



**FEDERAL DEMOCRATIC REPUBLIC OF ETHIOPIA**  
**MINISTRY OF WATER RESOURCES**

**WATER SECTOR DEVELOPMENT PROGRAM**  
**MAIN REPORT VOLUME I**

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## **1. Context and Background**

### **1.1 Physical Features of the Socio-economic Context**

Ethiopia is naturally endowed with water resources that could easily satisfy its domestic requirements for irrigation and hydropower, if sufficient financial resources were made available. The geographical location of Ethiopia and its favorable climate provide a relatively high amount of rainfall for the sub-Saharan African region. Annual surface runoff, excluding groundwater, is estimated to be about 122 billion m<sup>3</sup> of water. Groundwater resources are estimated to be around 2.6 billion m<sup>3</sup>. Ethiopia is also blessed with major rivers, although between 80 and 90 per cent of the water resources are found in the 4 river basins of Abay (Blue Nile), Tekeze, Baro Akobo, and Omo Gibe in western parts of Ethiopia where no more than 30 to 40 per cent of Ethiopia's population live.

The country has about 3.7 million hectares of potentially irrigable land, over which 75,000 ha of large-scale and 72,000 ha of small-scale irrigation schemes had been developed by 1996. Also by that year, the water supply system had been extended to only 1 quarter of the total population to provide clean water for domestic use. Of the hydropower potential of more than 135,000 GWh per year, perhaps only 1 per cent so far has been exploited.

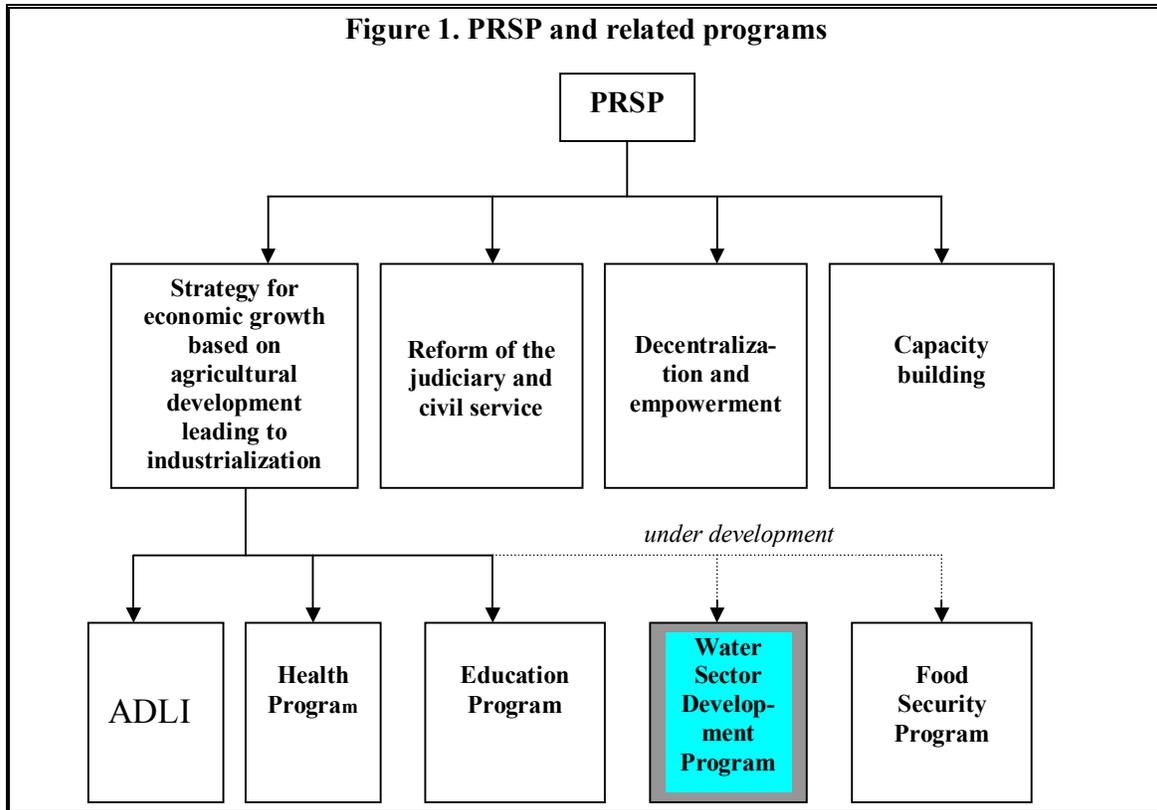
Close to 30 million Ethiopians of a total population of about 64 million live in absolute poverty. According to the Human Development Index, Ethiopia ranks at 171 of the total of 174 countries with a per-capita income of about US\$ 100 per year. The country's population is currently growing at a high rate of about 2.7 per cent per year. In addition, Ethiopia is facing humanitarian emergencies related to the spread of HIV/AIDS pandemic and chronic food insecurity owing to cyclical droughts, low levels of agricultural productivity, human displacement, and political instability in the region. Even under normal circumstances, some 4 to 5 million Ethiopians face chronic food insecurity.

Access to basic social services such as education, health, shelter, safe drinking water, and sanitation are among the lowest in the world. Only 1 quarter of the population in rural areas have access to drinking water from protected sources (tap and protected wells or springs) while more than 3 quarters of urban residents can access water from protected sources. Regarding energy, biomass appears to be the main source, in particular freely collected firewood--resulting in widespread environmental degradation. Approximately 2 thirds of the households use collected firewood. Electricity is a source of energy for cooking for barely more than 1 third of all households.

Natural disasters and geo-political factors had continuously hit the Ethiopia's journey of development—turning it into a journey of despair and frustration. In this context, the Government of the Federal Democratic Republic of Ethiopia undertakes initiatives for national development in parallel with continued responses to emergency situations. At the same time the Government has begun a series of reforms to transform the economy from a centrally controlled basis to a free-market orientation.

### **1.2 Poverty Alleviation and WSDP**

Recognizing pervasive poverty as Ethiopia's primary development challenge, the Government has issued the *Poverty Reduction Strategy Paper* (PRSP) that conceptualizes the range of guiding strategies to address poverty in the country. With the PRSP, the Government has committed itself to ensuring sustainable economic growth and development and improving access to basic social services. PRSP incorporates 4 building blocks: (a) a strategy for economic growth based on agricultural and industrial development, (b) judiciary and civil service reform, (c) decentralization and empowerment, and (d) capacity building. Figure 1 illustrates the linkages between the *Poverty Reduction Strategy Paper* as the national development framework and the other national and sectoral programs including the WSDP.



The first one, the Agricultural Development-Led Industrialized Strategy (ADLI), focuses on the basic needs of the rural population. The ADLI is complemented by other sectoral programs in Health, Education, and Roads aimed at improving the physical and social infrastructure and expanding access to basic goods and services. The present Water Sector Development Program (WSDP) and the Food Security Program are being developed. A strategy for capacity building is designed to support the implementation of all the envisaged work.

The PRSP expresses a considered view of sustainable development regarding the natural environment, including a full section on the subject that highlights close linkages between water management and water use (e.g., increasing sustainable agricultural production) and their potentially related impacts on the environment (depletion of water resources, pollution of water bodies and related effects etc.). The sustainable use and management of both the water resource and the environment are considered crucial for the success of socio-economic development and the reduction of poverty in Ethiopia.

### 1.3 Planning for Sustainable Development

The WSDP is contributing to major socio-economic targets such as enhancing the access of population to safe drinking water, improving food security through extending irrigation, and increasing the national production of electricity by constructing dams. Those programs may not, however, be sustainable if certain conditions related to their potential socio-economic as well as environmental impacts are not realized. The Government of Ethiopia recognizes that sustainable development requires a balanced approach between the social, economic, and environmental objectives of human activities, at all levels of intervention.

