

FEDERAL DEMOCRATIC REPUBLIC OF ETHIOPIA NATIONAL WATER POLICY AND STRATEGY



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TABLE OF CONTENTS

GLOSSARY	2
ABBREVIATIONS AND ACRONYMS	8
1. PREAMBLE	9
2. POLICY GOAL, OBJECTIVES AND GUIDING PRINCIPLES	12
3. GENERAL WATER POLICY STATEMENTS	14
4. SECTORAL POLICIES AND STRATEGIES	16
4.1. Water Supply and Sanitation (WSS).....	16
4.2. Irrigation and Drainage	28
4.3. Hydropower	35
5. POLICIES ON OTHER WATER USES	41
5.1. Inland Water Transport	41
5.2. Water for Tourism and Recreation	42
5.3. Water Use for Industries	43
5.4. Aquatic Eco-systems and Resources	45
6. WATER RESOURCES MANAGEMENT	47
6.1. Integrated Water Resources Management (IWRM)	47
6.2. Water Conservation	48
6.3. Water Protection	48
6.4. Buffer Zones	49
6.5. Environmental Flows	49
6.6. Watershed Management.....	50
6.7. Water Quality Management	51
6.8. Groundwater management	52
6.9. Wetlands Management.....	54
6.10. Water Allocation.....	54
6.11. Supply and Demand Management of Water	55
6.12. Trans-boundary Water Resources.....	57
6.13. Trans-regional Water Resources.....	58
6.14. Disasters and Emergencies	59
6.15. Dam Safety	62
7. POLICES ON CROSSCUTTING ISSUES	64
7.1. Capacity building	64
7.2. Research.....	65
7.3. Technology Transfer	66
7.4. Innovation	67
7.5. Water Information Systems	67
7.6. Climate Change Mitigation and Adaptation	70
8. POLICY ON WATER SECTOR GOVERNANCE	72
8.1. Legal frameworks	72
8.2. Institutional arrangements.....	72
8.3. Stakeholders' Engagement.....	73
8.4. Sector Coordination	74
8.5. Equity and Inclusion	74
8.6. Monitoring and Evaluation	75
8.7. Water Project/programme management	76
9. WATER SECTOR FINANCING	77
9.1. Government financing	77
9.2. Community financing	78
9.3. Development Partners (DPs) and NGOs financing	78
9.4. Private sector financing.....	78
10. MONITORING AND EVALUATION OF THE NATIONAL WATER POLICY	79

GLOSSARY

1. **Aesthetic use of water:** refers to the use of water for aesthetic or ornamental or decorative purposes, such as maintenance of a pond and lakes for decoration and fountains, reflecting pools, and water gardens.
2. **Aquatic ecosystems:** an ecological system considered as a functional unit comprised of water and the organisms that live in it.
3. **Aquifer:** an underground body or layer of water-bearing rock, soil, sand or gravel of sufficient porosity and permeability to allow groundwater flow and abstraction. Includes geological formations and structures that store and/or transmit water, such as to wells and springs.
4. **Basin:** a geographical area drained by a river, river system, or other body of water including surface and underground water flowing into a common terminus.
5. **Buffer zone:** a land area designated for special management controls including retention of runoff, aimed at protection around rivers, streams, wellfields and groundwater recharge sites for improvement of water quality.
6. **Carrying capacity:** the number/size of living things (humans, plants and animals) any area of land or water can support at any one time without environmental degradation.
7. **Climate resilient WASH:** a system that ensures reliable WASH services in the context of a changing climate.
8. **Climate smart agriculture:** agriculture practices that sustainably increase productivity and enhance adaptive capacity while reducing greenhouse gas emission.
9. **Commercial water supply:** water used for commercial areas, such as hotels, lodges, recreational centres, etc.
10. **Cost recovery:** to recover all of the expenses associated with a water system, programme or service to ensure long-term sustainability.
11. **De minimis:** exemption applying to small quantities of groundwater abstraction that is used without administrative formalities for meeting basic needs including food security.
12. **Domestic sewage:** wastewater composed of untreated human waste coming from residential and commercial sources.
13. **Drainage facility:** a series of infrastructures including the main, secondary, tertiary and field drainage canals necessary for the removal of excess water and salts from the

irrigation scheme in order to allow effective agricultural operations and to prevent water logging.

