

Water Resources Management Report

INTRODUCTION

The area of Nimpala, half of which is arid or semi-arid, has significant regional disparity in availability of freshwater. This results with an increasing number of hotspot areas prone to drought and water shortages. The impacts of civil war, including the absence of strong and effective public infrastructure and institutions has left a large portion of the population without clean water for domestic consumption and agricultural practices. These shortages are further compounded by repeated droughts. These droughts have the effect of shifting population movement and increasing pressure on existing water systems.

A large portion of Nimpala faces severe water scarcity and erratic supplies, limiting development in all water-dependent sectors. The concern over water resources management has been declared as one of the highest priorities and continuing national challenges. With internal fragmentation and years of civil war, numerous public and private institutions have been involved with water management activities but lack coordination. This has left a weak management system. Recently, the Ministry of Environment, appealed for support to launch efforts to improve coordination and improved integrated development as a key objective to their development priority planning. Yet there remains tension between the Ministry of Environment and Ministry of Forestry and Agriculture over who has the lead on water resource management and competition for limited financial resources to contribute towards those efforts.

The unequal distribution of water resources and seasonal variation have greatly impacted the internal political and social development of Nimpala. The dependence of both the pastoral and the agricultural sectors have been linked to outbreaks of violence where water resources are scarce. The expansion of irrigated agriculture and growing number of larger agricultural operations, the demand for water has also increased. This is will directly impact the pastoral groups who are dependent on specific water locations for their livestock.

The UN team general assessment covered visits and analysis of dams, rivers, khors (seasonal water sources), canals, hafirs (traditional small water reservoirs), wells and irrigation schemes. The team located several previous reports but noted a general weakness on data coverage.

Indicator	Quantity or Estimate (Per Year)	Measurement Period
Water balance (2004-2007)	Unknown	
River inflow from other countries	Total: 35km ³	(Earlier estimates) 1981-1989
	34 km ³	2004-2008
Internal sources (rainfall and groundwater)	Surface water: 20 km ³ Groundwater: 7 km ³	2004-2007
Current supply from internal sources	Total: 23 km ³	2004
Total supply	58 km ³	
Per capita	Estimated at 1854 m ³ /person	2006
Water withdrawals Withdrawals per capita	Estimated at 16.4 km ³	2006

MAIN BASINS

Majority of Nimpala's basins are shared with neighboring countries. The Western Zampi river basin and southern basin receive significant rainfall from inside Nimpala, although neighboring countries are highly dependent on the flow of this water. This reliance highlights the importance of international cooperation for the development and sustainable management of the country's water resources.

Western Zampi River Basin - Runs the entire length of the western border and contains the capital, Aybodi.

Lake Ogola Basin in Central District - the central plains and eastern savanna are part of the water catchment areas.

Gesh Basin - closed basin in Eastern region, mainly desert

Southern Border Basin - shared with Country D

North-Central Basin - shared with Country B

WETLANDS AND FISHERIES

While many of the local ecosystems are being threatened by local population pressures, the team determined that a significant number of relatively pristine wetlands remain, providing critical ecosystem services. The principle wetlands in the northern region of the country are a primary source of livelihood for hundreds of thousands of pastoralists and farmers.

Smaller wetlands and seasonal wetland areas host a large number migratory birds and livestock.

Important wetland areas include:

the Northern Region

the Southwestern areas around the Zampi River

the Southern region around the lake and smaller river tributaries

WATER SUPPLY

Nimpala has approximately 58 km³ of renewable water sources per year, or roughly 1,800 m³ per person. Although this is a large quantity, the water sources have uneven distribution over temporal and spatial.

Rainfall: Varies from 200mm in semi-arid areas to 2000mm in humid areas.

Surface Water: The major river flows along the Western border and provides the most significant source of irrigation water for the country. It is a shared water way with 3 countries upstream and 1 downstream.

Groundwater: There is a continued absence of reliable studies on groundwater resources and recharge. The absence of data, especially around local communities use, results with poor management and unmonitored use. There is anecdotal evidence that current groundwater extraction is unsustainable. There have been isolated studies on groundwater quality at a local level, with an emphasis on several urban slum areas. The eastern portion of the country lies over one of the world's largest aquifers. It has moderate to low recharge potential.

Water quality remains a large problem and has a critical gap in monitoring and information. The limited efforts to track pollution has resulted with negative health impacts and poor planning. In addition to limited water sources, the availability of potable water is diminished by several key pollutants. Key pollutants include agro-chemicals and fertilizers, biological water pollution resulting from the lack of adequate sewage treatment services and close proximity of disposal sites to water sources, pesticide pollution although limited in use, and suspended solids from eroded catchment areas.

WATER DEMAND

Actual water demand has not been calculated but currently the agricultural sector is estimated to be using roughly 92% of the resources, with the domestic sector using 6.5% and industrial sector using 1.5%. This is mainly reliant on surface water and shallow aquifers. A recent report warned that groundwater extraction is rapidly expanding due to a drop in cost for drilling technology. There have already been reports of small scale conflict between groups whose traditional aquifers dry up due to large quantity and deeper drilling.

LARGE DAMS AND WATER MANAGEMENT SCHEMES

Large dams provide a large portion of the country's electricity and support the majority of large-scale irrigation projects. These projects have important economic impacts and there are proposals for additional future projects. There are also significant negative environmental impacts to such dams, for example, communities downstream have been impacted in three key ways: 1. Reduced annual flow; 2. Removal of annual flood peaks; and 3. Increased riverbank erosion. Also significant build up of sediment in dam reservoirs has resulted in diminished nutrients and soil quality downstream now that annual flooding has been prevented and the sediments are no longer released.

A dam on the Southern portion of the Western River has raised tensions with the downstream neighbors. The combined impacts of reduce flow, removal of annual flood peaks and increased riverbank erosion have caused controversy and challenged previous standing agreements of water allocations. A conference of parties has been called for in 6 months, requesting Nimpala present more accurate information of water use and recharge from

their territory prior to the meeting.

Proposals have been submitted to construct the largest new dam project on the continent. The dam would double the electricity production in Nimpala and increase opportunities for access in a large portion of the country (mostly the urban areas in the North and West). However, at the time of this study, the UN team's evaluation showed that there had been inadequate environmental, economic and social impact assessments to weigh the positive and negative impacts of the project. The UN team found that none of the downstream scheme managers or farmers, who were most directly impacted by the dam, had been presented with the findings of the dam's environmental impact assessment report or findings. They were also not aware of the reported impacts of the dam on erosion and changes in traditional flow. The end of the war resulted with a reemergence of ambitious dam construction in several areas of the country. The interim government placed the former unit responsible for dam construction under the President's office. This group has more than 15 dam feasibility studies underway.

As a result of the peace agreement, each province was given separate powers related to management of water supply projects.

With the large quantity of transboundary water, shared with both countries to the West, North and South, and within Nimpala's Western areas, the national government must work to coordinate management and open reporting on a regular basis, which is currently not occurring.

OTHER TECHNOLOGIES FOR WATER DISTRIBUTION AND MANAGEMENT

The traditional systems of hand dug trenches, fed by rainwater and runoff, have an important role in supplying water for domestic use in rural areas and for pastoralists in remote areas and who have erratic rainfall. These systems which provide a critical services in remote areas of the country but are increasingly at risk to drifting sands, poor maintenance, and decreased rainfall. This has put a large population at risk and increased the instances of flashpoints for conflict and competition for limited water resources.

Proposals for additional canal systems are often attributed as one major underlying trigger of the original conflict.

POLICY

Since the end the civil war, a new effort as been placed on reviewing existing policy and identifying gaps. This process has begun within other sectors but none of the government ministries have yet produced any management plan for water resources. The president has recently made statements about the need for a national water resource assessment and planning process to address public awareness, holistic approaches to management, integration with sustainable development, capacity-building, institutional development and regional cooperation.

RECOMMENDATIONS

New large-scale water projects should be discouraged until a sustainable water management plan has been compiled. With renewed interest from foreign donors, foreign capital, and internal development ambitions, there is a great risk of unsustainable water use, which has a history of exacerbating existing conflict and tensions. On a broad level, the country needs to improve capacity for water resource management within the public

institutions. Nimpala's policy makers and natural resource managers must also start implement a philosophy and practical aspects of Integrated Water Resource Management.