The planning process to date has produced WSDP in its current state, based on the analysis of issues and strategic choices and the definition of its basic objectives, principles, and priorities that form the

building blocks of the program. The program framework as it is presented does not mean the end of the planning process, however. Indeed, since implementation still lies ahead, the planning process itself has really just begun.

Significant portions of the proposed WSDP still need to be worked out in detail in the light of realities evolve during the implementation phase. For example, this vast program is composed of four major sub-sectors (water supply and sewerage, irrigation, hydropower, and general water resources), each of which will undergo further planning, with respect to their relationship with each other and to cross-cutting support elements of the program such as legislation, capacity-building, information management, participation of stakeholders, and others. A second planning process will be undertaken as part of the implementation process, as WSDP evidently will need to be subdivided into smaller, more manageable components that correspond to individual donors' substantive preferences and financing capacities. A third layer of planning will take place at the level of the project, as each project is designed and structured so that it meets the general policy and program objectives.

There should be no doubt about Government's commitment to allocate higher resources for investing in the water sector. A recent paper presented by the Government of Ethiopia in the Third United Nations Conference on the Least Developed Countries (May 2001) provided Ethiopia's development vision over the next years (2001-2010). It was estimated that Ethiopia would need to invest an amount of \$39 billion to achieve the targets set under this vision. Out of this, about \$25 billion would be invested in major development programs which have strong impact on poverty alleviation. Not only that water was identified as one of the important pillar of the development vision, it also received significant amount of share in resource allocations marked for the development of social sectors. The paper went on to state that water sector investments would be targeted to realize the objectives of water resources policy issued in 1999.

## **2. Methodology**

A detailed methodology defining different steps and procedures for the preparation of WSDP was prepared that outlined the procedures employed in: (a) setting growth targets for various sub-sectors; (b) the identification and selection, screening and short-listing of projects proposed in the WSDP; and (c) developing investment requirements. The methodology together with the growth targets set for various sub-sectors were discussed and agreed in a national workshop that brought together almost all stakeholders and concerned institutions and individuals. Key features of this methodological framework are summarized in the succeeding sections.

### **2.1 Program Formulation Process**

The WSDP has been prepared by the Ministry of Water Resources. The United Nations Development Programme (UNDP) provided the financial assistance, while technical assistance was extended by the United Nations Department of Economic and Social Affairs (UN DESA) under the auspices of Project ETH/98/001. The project engaged the services of a local consulting firm Water Works Design & Supervision enterprise (WWDSE) to carry out this exercise. Leading national experts participated in this exercise on behalf of the WWDSE. The present report consists of two volumes (*Volume I: Executive Summary and Volume II: Main Report*) and is based on the outputs produced under this consultancy agreement and the contributions received from a team of national and international consultants regarding environmental and socio-economic impact analysis of the proposed program. All background reports are available from the MoWR upon request.

At the beginning of this exercise, Regional Technical Committees (RTCs) were set up in all regions so that their preferences and priorities could be accommodated in WSDP. The RTC in each Region was chaired by the representative of the Regional Water, Mines, and Energy Bureau (or Water Bureau, as the case may be), and composed of representatives of the Planning, Agriculture, Irrigation

Commissions (or Authority, in Oromiya) and Health Bureau. The MoWR and its consultants made repeated visits to the regions to explain the WSDP planning process and discuss the basic principles, approaches, and requirements from the RTC. Large amounts of data and information have been collected both from the Federal and Regional Government sources, as well as from many other institutions.

Another aspect of WSDP preparation was the extended consultative process that had gone into this exercise. During the formulation process, extensive consultations took place at all levels. At the national level, two major workshops were organized by the MoWR to review and comment on various outputs. All major stakeholders participated in these workshops and provided useful comments and insights. At the regional level, the RTCs have conducted local-level consultative meetings that involved the grass-roots stakeholders. Development programs in other sectors (education, health, and road transport) were consulted for their relevant experience. In summary, what makes WSDP unique as compared to the other sector development programs is that it is based on an extensive consultative process reflecting inputs ranging from international donors agencies to local level communities.

## 2.2 Program Elements

### 2.2.1 Main principles

Preparation of the WSDP in general, and the subsectoral programs and projects proposed therein in specific, hold that WSDP should:

- Be consistent with the national water management policy and the national water strategy.
- Be in line with the national economic development strategy, and relevant to the socio-economic development of Ethiopia.
- Promote sustainable development and management of water resources.
- Account the “Basin” as a planning unit for development and management of water resources.
- Incorporate linkages with the on-going and planned projects.
- Support the Millennium Declaration Goals (MDGs) related to water--that have bearing on the achievement of overarching MDGs such as poverty alleviation and food security.

### 2.2.2 Planning horizon

The planning horizon of the WSDP is 15 years, divided into three 5-year periods of the short-term (2002-2006), medium-term (2007-2011), and long-term (2012-2016) in order to suit the existing practice of 5-year development plans of Regional and Federal institutions. The level of detail of each of the planning horizons differs. The short-term plan is based on existing Federal and Regional plans with on-going projects at a high level of study and design. Also, the short-term plan is more detailed than the medium- and long-term plans because it has well-described physical targets and budgetary requirements. The medium-term plan carries over projects to some extent from the previous term in which case they are comparatively better defined, while plans for the last term are indicative and general both in terms of their physical description and investment requirements.

### 2.2.3 Sectoral priorities

The national and regional priorities reflected in the WSDP relate largely to: (a) developing water resources for different uses; and (b) meeting national and regional development objectives that reinforce prospects for successful WSDP outcomes. The WSDP focuses particularly on action to:

- Make clean water available for drinking and sanitation.
- Make water available for livestock in nomadic and other special areas.
- Extend irrigation for agricultural production to the maximum possible.
- Expand generation capacity to meet hydroelectric power needs.
- Provide water for industrial development.
- Provide water for fisheries, tourism, and transportation, among other uses.

Within the above perspective, highest priority is given to those programs and projects that have either been started, appraised and considered for funding, identified in master-plan studies, considered for capacity building, or designated in the Nile Basin Initiative (NBI) and the Eastern Nile Subsidiary Action Program (ENSAP).

## 2.3 Program Preparation

The program preparation entailed a number of steps, but for reasons of simplicity summarized here under two broad categories: (a) setting the growth targets; and (b) selection and short-listing of projects.

### 2.3.1 Setting the growth targets

Target setting began with a baseline case reflecting the existing development level or service coverage of each subsector. This was followed by projecting the population over different planning horizons based on long-term growth rates of the Central Statistical Authority (CSA). Analysis of the national development vision reflected in various official policy documents and of existing capacities together with past performance contributed further in the development and refinement of sub-sector specific targets. Towards this end, regions provided inputs based on their respective needs and priorities. These targets were discussed and agreed in a national workshop (see section 3 below).

### 2.3.2 Selection and short-listing of projects

Project identification involved assessment of various planning documents, previous studies, related programs of the Federal and Regional Governments, as well as those identified by the consultants and recommended by the regions. Projects identified under various basin master-plan studies and those studied or designed previously but not yet implemented made the bulk of the original inventory. Screening and evaluation measures (see Chapter 4 of Main Report) further reduced the list to a feasible number. Costs of projects on the screened list were updated using the GDP Deflator. Since project costs comprise local and foreign components, the local and foreign costs were updated separately. Evaluation and ranking criteria were applied in the final selection of projects. This framework was used for projects only if data on required parameters were available, as was the case with many of the large- and medium-scale irrigation projects.

### **3. Targets to be Achieved**

**Water Supply and Sewerage Development Program (WSSDP):** The WSSDP consists of urban water supply, rural water supply, livestock water supply, and urban sewerage projects. Work activities are chiefly study and design, construction, rehabilitation and expansion, and operation and maintenance. WSSDP targets for water supply in urban and rural areas over different planning horizons are presented in table 1.

**Irrigation Development Program (IDP):** IDP targets are shown in table 2. In the short-term (2002–2006), IDP will emphasize the development of small-scale irrigation. Capacity-building in the study, design, and implementation of irrigation projects will have next highest priority. Wherever possible, priority shall also be given to the completion of on-going and suspended large-scale irrigation projects. Increasing emphasis will be given to the development of large and medium-scale irrigation schemes in the medium- to long-term.

**Hydropower Development Program (HDP):** The HDP has been designed to meet local electricity demand in the national grid or “Interconnected System” (ICS), export demand, and small-scale hydropower development targets for rural areas. The basis for setting targets for electric supply is the June 2000 forecast for electricity demand by the Ethiopian Electric Power Corporation (EEPCo). Planning assumptions included average GDP growth rate of 6.6 per cent per year. Because of delivery system losses, the corresponding generation requirement was estimated to be about 20 per cent greater than the consumer demand shown here. The projected electricity demand is presented in table 3. Development of potential export markets is the subject of on-going discussions with the neighboring countries of Sudan and Djibouti.

**Water Resources Development Program (WRDP):** The chief concerns in the water resources sub-sector are to lay the solid foundations for successful program implementation in the other sub-sectors, especially irrigation and hydropower, with the collection and analysis of various kinds of data and information that are needed. In this regard, main targets set for this program include the establishment of 349 new hydrology stations and 745 new meteorology stations. Transformation of current data transmission and analysis practices to modern and efficient computerized methods was also planned. To solve problems associated with floods, particularly along the Awash River course, projects to mitigate those problems were included. Regarding resource assessment, the main targets are to complete the remaining studies for the master plans for integrated development of river basins, integrate at national level the master-plan studies already conducted, and complete the national groundwater assessment study (currently planned to be undertaken by Ethiopian Geological Survey).

**Institution- and Capacity-Building Program (ICBP):** The national water policy calls for the establishment of an appropriate institutional framework from the national to the Regional and lowest administrative levels in accordance with the evolving forms of decentralized management. This is so because capacity-building at all levels is critical to ensuring sustainable development and management of water resources, a principle that is reflected in the WSDP framework. Accordingly, the ICBP consists of two main components: development of human resources and strengthening of water-resources institutions through structural reforms and provision of equipment, vehicles, and materials. The ICBP goal is to build the necessary manpower, material, and institutional capacities that will enable implementation of all the WSDP subsectoral projects to succeed. An essential part of its mission is to improve the quality of decision-making, technical ability, efficiency, and managerial performance of planning and operations of WSDP-associated private and governmental bodies at Federal, Regional, and local levels.

**Table 1. Targets of the Water Supply and Sewerage Development Program (WSSDP)**

Region	Existing Situation			End of 2006			End of 2011			End of 2016		
	Total Population 000	Coverage %	Population to be served 000	Total Population 000	Coverage %	Population to be served 000	Total Population 000	Coverage %	Population to be served 000	Total Population 000	Coverage %	Population to be served 000
Addis Ababa	2,570	70	1,799	2,973	95	2,824	3,418	100	3,418	3,883	100	3,883
Afar	1,243	16.5	205	1,389	32.6	453	1,540	48.8	752	1,695	65.1	1,103
Amhara	16,748	30.7	5,136	19,120	43.2	8,266	27,175	55.5	12,045	24,484	67.3	16,476
Benishangul Gumuz	551	20.3	112	625	40.5	253	706	52.5	371	791	64.5	510
Dire Dawa	330	59.5	196	398	70.6	281	474	92	436	555	97.8	543
Gambella	216	17.6	38	247	28	69	279	44.2	123	311	53	165
Harari	166	22.7	38	196	29.5	58	228	78.7	179	265	90.6	240
Oromiya	23,023	31.2	7,175	26,553	47.6	12,632	30,410	65.8	20,019	34,476	83.2	28,685
Somali	3,797	13	464	4,329	23.6	1,023	4,919	40.8	2,006	5,537	56.9	3,151
South (SNNPR)	12,903	28.6	3,691	14,902	38.3	5,709	17,035	50.2	8,548	19,247	71.3	13,725
Tigray	3,797	34.1	1,296	4,335	52.9	2,293	4,923	72.2	3,557	5,551	92.3	5,122
National	65,344	30.9	20,180	75,067	45.1	33,862	85,647	60.1	51,453	96,795	76	73,604

**Table 2. Targets of the Irrigation Development Program (IDP)**

Description	Small-scale schemes	Large- and medium-scale schemes	Total area
Short-term 1 <sup>st</sup> 5 years: (2002-2006):	40,319	13,044	53,363
Medium-term 2 <sup>nd</sup> 5 years: (2007- 2012):	40,348	39,701	80,049
Long-term 3 <sup>rd</sup> 5 years: (2012-2016):	46,471	94,729	141,200
Total area to be developed during 2002-2016:	127,138	147,474	274,612
Currently developed (approximate):	98,625	98,625	197,250
Grand total irrigated area by 2016:	225,763	246,099	471,862

**Table 3. Electricity demand in the HDP plan period, in GWh**

Targets/Consumer Categories	Existing Situation	End of Short Term (2006)	End of Medium Term (2011)	End of Long Term (2016)
• Domestic	441	636	857	1 152
• Services	311	507	750	1 124
• Industries	562	836	1 163	1 619
• Rural	-	24	70	145
<b>Total</b>	<b>1 314</b>	<b>2 003</b>	<b>2 840</b>	<b>4 040</b>

## **4. Description of Program**

Major outputs of the WSDP subsectoral programs for development of water supply and sewerage, irrigation, hydropower, water resources (cross-sectoral and general), and institution- and capacity-building are summarized in the following paragraphs.

### **4.1 WSSDP Components**

*Urban water supply:* Urban water supply coverage will grow from the current 74 to 98 per cent of the urban population during the plan period. Towards this aim, the following works will be executed: (a) completion of study and design for 391 towns; (b) construction of waterworks for 402 towns; and (c) rehabilitation of waterworks in 112 towns.

*Rural water supply:* Water supply coverage will grow from the current 23 per cent of the rural population to 71 per cent by the completion of WSSDP. This would entail the construction of following waterworks: (a) 4,255 deep wells; (b) 9,329 shallow wells; (c) 27,338 hand-dug wells; (d) 18,908 springs (developed); and (e) 222 subsurface dams, surface-water harvesting projects, river intakes, and related works. Also, 2857 works will be rehabilitated.

*Livestock watering:* Projects will be implemented to provide 10,761 ponds, cisterns, ground catchments, and watering facilities for livestock.

*Sewerage services:* This would include: (a) completion of study and design work of services for 109 cities and towns; and (b) construction of 110 sewerage projects.

### **4.2 IDP Components**

The IDP small-scale irrigation schemes scheduled for implementation during the short-term will provide new irrigation over 40,319 ha of farmland. New small-scale irrigation projects in the medium-term will cover 40,438 ha and in the long-term will cover 46,471 ha. A total of 14 large-scale and 3 medium-scale irrigation schemes are planned for implementation during the entire program horizon of 2002–2016:

- During the short-term, the large-scale projects of Omo Ratti (for 8,700 ha of new coverage) and most (72 per cent) of the Koga project (for 4,344 ha) will be implemented.
- During the medium-term, 4 large-scale and 2 medium-scale project will be implemented, for a combined area of 34,236 ha; they include Alwero/Abobo (for 10,400 ha), Gode West and a small part of Gode South (9,000 ha), Koga (1,656 ha), Megech (10,018 ha), Nagi Beach (2,070 ha), and Azena/Ayo (1,092 ha).
- During the long-term, 11 projects will be implemented that comprise 10 large-scale and 1 medium-scale scheme and cover a new area of 71,963 ha; with an additional 21,518 ha of large-scale schemes under the first phase of the Eastern Nile Cooperation Program.

Altogether, a total of 274,612 ha of farmland will be developed under new irrigation schemes. Of that total, 147,474 ha will be developed under the Federal Government's Large- and Medium-Scale Irrigation Development Plan and 127,138 ha will be developed under the Regional Small-Scale Irrigation Development Plan. Combined with existing irrigation networks, the countrywide total area of irrigated farmland will be approximately 471,862 ha by the end of WSDP.

### 4.3 HDP Components

*Hydropower plant construction:* This would include construction of: (a) 6 medium-scale hydropower plants with an aggregate installed capacity of about 950 MW, and (b) 15 small-scale hydropower plants (<10 MW each).

*Hydropower plant studies:* The following number of sites will be studied to different levels (feasibility, pre-feasibility, and reconnaissance).

- Feasibility studies of 15 medium-scale hydropower sites by MoWR
- Feasibility studies of 2 small-scale hydropower sites by EEPCo.
- Feasibility studies of 35 small-scale hydropower sites in various regions.
- Pre-feasibility studies of 18 medium-scale hydropower sites by MoWR.
- Pre-feasibility studies of 30 small-scale hydropower sites in various regions.
- Reconnaissance studies of 30 medium-scale hydropower sites by MoWR.

*Miscellaneous outcomes:* Other main outcomes of the HDP will include the following.

- Review of feasibility studies for Ethiopia–Sudan and Ethiopia–Djibouti transmission lines.
- Construction of Ethiopia–Sudan and Ethiopia–Djibouti 230-kV lines.
- Start of construction of 1 power plant under the NBI agreement.
- Study of Koka dam and reservoir support schemes (dam height-raising and diversion into an alternative reservoir).
- Setting up, organizing, and equipping the focal point for HPD database development at the Federal level (MoWR as implementer).
- Development of the regulatory framework in HPD (MoWR as implementer).

### 4.4 WRDP Components

*Hydrology:* Effort in the program period will be to bring the number of hydrological stations as close to the prescribed WMO (World Meteorological Organization) standards as possible. Towards this end, a total of 274 new hydrological gauging stations will be installed at various rivers and lakes for collection of hydrological data. This will include 150 new automatic recording stations and 124 new non-recording stations.

*Meteorological services:* To improve collection of reliable meteorological data, the National Meteorological Services Agency (NMSA) will install 745 new weather stations of varying classes at selected representative areas across the country, bringing the total number of stations to 1,540. To strengthen and expand meteorological data collection and supply of adequate weather information, meteorological branch offices will be established in 8 regions within the next five years.

*Flood protection and control:* The WRDP has proposed to undertake a number of flood protection studies and works on many sites. Major sites include: Awash River Basin, Lake Tana, Lake Awassa,

Lake Besseka, and Koka Dam. Nature and type of study or work will differ across various sites. In addition, a regional flood study and control programs will be executed for the city of Addis Ababa.

*Master plan studies for integrated development of river basins:* River basins that have not yet been the subject of integrated master plans for water-resources development will be studied. They include the basins of Wabi-Shebelle, Genale-Dawa, Rift Valley Lakes, Ogaden, Awash, and Danakil-Aysha. In addition, an integrated resources development plan of the Dire Dawa Council will be completed during the short-term planning horizon.

*National integrated river-basin master-plan:* After the completion of individual basin master plans, a nationwide river-basin master plan will be compiled that incorporates all the individual master plans, setting the stage for a comprehensive review of all the development options in the country's river basins.

*National groundwater assessment program:* The assessment of the amount of groundwater available for sustainable exploitation, its location and extent as well as quality is planned to be conducted jointly by the MoWR and the Geological Survey of Ethiopia.

*Other outputs:* The program has proposed to establish a central monitoring laboratory for water-quality investigations at the Federal level, and eight small-scale laboratories in different regions. In addition, some watershed management projects will be executed for the regions of Harari, Somali, SNNP, and Dire Dawa.

## 4.5 ICBP components

The ICBP consists of projects to:

- Create an enabling environment that includes an appropriate legal and regulatory framework, and enforcement of the policy and strategy.
- Establish the necessary institutions required to undertake the program. It will involve reorganization of the MoWR; establishment of seven basin authorities and a few other institutions; and strengthening of regional institutions.
- Develop manpower, which basically comprises training, career development, and design of motivational systems.
- Improve technical input in the form of equipment, infrastructure, and program financing.

A comprehensive human-resources development plan in the form of long-term and short-term training programs for Federal institutions and Regional bureaus have been considered for the ICBP project roster. Institutional capacity-building programs included in the ICBP deals with procurement of equipment, strengthening of the existing institutions, and establishing new ones.

## 5. Investment Needs

Investment needs to implement the physical program defined above are discussed here first on sub-sectoral basis, and then on a whole program basis.

**WSSDP investment needs:** Investment requirements for the WSSDP are estimated to be US\$2,935.8 million. Region wise investment requirements over different planning horizons are shown in table 4 for various components of the program. Of the total investment requirements, rural water-supply projects account for US\$ 2,086 million (or 71 per cent of the total), urban water supply for US\$ 819 million (28 per cent), and urban sewerage for US\$ 30 million (1.1 per cent).

**IDP investment needs:** IDP investment needs are classified by level of responsibility: Federal and Regional. The Federal investment plan for the short, medium and long terms would require a total investment of US\$ 1,114.3 million over 15 years, of which US\$ 664 million would be in foreign currency. The investment needs over different planning horizons are: US\$ 114.4 million in the short-term, US\$ 260.3 million in the medium-term, and US\$ 734.4 million in the long-term. On the other hand, the regional investment plans in the form of SSIDP would require a total investment of US\$ 599.4 million, i.e. US\$ 193.2 million in the short-term, US\$ 188.0 million in the medium-term and US\$ 217.4 million in the long-term. Nearly 38.7 % of this investment cost would require foreign currency (US\$ 231.8 million), with the remaining 61.3 % being in local currency.

**Table 4. Summary of WSSDP investment requirements (US\$ millions)**

Region	Short-term				Medium-term				Long-term				Grand Total
	UWS	RWS	US	Total	UWS	RWS	US	Total	UWS	RWS	US	Total	
Addis Ababa	183.0			183.0	224.6			224.6	140.3			140.3	547.8
Afar	9.5	13.4	6.4	29.3	5.8	23.2	0.9	29.9	4.3	32.6	0.9	37.8	96.9
Amhara	36.1	127.7	0.3	164.1	13.4	144.5	0.7	158.5	9.1	164.0	0.7	173.8	496.4
Benshangul Gumz	4.9	1.7	0.3	6.9	2.2	1.9	0.7	4.8	1.4	2.1	0.4	3.9	15.6
Dire Dawa	1.9	1.1	0.1	3.1	2.0	1.3	0.6	3.9	0.8	2.5	-	3.3	10.2
Gambella	7.1	3.8	0.1	11.0	0.5	7.0	0.3	7.7	0.6	8.0	-	8.6	27.3
Harari	28.5	1.0	0.1	29.6	1.0	0.7	0.4	2.1	8.8	1.0	0.1	9.9	41.6
Oromiya	31.2	185.9	0.1	217.3	49.1	246.3	1.9	297.3	4.0	296.5	1.3	301.8	816.4
Somali	3.0	49.4	1.8	54.2	4.0	92.9	2.5	99.4	0.6	104.4	1.0	106.0	259.6
SNNPR	4.7	101.1	0.7	106.4	20.0	134.4	2.7	157.1	3.7	138.4	1.4	143.5	407.0
Tigray	6.3	64.8	0.4	71.5	6.6	63.9	2.1	72.6	0.6	71.1	1.3	73.0	217.0
Total				876.3				1057.9				1001.7	2935.8
F/C				630.9				761.7				721.2	2113.7
L/C				245.4				296.2				280.5	822.0

**Table 5. Summary of IDP investment requirements (US\$ millions)**

Project Type	ST	MT	LT	Total
1. Federal Projects	114.7	268.1	700.9	1,083.7
1.1 Implementation	90.6	223.0	686.7	1,003.0
1.2 Studies & designs				
a) Program Scheme	8.0	16.3	4.3	28.6
b) Nile Initiative Schemes (w/o Tana Shore Schemes)	16.1	28.8	-	44.9
c) Multi-purpose Schemes	-	-	9.9	9.9
2. Regional Projects	193.2	188.8	217.4	599.4
2.1 Implementation	188.3	184.0	211.9	584.2
2.2 Studies & Designs	4.9	4.8	5.5	15.2
Total	307.9	456.9	918.3	1,683.1

**Table 6. Summary of HPD investment requirements (US\$ millions)**

Project Type	ST	MT	LT	Total
1. Federal Projects	647.34	516.2	764.5	1928.04
1.1 On-going Projects	--	--	--	--
Construction	92.6	--	--	92.6
HPD Studies	--	--	--	--
1.2 Planned Projects				
Construction	533.5	499.7	750	1783.2
HPD Studies	15.1	14.5	14.5	44.1
Other Activities	6.14	2.0	--	8.14
2. Regional Projects	1.7	9.7	12.2	23.6
1.1 On- going Projects	--	--	--	--
1.2 Planned Projects	--	--	--	--
Small Hydro Construction	--	8.0	10.0	18.0
Small Hydro Studies	1.7	1.7	2.2	5.6
<b>Total</b>	<b>649.04</b>	<b>525.9</b>	<b>776.7</b>	<b>1951.64</b>

**HDP investment needs:** The total investment requirement for HPD in the planning period is US\$ 1,951.64 million (table 6). Of the total planned investment, US\$ 1,928.1 million (or 99 per cent) is for the Federal projects. By contrast, Regional projects account for only 1 per cent. The major reason for this difference in the share of investment between Federal and Regional projects is the cost of construction of Gilgel Gibe, Tekeze, Gojeb, Finchaa IV unit, and hydropower projects that are included under Federal projects. They are on-going and committed projects. Their construction cost accounts for about 96 per cent of the total investment requirement for Federal and Regional projects for the HDP horizon. In comparison, cost of small-scale hydropower plant construction in various Regions amounts to only US\$ 18 million. HPD studies at the Federal and Regional levels account for US\$ 49.70 million (or 2.5 per cent of total investment) for the HDP period.

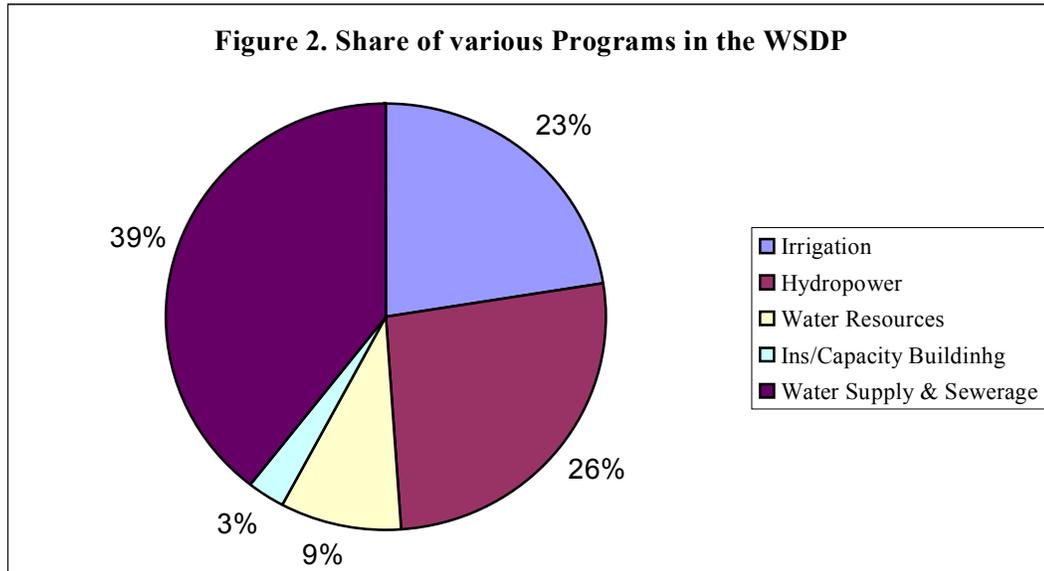
**WRDP investment needs:** Total investment requirements over the entire plan period amounts to \$US 655.58 million. The share of Federal and Regional projects is estimated to be 68 and 32 per cent, respectively. As for as share over three planning periods is concerned, it is around 30 per cent in the short-term, while it is almost evenly distributed in the remaining two planning periods.

**ICBC investment needs:** Investment requirements for the institutional and capacity building plan are estimated to be around \$US 218 million over 15 years period. Regional share constitutes about 89 per cent of the total investment plan. About 43 per cent of the plan requirements need to be met in the short-term planning horizon. The remaining amount is distributed almost equally during the medium- and long-term plan periods. Institutional and capacity building financial needs constitute only 3 per cent of the total investment requirements for the WSDP.

**Summary of investment needs:** Total financial requirements for the WSDP over the entire planning period of 2002–2016 are estimated to be \$US 7,444.8 million (table 7). Water supply and sewerage program constitute about 39 per cent of the total investment needs followed by 26 per cent for hydropower, 23 per cent for irrigation, 9 per cent for water resources, and 3 per cent for institutions and capacity building. Financial requirements estimated for three planning horizons amounts to: \$US 2,110 million (28 per cent) in the short-term, \$US 2,336 (31 per cent) in the medium-term, and \$US 2,999 million (41 per cent) in the long-term.

**Table 7. Summary of overall WSDP investment requirements (US\$ million)**

Sub-sector	ST	MT	LT	Total
<b>Water Supply &amp; Sewerage Program</b>	<b>876.2</b>	<b>1,057.9</b>	<b>1,001.7</b>	<b>2,935.8</b>
Federal				
Regional	876.2	1,057.9	1,001.7	2,935.8
<b>Irrigation Program</b>	<b>307.9</b>	<b>456.9</b>	<b>918.3</b>	<b>1,683.1</b>
Federal	114.7	268.1	700.9	1,083.7
Regional	193.2	188.8	217.4	599.4
<b>Hydropower Program</b>	<b>649.1</b>	<b>525.9</b>	<b>776.7</b>	<b>1,951.7</b>
Federal	647.4	516.2	764.5	1,928.1
Regional	1.7	9.7	12.2	23.6
<b>General Water Resources Program</b>	<b>183.9</b>	<b>231.9</b>	<b>240.5</b>	<b>656.3</b>
Federal	133.7	160.1	153.7	447.5
Regional	50.2	71.8	86.8	208.8
<b>Institution/Capacity Building Program</b>	<b>92.9</b>	<b>63.3</b>	<b>61.7</b>	<b>217.9</b>
Federal	13.2	5.3	5.0	23.5
Regional	79.7	58.0	56.7	194.4
<b>Total</b>	<b>2,110.0</b>	<b>2,335.9</b>	<b>2,998.9</b>	<b>7,444.8</b>
Federal	909.0	949.7	1,624.1	3,482.8
Regional	1,201.0	1,386.2	1,374.8	3,962.0



## **6. Investment Priorities**

Successful implementation of the WSDP very much depends upon the availability of financial requirements mentioned above, together with the establishment of necessary institutional improvements as spelled out under the institutional/capacity building component. Overall implementation of the WSDP will, however, be guided by a three-prong investment strategy--referring to each of the planning horizon.

- In the short-term, investment will be made in programs and projects that can help build national and regional capacities, secure food production, and meet immediate capacity and infrastructural needs.
- In the medium-term, investment will be made in projects that can maximize growth to generate the financial and economic base for future investment and develop sustainable social and physical infrastructures and capacities to create the base for future growth.
- In the long-term, investments will be made in programs and projects that contribute towards reducing regional disparities and enhance contribution of the sector to the general socio-economic development of the country.

Within the above framework, if available resources turn out to be short of what is required, projects within various subsectors will be prioritized to make implementation targets compatible with the resource constraints.

In the water supply and sewerage subsector, implementation of projects will assume the following priority order: (a) rehabilitation of existing water supply schemes; (b) new schemes with lower per-unit costs to implement such as springs and hand-dug wells; (c) point sources in drought-prone areas, less developed regions, nomadic areas, and areas of great water scarcity; and (d) water scarcity for human and animal consumption.

In the case of irrigation sub-sector, the hierarchy of investment priorities will be as follows. First priority will go to the implementation of regional SSIDP projects, given the importance of the current Poverty Reduction Strategy for the country. Second in priority for investment consideration, reflecting Government's international commitments, are the NBI irrigation projects (of the ENSAP). Three suspended national schemes will have third place in priority. Fourth priority will be for other LMSIDP schemes that will be implemented over 29,062 ha. Last but not the least, a study of two multipurpose schemes to cover 124,626 ha will be undertaken.

With regard to the hydropower sub-sector, in terms of external financing, the hierarchy of priorities will be as follows: (a) study projects in the HPD program; (b) NBI projects; and (c) regional HPD construction projects. In the case of water resources development, if the planned roster must be reduced, Federal projects should be given priority over Regional projects followed by the Addis Ababa priority projects. Federal activities outside of watershed management for the Nile sub-basin need less than US\$ 50 million for implementation, so they should be implemented as proposed.

## **7. Environmental and Social Sustainability**

The Government of Ethiopia recognizes that the WSDP might have positive and negative environmental impacts. In order to maximize positive impacts and minimize or avoid negative impacts, the Government, in line with its environmental and water sectors policies and legislation, commits itself to undertaking an Environmental and Social Impact Assessment of the components of WSDP. This analysis will be undertaken for all major projects identified in the WSDP. Some of these projects, especially those selected from the master plan studies, had already been subject to this kind

of analysis. In many cases, however, this analysis will require updating because conditions have changed quite a bit since the master plan studies were completed. At some stage during the plan period, each of the intervention proposed for various WSDP components will be transformed into a specific project document--this is the time when detailed impact assessment will be undertaken.

At this stage, from the environmental perspective, it is recognized that the WSDP interventions could possibly have four types of impacts on water resources, namely (a) impacts on the water cycle, (b) impacts on the water availability, (c) impacts on water quality, and (d) impacts on the aquatic ecosystems. For example, major changes in water quantity or quality, or water regulation, may affect the flora and fauna living or dependent on aquatic ecosystems and create disturbance in the natural environment that threaten the existence of indigenous species. Water development programs can also impact on human health --both positively and negatively. Providing increased access to water supply and sanitation services (WSSDP) could lead to improved environmental health conditions and can be a major factor in fight against poverty. On the other hand, if water abstraction points are not protected, the transformation of both quantitative and qualitative characteristics of the water resources can create or expand health risks due to the spread of water-borne diseases.

Social impact assessment is an effort to estimate, in advance, the likely positive and negative social consequences of the proposed WSDP activities so that action can be taken to enhance benefits from the positive impacts and to mitigate the negative consequences. The proposed investments are likely to generate thousands of jobs, as most WSDP investment areas are heavily biased in favor of labor intensive processes. The WSDP would thus make a useful contribution to the critical problem of employment generation in a surplus labor economy. This would also enhance the prospects for sustainability of investments, since people will be able to pay for the services.

The social impact assessment at the subsectoral program and project level will specifically address how specific WSDP interventions will affect the: population structure, community and institutional structures, distribution of power and authority, and livelihoods of vulnerable and marginalized social groups. And, at a more general level, how all these issues would have an impact on poverty reduction.

## **8. Program Implementation and Monitoring**

### **8.1 Implementation Strategy**

The WSDP recommends an array of investments and measures, which emerged through an extensive consultative process, for each sub-sector and supporting program. These measures are outlined below as main elements of the implementation strategy, and provide answers to two main questions. Where should we begin? And how should we proceed? If these elements are not made explicit, the WSDP implementation will not get concerted action. Nor can its progress be monitored for mid-course correction and periodic revision. The implementation strategy also takes into account the roadmap provided by the national water strategy. Key elements of the strategy are:

- Strengthening of existing institutional structure.
- Ensuring strong coordination among all program components.
- Prioritizing the program implementation to meet funding constraints.
- Assigning priority to complete the on-going programs/projects.
- Promoting decentralized management through involvement of local communities.
- Bridging technical capacity gaps in the short-term.

- Creating conditions to build new and innovative partnerships at all levels.
- Starting implementation from undisputed resource development and management domains.

## 8.2 Implementing Partners

Implementation of WSDP activities and projects will involve a large number of partners--each with different roles and functions. These include: (a) Government institutions; (b) private sector; (c) local communities and individuals; (d) NGOs; and (e) external support agencies. Roles and functions of these partners are briefly summarized here.

**Government institutions:** Implementation of the WSDP activities at Federal and Regional levels will not only involve water-related institutions, but other institutions as well. Nevertheless, MoWR at the Federal level and WMEB at the Regional level would assume the lead responsibility for program implementation. Their principal role would be to provide leadership in making high-profile decisions designed for maximum impact within limited means.

**Private sector:** The private sector so far has played very little role in the development of water sector. However, as the Government moves towards the implementation of WSDP activities, it sees private sector as an important partner in pursuit of the WSDP objectives. The Government will examine the possibility of introducing different kinds of incentives to create condition conducive to private sector participation in implementing WSDP activities.

**Local communities and individuals:** Communities and individuals are expected to invest capital and labor and to improve their resource management practices. Communities will be responsible to manage common resources, improve their own organizational set up, undertake and maintain projects, and increase the involvement of women.

**Non-governmental organizations:** The effectiveness of the NGO contribution to WSDP will be improved by co-ordinating and linking their activities to the development programs of the regions. The NGOs will perform four important functions within the context of WSDP implementation: (a) bringing additional financial resources; (b) strengthening technical capacities of regional bureaus; (c) organizing local communities; and (d) undertaking rehabilitation works.

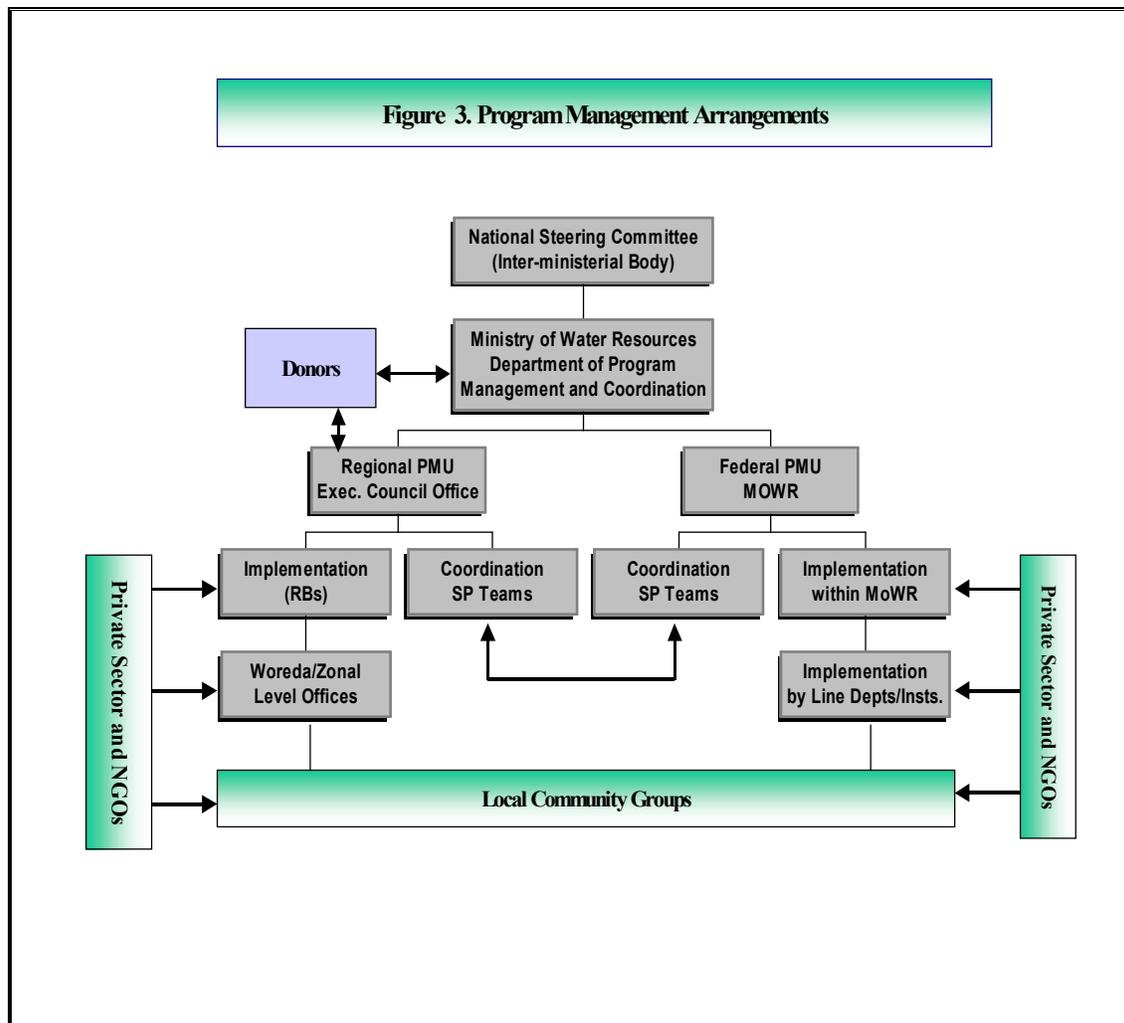
**External support agencies:** Given the financial size of WSDP, role of international lending and donor institutions in providing financial resources and technical assistance to implement the program activities can hardly be over-emphasized. The WSDP provides a comprehensive framework to donor agencies not only to select projects and programs for financing in accordance with their respective country assistance strategies, but also to coordinate water sector activities to improve the efficiency and management of external assistance.

## 8.3 Program Management

Program management entails four major functions: planning, implementation, co-ordination and monitoring. During the course of WSDP implementation, all of these functions are to be performed at three levels: national, regional, and local. At each level, different partners (identified above) are expected to make specific contributions in the execution of these functions. The program management arrangements proposed here aims at bringing all stakeholders together for increased upstream level support and improved downstream level co-ordination.

### 8.3.1 Management arrangements

Specific management arrangements proposed for the implementation of WSDP are exhibited in schematic form in figure 3. These arrangements ensure strong linkages between the Federal and Regional components of WSDP. In line with the broad implementation strategy guidelines, these arrangements would contribute further towards strengthening the existing institutional framework. Towards this aim, establishment of following organs is proposed.



**National Steering Committee (NSC):** The WSDP implementation requires participation of leading institutional stakeholders. Accordingly, at the highest level, a National Steering Committee (NSC) will be established. This will be an inter-ministerial body consisting of representatives of relevant Federal ministries and institutions, regional states, donors and private sector. Selected community representatives from different regions will also represent at the Committee. This Committee will not be involved in the routine day to day program management operations; instead its role will be to monitor program progress and provide policy advice and guidance to the implementing organs.

**Federal Program Management Unit (PMIU):** The FPMU will be established within the MoWR to provide technical, logistical and administrative support to all aspects of program management, as described earlier: planning, implementation, coordination and monitoring. To begin with, it can start functioning as part of the Planning Department of the MoWR. However, at a later stage, possibility of transforming it into a full-fledged Department of Program Management and Coordination will be explored. Probably the second year of program implementation will be the best time to look into this option.

**Regional Program Management Unit (RPMU):** On the pattern of FPMU, a separate RPMU will be established in each region within the Executive Council Office. This is essential because much of the program components are to be implemented at the regional level. Socio-political considerations also warrant so. Its functions and responsibilities will almost be similar to those of the FPMU, but focusing mainly on regional level activities.

**Sub-program Level Teams:** Both under the FPMU and RPMUs, 3-4 sub-program level teams will be established because WSDP projects are grouped in accordance with major sub-sectors dealing with irrigation, hydropower, water supply and sewerage and general water resources. These specialised teams will be responsible for co-ordination of sub-program level activities.

### 8.3.2 Execution of works

Much of the small-scale construction work will be contracted out to local companies, NGOs, local community groups and, in some cases, may be to relevant Government institutions. In the case of large projects, works will be awarded to local or international companies by employing competitive bidding procedures. At the beginning of the program implementation, a Program Implementation Manuel (PIM) will be prepared to define, *inter-alia*, rules and procedures for engaging local and international consultants in the execution of WSDP works.

### 8.3.3 Program monitoring

The ultimate responsibility for monitoring of the proposed program lies with the Government of Ethiopia as part of its fundamental responsibility to execute its own program. At the initiation of the program implementation, a detailed monitoring process will be defined, including operational plan, performance indicators, monitoring tools, and boundary conditions. These procedures will be elaborated in the Program Implementation Manuel, together with the concrete steps to be followed in the process with definition of responsibilities. In this context, a detailed electronic monitoring system will be put in place to ensure timely flow of information among various implementing organs in the required format. The WSDP implementation will be monitored, reviewed and evaluated at least at three different levels.

The *first level* of review and monitoring will be done at the project level. Quarterly meetings between the project implementing agencies (private sector, communities, NGOs etc.) and sub-program level teams will provide the necessary forum for this review.

The *second level* of review calls for more intensive review and monitoring of program performance on bi-annual basis. This review will be undertaken jointly by the Program Managers of FPMU and all RPMUs. Reports coming out of the first level of review will serve the basis for discussion at this stage of the review. The FPMU will submit the summary of this review to the Minister of Water Resources.

The *third level* of review calls for an annual review of program performance by the National Steering Committee. Towards this aim, the FPMU will prepare the Annual Progress Report with the involvement of all stakeholders (especially the RPMUs). This report will reflect the results achieved so

far and the problems encountered in the program execution. This meeting in addition to reviewing the past progress will approve the operational plan for the next year.

## **9. Financial Planning**

The WSDP is is concerned with the way all social and economic development will be undertaken. Total estimated cost of the WSDP is \$US 7,444.8 million over 15 years period (2002-2017) covering all aspects of water resources development and management, and extending to all possible water uses.

### **9.1 Sources of Funding**

Projections of investment requirements to support the WSDP activities over the next one and half decade are based on three major sources of financing: (a) external sources; (b) domestic resources; and (c) private capital--both domestic and international.

At this stage it is a bit premature to indicate that who would contribute how much resources towards the WSDP implementation. Part of the Government's resource mobilization strategy is to present this WSDP to various partners to seek their participation in its implementation. However, based on past experience of financing to the water sector, as well as response of different partners to other sector development plans (health, education and road), the Government has made some tentative estimates of the contributions from different sources over the next 15 years. Estimated figures are: \$1,827 million from Government sources (24.5%), \$1,895 million from international private sector (25.4%), \$759 million from domestic private sector (10.2%), \$377 million from communities/beneficiaries (5.1%) and \$2,585 million from multilateral and bilateral donors (34.8%). The Government fully realizes that future of this program and of resource mobilization greatly depends upon its implementation performance in initial years of the program. As such, these figures will be subject to continuous revision and refinement as the program implementation proceeds.

At this stage, the financial picture for short-term (2002-2006) is relatively more clear. Total investment requirements for all sub-sectors are \$2,110 million. The Government has already mobilized (or will certainly be able to do so) a total of \$1,241 million from different sources. This includes an allocation of \$325 million from the Government treasury, contributions of \$19 million from beneficiaries of the SSIDP and contributions of \$55 million from beneficiaries of the RWSDP. In addition, funding of \$100 million is already available from bilateral and multilateral sources, and an amount of \$742 million is expected to become available for hydropower projects under the NBI. The remaining balance turns out to be \$174 million per year over the next five years, that is yet to be mobilized/secured. In other words, with resources at hand, the Government can proceed with the program implementation.

### **9.2 Resource Mobilization Strategy**

The Government plans to exert all out efforts to raise the required resources for the implementation of WSDP activities. In this regard, the following actions will be taken.

- A donor's meeting will be organized in Addis Ababa to launch the implementation of WSDP and to secure donors' interest in various WSDP activities.
- A Resource Mobilization Committee has been constituted that has already started its work. The Committee will further intensify its work once this report is officially released and distributed to all potential partners.

- The Committee will hold meetings with various donor agencies (not present in Addis Ababa) at their headquarters and introduce them to the various aspects of WSDP. Similar efforts will be made to secure the interest of large international private sector companies.
- The Government will soon announce a policy on tax rebates and extending credit lines to private sector companies that would be willing to invest in the water sector.
- The WSDP will be introduced in all international water meetings, especially during 2003 since this year has been declared as an International Year of Freshwater.

## **10. Promising Factors**

In spite of the stagnant character of the water sector, there are many hopeful factors in the present situation. that provide basis for optimism.

First, the Government of Ethiopia remains very much committed to the goal of poverty alleviation and realizes that sustainable development and management of water resources is crucial to the achievement of this goal. As such, water has been reflected as one of the priority area in country's poverty alleviation strategy.

Second, the Ethiopia has come a long way in creating mutual trust and better understanding with its riparian neighbors about equitable sharing of trans-boundary waters. The NBI has made considerable progress and a common vision has been developed together with investment plans for mutually agreed projects.

Third, the Government has already committed to mobilize a considerable amount of financial resources from domestic sources to meet the short-term investment needs of WSDP.

Fourth, provision of water supply to those having no access to safe drinking water supply remains on the top of internal development agenda, as was agreed in the Millenium Declaration Goals and recently reaffirmed in the Johannesburg Summit. Accordingly, the multilateral and bilateral development agencies are expected to extend more support to water sector in Ethiopia.

Finally, building partnerships with the private sector is increasingly being seen as an important mean to bring additional financial resources to the development and management of water sector. The Government is ready to discuss such partnerships, and create necessary incentive structure and regulations to promote the participation of private sector.

## **11. Getting Started**

Implementing the WSDP activities will take considerable multi-sectoral and sectoral planning and programming over the next 1-2 years, along with capacity building and institutional strengthening. Yet the focus solely on planning and institutional development in the initial years could be risky as the momentum on substantive action—i.e., implementation of projects—could be easily lost. Feedback from implementation of projects at ground level is also important to proper planning and strengthening of institutions. The Government will therefore take following actions in the initial years to ensure smooth implementation of WSDP activities and secure sustainability of WSDP investments over the entire planning horizon.

- To initiate and facilitate program implementation, following institutional arrangements will be put in place: (a) creation of a National Steering Committee representing all stakeholders; (b) establishment of a Federal Program Management Unit (FPMU) within the Ministry of

Water Resources; and (c) establishment of Regional Program Management Units (RPMUs) in the Executive Council Offices of all regions.

- The FPMU and RPMUs will be made fully functional by assigning necessary staff and making available the required equipment. These units will develop an operational plan (work plan) for the short-term, especially with more details for the initial years, for approval of the National Steering Committee.
- A Program Implementation Manual (PIM) will be prepared that would serve as a step-by-step guide to deal with different aspects of program implementation. Such aspects may include, but not limited to: procurement of goods and services, engagement of consultants/firms, accessing program funds, disbursement procedures and regulations, roles and functions of implementing agencies vis-à-vis other agencies participating in the program etc.
- The program performance will be continuously monitored and evaluated at different levels--ranging from project level progress to subprogram level performance to national level evaluation and assessment. For this purpose, a monitoring system will be put in place that will include baseline data and information, and encompass a reporting mechanism. It will also include detailed procedures for monitoring and evaluation of program impacts.
- The WSDP has identified a series of projects with tentative cost estimates. Proposed interventions will be transformed into detailed project documents in line with the format and requirements of funding agencies. In some cases, these project documents might already exist but will need some updating.
- Immediate priority of the Government is to mobilize resources for the short-term implementation of the WSDP. Towards this aim, a series of resource mobilization meetings will be arranged with all partners, whether domestic or international, especially with the private sector. The WSDP will be introduced at all international water related conferences to sensitize the international community.
- A short-term capacity building plan will be prepared and implemented to enable the existing institutions to cope with the extensive program management requirements in the first part of the planning horizon. This would entail employing additional skilled manpower, upgrading the skills of existing manpower, and purchasing construction machinery, vehicles, and equipment.
- All future water sector projects and donors activities will be coordinated within the framework provided by the WSDP. This applies equally to all those projects that are not included in this WSDP.

## **12. Concluding Remarks**

The WSDP consists of, and depends on, an interweaving of the physical means of land and water resources with the necessary economic, social, environmental and political factors. Implementation of such a plan will require heroic efforts by the Government and people of Ethiopia. It is a big challenge, and not an easy one. The impact of concerted efforts to increase food production, providing safe drinking water to those who presently do not have an access, generate additional hydropower to stimulate economic growth will be felt in almost every department of the Federal and Regional Governments. These institutions should start reorienting themselves to cope with these impacts.

The WSDP will intimately effect the life of every family in each project area. Each year thousands of farmers and their families will be involved in technologic, economic and social revolution. The local communities must become aware of a new frontier, after years of decreasing hopes and resources. The

Government should play a lead role in raising this awareness among the rural population, though it will be a daunting task because of problems of village isolation, illiteracy, shortage or lack of qualified personnel, and lack of mass communication media. Success will not occur unless the communities can be motivated and mobilized to extend their efforts to cooperate.

Staffing of the implementing institutions will be a difficult problem. Domestic personnel will clearly not be available in adequate numbers during the early years of the program, but every effort should be made to build up the domestically recruited staff as quickly as possible. During the early years, technical assistance from private sector and external support agencies will probably be essential. It is evident that competent professionals would not be willing to work based on the existing salary structure. The Government therefore must adjust itself to this reality and be ready to attract national professionals by offering them competitive packages.