14. **Ecohydrology:** the functional interrelations between hydrology and biota from the molecular to catchment scale for sustainable management of water and its related ecosystems.
15. **Effluent:** any liquid from domestic or non-domestic origin that is discharged into the environment with or without treatment.
16. **Environmental flows:** the quality, quantity, and timing of water flows required to maintain the components, functions, processes, and resilience of aquatic ecosystems that provide goods and service to people.
17. **Environmental impact assessment:** a systematic examination of the effects of a project on the environment.
18. **Equity:** the principle of fairness which recognises that people are different and need different support and resources to ensure their rights are realised.
19. **Faecal sludge:** solid or settled contents of pit latrines and septic tanks or other onsite sanitation systems.
20. **Faecal sludge management:** various technologies and mechanisms for collection, transportation, treatment and disposal of sludge produced by septic tanks and pit latrines or other onsite sanitation systems.
21. **Good governance principles:** meaningful participation and inclusion, transparency and accountability.
22. **Grey water:** water from the kitchen, bath, laundry and other domestic activities excluding black water.
23. **Ground truthing:** acquisition and validation of information by direct observation or experience on the ground.
24. **Inclusion:** the process of ensuring that all are able to participate fully and supporting people – including those who are discriminated against and marginalised – to engage in wider processes to ensure that their rights and needs are recognised.
25. **Industrial water supply:** water used for small, medium and large scale manufacturing, construction and mining industries.

26. **Inland water transport:** a stretch of water – both navigable rivers and lakes (natural water-courses, reservoirs, whether or not they have been improved for navigation purposes) and canals (waterways constructed primarily for the purpose of navigation or other purposes) – over which ship or boat can navigate to transport goods and persons.
27. **Integrated water resources management:** a systematic process for the coordinated sustainable development, allocation and monitoring of water, land and related resource use in the context of social, economic and environmental objectives ensuring inter and intergenerational equity.
28. **Inter-basin transfer:** the transfer of water from a basin with a surplus (donor basin) to a basin suffering from shortage (recipient basin) to primarily alleviate water scarcity or flooding.
29. **Irrigation efficiency:** a ratio between the amounts of water effectively used for crop growth to the amount diverted from the source.
30. **Managed aquifer recharge:** an intentional recharge method of groundwater to suitable aquifers for subsequent recovery or to achieve environmental benefits. The managed process assures adequate protection of human health and the environment.
31. **Nature-based solutions:** use or mimicking of natural processes to protect, sustainably manage, and restore ecosystems by enhancing water availability, improving water quality, and reducing risks associated with water-related disasters and climate change.
32. **Non-revenue water:** the difference between the volume of water produced and delivered to a supply system and the volume of water for which revenue is collected. Includes unbilled water used for firefighting and other excluded purposes.
33. **Phytotechnology:** the application of science and engineering to examine problems and provide solutions involving plants.
34. **Plumbing code:** An Ethiopian Building Code that provides regulations for the design, installation and inspection of building water supply and internal and external drainage systems.
35. **Polluters pay principles:** polluters should bear the cost of measures to reduce pollution according to the extent of either the damage done to society or the exceeding of an acceptable level (standard) of pollution.
36. **Precautionary principle:** an approach to cope with risks when scientific evidence about potential environmental harm or human health hazard is uncertain and the stakes are high.

37. **Principle of holistic systems thinking:** an approach that considers systemic integration and nexuses between strong and multi-dimensional interlinkages of water, land, energy, agriculture/food and natural ecosystems.
38. **Project management:** a carefully planned effort to accomplish a specific objective, using knowledge, skills, tools, resources and techniques to plan and implement activities to meet or exceed stakeholder needs and expectations from a project.
39. **Protection zones:** a zone delineated to protect the quality and quantity of water for domestic and non-domestic water supply. Protection zones are applicable for both groundwater and surface water supply sources.
40. **Public-private partnership :** a long-term agreement between a Contracting Authority and a Private Party under which a Private Party : a) undertakes to perform a Public Service Activity that would otherwise be carried out by the Contracting Authority; b) receives a benefit by way of compensation by or on behalf of the Contracting Authority; tariffs or fees collected by the Private Party from users or consumers of a service; and a combination of such compensation and such charges or fees; and c) is generally liable for risks arising from the performance of the activity or use of the state property in accordance with the terms of the Project Agreements.
41. **Public water supply:** provision of water for educational, health, sporting and cultural facilities, governmental and non-governmental institutions, municipal services such as firefighting, park management, operation of treatment plants.
42. **Recreational use of water:** the using of water bodies like rivers and lakes for water sport activities, health and wellbeing.
43. **Riparian States /Countries:** nation-states/ countries through or along which a portion of a trans-boundary river flows or a common water body lies on.
44. **Safely managed sanitation:** improved sanitation facility which is not shared with other households and where excreta is safely disposed in situ or transported and treated off-site.
45. **Safely managed water supply:** drinking water supplied at premises which is safe for drinking, affordable and available at all times.
46. **Sanitation:** the development and application of sanitary measures including provision of facilities and services for the safe management of human excreta and wastewater to protect public and environmental health.
47. **Sector-wide approach:** an approach to international development that brings together governments, donors and other stakeholders within any sector. The approach involves movement over time under government leadership towards broadening policy dialogue;

developing a single sector policy (that addresses private and public sector issues) and a common realistic expenditure program; common monitoring arrangements; and more coordinated procedures for funding and procurement.

48. **Self-supply:** water abstraction for own consumption, including domestic or non-domestic use.
49. **Source water protection:** measures to protect and maintain water quality, to prevent soil erosion, to recover polluted water bodies, to protect ecological systems, and to enhance the construction of small to middle-scale water conservancy projects at the water intake(s) point and the land area that contributes water to that source.
50. **Stakeholder:** organization, group or individual that has an interest or concern in water resources and that can affect or be affected by decisions about water resources development and management policies and actions.
51. **Strategy/ies:** comprehensive plan of action(s) designed to implement a policy or achieve a long-term or overall aim of an institution.
52. **Trans-boundary waters:** aquifers, lakes and rivers that are shared by two or more countries/nation-states.
53. **Trans-regional waters:** aquifers, lakes and rivers that are shared by two or more regions (including city administrations) within the country of Ethiopia.
54. **Water body:** any significant accumulation of water forming a geographical feature, such as rivers, streams, lakes, wetlands, reservoirs, springs, well fields, and water towers.
55. **Water conservation:** practices, measures and actions to reduce unnecessary water usage, improve efficiency of its use, and reduce losses and waste.
56. **Water demand management:** the use of pricing and non-pricing instruments, to efficiently and rationally use the existing water resources, aiming to reduce the demand before further increasing the supply.
57. **Water resources assessment:** an assessment of the aspects of the supply and demand for water resources.
58. **Water resources development:** physical activities to improve the beneficial use of water for different uses.
59. **Water resources management:** Water resources development, utilization, conservation, protection and control that incorporate physical, social, economic as well as environmental interdependence.

60. **Water resources planning:** planning of the development, protection, conservation, control and allocation of water resources by matching water availability and demand, taking into account the national objectives and constraints & the interests of stakeholders.
61. **Wastewater:** used water from domestic and non-domestic sources that contain harmful materials and cause water quality impairment. Wastewater includes both domestic sewage and industrial waste from manufacturing sources.
62. **Water governance:** the political, social, economic and administrative systems in place to influence water's use and management through processes for decision making.
63. **Water safety plan:** a comprehensive risk assessment and risk management approach that encompasses all steps in the water supply, from catchment to consumer.
64. **Water services fee:** fees charged for water supply services only.
65. **Watershed:** also known as catchment or basin refers to the land area which drains or contributes runoff to a common outlet into a river, lake or wetland system. Watershed could also mean the water parting boundaries.
66. **Watershed management:** the process and practice of organizing and guiding land and other resources use within a watershed to provide desired goods and services without adversely affecting soil, land and water resources.
67. **Water supply:** provision of water for uses such as drinking water and other domestic purposes, water for livestock, and water for public, commercial and industrial uses.
68. **Water tower:** highland or mountain area that catches rain and slowly releases in the form of streams, and springs to low lying areas.
69. **Water tariff:** a price assigned to water supplied to water users for the amount of water consumed and services provided, which will be set by a legally authorized body.
70. **Wellfield:** the land above and surrounding wells drilled into an aquifer.
71. **Wetland:** an area of marsh, fen, peatland or water, whether natural or artificial, permanently or periodically flooded, with water that is static or flowing, fresh, brackish or salt. All rivers and lakes in Ethiopia are regarded as wetlands.
72. **Unaccounted-for water:** the difference between the volume of water delivered to a supply system and the volume of water accounted for by legitimate consumption.
73. **Users pay principle:** the users of a natural resource should bear the full cost of running down natural capital and consuming natural resources.

ABBREVIATIONS AND ACRONYMS

AWD	Acute Watery Diarrhea
BMC	Billion Cubic Meter
CRGE	Climate Resilient Green Economy
CR-WASH	Climate Resilient Water Supply, Sanitation and Hygiene
CSOs	Civil Society Organizations
DRRM	Disaster Risk Reduction and Management
EFCCC	Environment, Forest and Climate Change Commission
EIA	Environmental Impact Assessment
EWRIS	Ethiopian Water Resources Information Systems
EWTI	Ethiopian Water Technology Institute
FDRE	Federal Democratic Republic of Ethiopia
FSM	Faecal Sludge Management
GDP	Growth Domestic Product
GoE	Government of Ethiopia
GTP	Growth and Transformation Plan
HEIs	Higher Education Institutions
HPD	Hydro Power Development
ICOLD	International Commission of Large Dams
IDC	Irrigation Development Commission
IMIS	Irrigation Management Information System
IPDC	Industrial Parks Development Corporation
IWRM	Integrated Water Resources Management
KPIs	Key Performance Indicators
MAR	Managed Aquifer Recharge
MFI	Micro Financing Institutions
MoWIE	Ministry of Water, Irrigation and Energy
M&E	Monitoring and Evaluation
NBS	Nature-Based Solutions
NGOs	Non-Governmental Organizations
NRW	Non-Revenue Water
NWRRRC	National Water Resources Research Centre
O&M	Operation and Maintenance
PES	Payment for Ecosystem Services
PPP	Public–Private Partnerships
R&D	Research and Development
SDGs	Sustainable Development Goals
TVET	Technical and Vocational Education and Training
WASH	Water, Sanitation and Hygiene
WASHCO	Water, Sanitation and Hygiene Committees
WDC	Water Development Commission
WDM	Water Demand Management
WRA	Water Resources Assessment
WRD	Water Resources Development
WRDF	Water Resources Development Fund
WRM	Water Resources Management
WSI	Water-Saving Irrigation
WSS	Water Supply and Sanitation
WSP	Water Safety Plan
VL0M	Village Level Operation and Maintenance

1. PREAMBLE

Ethiopia is the second-most populous country in Africa with an area of 1,104,300 km² of which 7,730 km² is covered by water bodies.

Ethiopia's hydrogeological conditions and topography features are complex because of its high-altitude volcanic plateau tapering into the Rift Valley and peripheral lowlands. The Great Rift Valley of eastern Africa divides the country into two plateaus and stretches from the northeast (Afar depression) to south-west with 40–60 km wide flat-lying plain in the east, south, and west borders of the country (Turkana depression). The water resources distribution of the country is also highly skewed. The south and south-western parts of the country hold a large portion of the water resources while about 60% of the country's remaining landmass is characterized by arid or semi-arid climatic type, and is prone to recurrent droughts.

The country's water resources are governed by 12 major river basins, of which eight are wet basins, three are dry basins and the remaining one is a lake basin. The total annual surface runoff from the river basins amounts to about 122 billion cubic meter. The groundwater potential of the country has not been sufficiently studied. Even though Ethiopia comparatively receives a substantial volume of rainfall, this is subject to high spatio-temporal variability driven by the tropical monsoon and diverse topographic features. The water resources development potential therefore varies across the country. With increasing population growth and economic development needs, the demand for water in all sectors is increasing.

Water is a social and economic good. It is a scarce, vulnerable and strategic resource that should be developed and managed with due care given for environmental sustainability. Water resources development activities must be based on appropriate studies, and integrated and coordinated planning and implementation. Proper institutional arrangements, legal frameworks and solid water policy and strategy should also be put in place to regulate flows, manage and control abstraction, effluent discharge and wastewater treatment, and promote efficiency gains. Without such measures people's livelihoods, health, and the entire ecosystem's services may be jeopardized, and consequently, the overall socio-economic development trajectory may be under serious threat.

The Federal Democratic Republic of Ethiopia's (FDRE) Constitution defines the powers and functions of the Federal Government and the Regional States with respect to the country's water resources management and administration. Accordingly, it is the Federal Government of Ethiopia (GoE) that has the mandate to enact laws for the utilization and conservation of land and other natural resources, including water, of the country (Article 51.5 of the Constitution) while the Regional States have the mandate to administer land and other natural resources in accordance with Federal laws (Article 52.2d).

The Ministry of Water, Irrigation and Energy (MoWIE) is a Federal institution established by Proclamation No. 1097/2018 that defines the Power and Duties of the Executive Organ of the FDRE under which it has been mandated to design policies and legal frameworks for the development of water resources among others.

The Ethiopian Water Resources Management Policy was prepared in 1999 and approved by the Council of Ministers, with the goal to ensure that Ethiopia's water resources contribute to the nation's socio-economic development while guaranteeing equity, efficiency and environmental integrity. The policy was complemented by the Water Sector Strategy in 2001. Both documents were structured to give clear guidance to the sector actors. Since their issuance, significant changes and developments have taken place both at the national, regional, and international levels that call for the review and update of existing water policy and associated strategies. Some of the major developments are:

- the reorganization of the Federal Ministry of Water Resources, currently the Ministry of Water, Irrigation and Energy (MoWIE) and the subsequent establishment of various institutions accountable to the Ministry.
- issuance of various macro-economic policies and plans including the Growth and Transformation Plans (GTPs) and the Climate Resilient Green Economy Plan. The Government of Ethiopia has set out its development goals in successive GTPs which identify water and sanitation as the first area of priority for achieving sustainable growth and poverty reduction. Moreover, the GoE is striving to make Ethiopia an industrial hub of light manufacturing industries in Africa with the aim of supporting the country's progress towards becoming a middle-income country by the year 2025;
- the GoE's has endorsed the Africa Agenda 2063, the master plan for transforming Africa into the global powerhouse of the future through building environmentally sustainable and climate-resilient economies. It is the continent's strategic framework that aims to deliver on its goal for inclusive and sustainable development.
- the Africa Water Vision for 2025 has been developed for "an Africa where there is an equitable and sustainable use and management of water resources for poverty alleviation, socio-economic development, regional cooperation, and the environment".
- the UN General Assembly's recognition of the human right to drinking water in 2010; the 2030 Agenda for Sustainable Development and its 17 Sustainable Development Goals (SDGs), adopted in 2015 by UN Member State countries; as well as the 2016 Paris Agreement on climate change. Availability and protection of freshwater resources matter to the achievement of all these goals;
- the GoE has enacted a Proclamation facilitating Public-Private Partnership (PPP), recognizing that the private sector is essential to support the country's economic growth and job creation, and improve the quality of public services, particularly in infrastructure; and
- the Home-grown Economic Reform, a coordinated response to propel the country's economic progress is under implementation. It is a comprehensive blueprint that addresses the key bottlenecks and outlines macro-economic, structural, and sectoral reforms that will pave the path for prosperity.

In order to incorporate and address the above stated emerging issues and development targets and address the shortfalls of the previous water policy, this updated National Water Policy and Strategy document has been prepared. The revised water policy gives due emphasis to the development and management of water resources to improve the wellbeing of the people of

Ethiopia and accelerate the socio-economic development by making water a strategic center of development. More specifically, it focuses on ensuring water security through surface and groundwater development such as building water-regulating hydro-infrastructures, water buffer management, environmental conservation, and use of efficient technologies in service delivery, water resources management and governance through strengthening regulatory institutions, the establishment of basin institutions, procedures and guidelines among others. The climate change and other emerging issues which have a critical effect on the water resource are also given adequate focus.

Therefore, the updated National Water Policy and Strategy document is expected to serve as a national guiding framework for the sustainable development and management of water resources of Ethiopia.

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2. POLICY GOAL, OBJECTIVES AND GUIDING PRINCIPLES

2.1. Goal

The overall goal of the National Water Policy is to guide and coordinate all national efforts towards efficient, equitable and optimum utilization and management of the water resources for the overall socio-economic development of the country on a sustainable basis.

2.2. Objectives

The main objectives of the National Water Policy are to:

1. Ensure integrated water resources development and management that makes water readily available for social, economic and environmental benefits of the people of Ethiopia.
2. Ensure allocation and apportionment of water to different uses based on comprehensive and integrated plans and principles that incorporate equity of access, efficiency of use, and sustainability of the resource.
3. Promote conservation and protection of water resources for efficient and sustainable utilization in all water uses.
4. Promote cooperation in the management of trans-boundary waters without compromising the country's sovereignty, security and territorial integrity.
5. Promote cooperation and collaboration in the management of trans-regional waters based on applicable laws and regulations.
6. Strengthen water resources management institutions and promote good governance in the water sector.
7. Manage and combat drought and floods as well as other associated disasters through proactive allocation, distribution and management of water.
8. Ensure water resources are appropriately monitored and there is a functional water resources management information system.
9. Ensure meaningful stakeholders' participation in water resources development and management including the private sector and civil society organizations.
10. Ensure that water resources development and management contributes to climate resilient development and climate change adaptation is mainstreamed in any water sector development and management undertakings.
11. Promote research, innovation and technology transfer in the water sector.
12. Make sure all water development and management interventions are equitable and inclusive and leave no one behind.

2.3. Guiding Principles

1. Water is a natural, finite and vulnerable resource, essential to sustain life, development, and the environment.
2. Water has social and economic value in all its competing uses and should be recognized both as a social and an economic good.
3. The right of ownership of water resources is exclusively vested in the state and in the peoples of Ethiopia.

4. The state takes steps to progressively realise every citizen's access to sufficient, continuously available, affordable and safe drinking water and sanitation, with the aim to achieve universal and equitable access and leave no one behind.
5. Integrated Water Resources Management (IWRM) taking the basin / sub-basin as a unit should be the main principle for planning, development and management of water resources.
6. Water development and management should be based on a participatory approach involving users, planners, implementers and policy makers at all levels.
7. Water resources should be administered at the lowest appropriate level of decision-making in line with the federal laws and basin development plans.
8. Women and youth play central parts in the provision, development, management and safeguarding of water.
9. Development and management of water resources should ensure social equity, economic efficiency, systems reliability and sustainability norms.
10. Water resources development and management should be based on evidence and reliable data.
11. Water's multiple values and uses to different groups and interests should be recognized.
12. Water resources should be developed and managed as per the following principles:
 - the polluters pay principle;
 - the users pay principle;
 - the precautionary principle;
 - the good governance principles; and
 - the principle of holistic systems thinking.

3. GENERAL WATER POLICY STATEMENTS

1. Ensure the integration of water resources development and management with Ethiopia's overall socio-economic development plan and targets.
2. Ensure that water resources development and management is compatible and integrated with other natural resources as well as basin development plans and with the goals of other sectoral developments such as in health, mines, energy, industry, agriculture, industry and services.
3. Recognize that water resources development, utilization, protection and conservation go hand in hand and ensure that water supply and sanitation, irrigation and drainage as well as hydraulic structures, watershed management and related activities are integrated and addressed in unison.
4. Ensure that all water development interventions in the sector undergo thorough viability study and environmental impact assessment.
5. Promote and encourage the proper management of water infrastructures through setting up appropriate management institutions, and allocating enough resources for protection and conservation, operation and maintenance.
6. Integrate and institutionalize meteorological and hydrological services at all levels (from the federal up to the lowest administrative structure) and ensure sectoral institutions receive the utmost benefit from these services.
7. In allocation of scarce water resources, ensure first that water for basic necessities at the household level is fulfilled followed by the achieving of food security, and minimum ecosystem needs. All other allocations of water shall be based on equitable and efficient socio-economic development criteria.
8. Promote and support inter-regional cooperation in the development and management of trans-regional rivers and lakes as per the federal laws and regulations, and basin development plans.
9. As deemed necessary and viable, promote inter-basin transfer of water, to minimize the spatiotemporal variability and unpredictability of water due to the extremities of drought and floods amongst the different basins.
10. Ensure that Ethiopia utilizes its trans-boundary water resources in an equitable and reasonable manner while recognizing the fact that these shared resources are vital sources of livelihood and crucial for the socio-economic development of the people of Ethiopia.
11. The development and management of trans-boundary water resources on bi-lateral or multi-lateral basis shall be promoted in consultation with riparian nation-states keeping paramount the national interest.
12. Strengthen the necessary regulatory frameworks and institutional capacity in terms of legislation, facilities, human resources, finance, information systems, and research and studies, procedures, guidelines and standards and the like to ensure effective and sustainable use and management of water resources.
13. Water resources development and management should mainstream different gender aspects and give due emphasis to the inclusion of persons with disabilities and other vulnerable groups.

14. The provision of water supply services, to the underprivileged or vulnerable sections of the population, shall be ensured based on a special “social tariff”.
15. Promote and advocate for institutional stability and continuity in water resources management and ensure smooth transition during times of changes.
16. Promote the transfer and adaptation of relevant technologies in the water sector and standardize and regulate their use, while supporting local technology development, production and innovation.
17. Support and enhance traditional and localized water harvesting techniques and technologies in view of the advantages provided by the schemes’ dependence on local resources and indigenous skills.
18. Promote participation of relevant stakeholders in the planning, studies, implementation, operation and maintenance of water development and management undertakings.
19. Promote the involvement and meaningful participation of the private sector in the development and management of water resources.
20. Ensure sustainable use and management of groundwater resources through enhancing groundwater mapping, regular monitoring, regulated abstraction and recharge measures, and source protection.
21. All water related data should be properly collected, analysed, and interpreted to facilitate development of a comprehensive water information system which supports informed decision making in the management of water.
22. Ensure that climate change is factored into any and every water sector development and management undertakings and make sure that water development interventions contribute to communities’ resilience to impacts of climate change. While every effort should be made to avert water related disasters like floods and droughts, through strict design, construction, operation and maintenance standards, emphasis shall be given to preparedness and contingency planning with coping mechanisms and coordinated response.

4. SECTORAL POLICIES AND STRATEGIES

4.1. Water Supply and Sanitation (WSS)

The overall objective of the water supply and sanitation policy and strategy is to enhance the health, well-being and productivity of the Ethiopian people through provision of access to sustainable, safely managed and climate resilient water supply and sanitation services.

The water supply and sanitation policy focuses on eight key aspects for which policy statements are drafted as follows.

4.1.1. Study, Planning and Design

1. Ensure that the planning, design and implementation of water supply and sanitation systems give priority to the unserved population while also considering improvement of the service level of those who have access in accordance with national, regional and global targets.

Strategies:

- i. Develop water supply and sanitation status assessment criteria with options to determine levels of hierarchy*
 - ii. Develop maps that indicate level of access from those without access to the highest form of access considering national plans such as GTPs, global targets SDG 6.1 and 6.2, Africa Water Vision 2025 and the African Union's Agenda 2063.*
 - iii. Develop mechanisms for mainstreaming global, regional and national targets in the planning, design and implementation of water supply and sanitation programs and projects*
2. Recognize that water supply and sanitation services are inseparable and integrated at all levels starting from planning phase through the establishment of a proactive and interactive coordination mechanism.

Strategies:

- i. Establish a mechanism that shows key planning steps to check the linkage between water supply and sanitation.*
- ii. Develop a planning criteria that links the level of water supply with the corresponding sanitation service level and establish a monitoring mechanism that their implementation is coordinated*
- iii. Device planning coordination mechanism between water supply and sanitation services at all levels*

3. Recognize that non-domestic water supply and sanitation is an integral part of the overall water sector and incorporate its development plans with comprehensive water supply and sanitation development and management undertakings.

Strategies:

- i. *Develop planning criteria for the incorporation of livestock, public, commercial such as hotel and tourism, small and large scale businesses and industrial water demands in water supply and sanitation development and management.*
 - ii. *Develop specific planning criteria for handling sanitation aspects--liquid waste management--from the non-domestic water users.*
4. Promote the preparation and implementation of a long-term water supply and sanitation roadmap.

Strategies:

- i. *Assess baseline situation to determine the prevailing water supply situation in comparison with national, regional and global targets,*
 - ii. *Develop alternative scenarios, determine long-term demands and design roadmap for water supply and sanitation which is in line with the overall national development plan and relevant sectoral plans, regional and global targets.*
 - iii. *Develop monitoring and evaluation mechanisms to follow the phased implementation of the long-term plan*
5. Ensure long-term plans of water supply and sanitation system work towards securing and protecting potential water sources.

Strategies:

- i. *Initiate baseline assessment of the situation of water supply sources and their protection,*
 - ii. *Design and issue legal framework and instrument for water source protection*
 - iii. *Create a database of legally registered protection zones or areas of water supply sources.*
6. Ensure comprehensive sanitation plans that promote access to sustainable and equitable sanitation services.

Strategies:

- i. *Develop and implement behaviour change communication strategies and community participation guidelines to ensure access to sustainable sanitation services.*
- ii. *Introduce Citywide Inclusive Sanitation in urban and peri-urban areas.*
- iii. *Develop and implement national open defecation-free strategy in collaboration with relevant institutions.*

7. Ensure the design of water supply and sanitation infrastructure is up to standard, transparent, participatory, and inclusive and addresses equity issues.

Strategies:

- i. *Develop water supply and sanitation infrastructure design protocol which ensures quality design, creates accountability and guarantee participation, inclusiveness and equity.*
 - ii. *Address requirements of persons with disability in the planning and design of water supply and sanitation facilities.*
8. Enhance incorporation of alternative renewable energy sources and water efficient water supply and sanitation technologies and promote their incorporation in relevant codes and guidelines.

Strategies:

- i. *Prepare inventory of technologies and energy sources for water supply and sanitation infrastructures and develop atlas of areas with preferred renewable energy sources*
 - ii. *Establish catalogue of efficient technologies for water supply and sanitation infrastructure to be referenced by designers.*
 - iii. *Develop code that guides the planning, design and implementation of water supply and sanitation services which includes renewable energy sources and efficient technologies*
9. Ensure the planning and design of water supply and sanitation system is based on official data unless and otherwise the situation requires using other methods.

Strategies:

- i. *Develop a catalogue of data required for study and design of water supply and sanitation systems with sources and further references, if not available locally.*
 - ii. *Establish data verification protocol for critical planning parameters such as population, per-capita water demand, wastewater per-capita production, etc.*
10. Promote sustainable storm water planning and management in urban areas.

Strategies:

- i. *Develop appropriate planning, study and design parameters for the planning, design and management of urban storm water management from sanitation perspective*
- ii. *Develop a coordination mechanism with stakeholders to ensure sustainable urban storm water management.*

4.1.2. Standards, Guidelines and Codes

1. Promote the development of dynamic and sustainable standards, guidelines and codes for the planning, design and implementation of water supply and sanitation infrastructures.

Strategies:

- i. Develop and implement gender sensitive, inclusive, cost effective, environmental and social friendly, and climate resilient national water supply and sanitation planning parameters, design standards and criteria, guidelines, and procedures*
 - ii. Establish acceptable, desirable and permissible ranges and limits for the relevant parameters which will be subjected to revision as required.*
 - iii. Develop and enforce standards and codes that govern the design and implementation of water supply and sanitation infrastructures.*
 - iv. Develop and enforce standards and codes that govern the design and implementation of urban storm water management infrastructures.*
2. Promote the standardization of water supply and sanitation technologies.

Strategies:

- i. Standardize and regulate technologies that shall be used for the abstraction, treatment, storage and distribution of drinking water;*
 - ii. Standardize and regulate technologies that shall be used for the containment, transport, treatment, reuse or recycling of faecal sludge and liquid waste.*
3. Promote the introduction of water supply and sanitation service delivery standards.

Strategies:

- i. Develop minimum water supply and sanitation service delivery standards and guideline*
- ii. