits. We must advance to a society which respects diversity, and which is based on equitable and just relations between people, regions and nations.

Our shared experiences have led us to agree the following:

1. we recognise and endorse the principles of the 1992 'NGO and Social Movements Declarations of Rio de Janeiro' and the 1994 'Manibeli Declaration on World Bank funding of large dams.
2. we will oppose the construction of any dam which has not been approved by the affected people after an informed and participative decision-making process.
3. we demand that governments, international agencies and investors implement an immediate moratorium on the building of large dams:
    a) there is a halt to all forms of violence and intimidation against people affected by dams and organisations opposing dams.
    b) Reparations, including the provision of adequate land, housing and social infrastructure, be negotiated with the millions of people whose livelihoods have already suffered because of dams.
    c) Actions are taken to restore environments damaged by dams – even when this requires the removal of the dams.
    d) Territorial rights of indigenous, tribal, semi-tribal and traditional populations affected by dams are fully respected through providing them with territories which allow them to regain their previous cultural and economic conditions – this again may require the removal of the dams.
    e) An international independent commission is established to conduct a comprehensive review of all large dams financed or otherwise supported by international aid and credit

agencies, and its policy conclusions implemented. The establishment and procedures of the review must be subject to the approval and monitoring of representatives of the international movement of people affected by dams.

f) Each national and regional agency which has financed or otherwise supported the building of large dams have commissioned independent comprehensive review of each large dam project they have funded and implemented the policy conclusions of the reviews. T he reviews must be carried out with the participation of representatives of the affected people's organisations.

g) Policies on energy and freshwater are implemented which encourage the use of sustainable and appropriate technologies and management practices, using the contributions of both modern science and traditional knowledge. These policies need also to discourage waste and over consumption a guarantee equitable access to these basic needs.

4. The process of privatization which is being imposed on countries many parts of the world by multilateral institutions is increasing social, economic and political exclusion and injustice. We do not accept the claims that this process is a solution t corruption, inefficiency and other problems in the poor and water sectors where these are under the control of the state. Our priority is democratic and effective public control and regulation of entities which provided electricity and water in a way which guarantees the needs and desires of people.
5. Over the years, we have shown our growing power. We have occupied dam sites and offices, marched in our villages and cities, refused to leave our lands even though we have faced intimidation, violence and drowning. We have unmasked the corruption, lies and false promises of the dam industry. Nationally and internationally we have worked in solidarity with others fighting against destructive development projects and together with those fighting for human rights, social justice, and an end to environmental destruction.

We are strong, diverse and united and our cause is just. We have stopped destructive dams and have forced dam builders to respect our rights. We have stopped dams in the past, and we will stop more in the future.

We commit ourselves to intensifying the fight against destructive dams. From the villages of India, Brazil and Lesotho to the boardrooms of Washington, Tokyo and London, we will force dam builders to accept our demands.

To reinforce our movement we will build and strengthen regional and international networks. To symbolise our growing unity, we declare that 14 March, the Brazilian Day of Struggles Against Dams, will from now on become the International Day of Action Against Dams and for Rivers, Water, and Life.

Aguas para a vida, nao para a morte!
Agues para la vida, no para la muerte!
Water for life, not for death!

Source: McCully, 2001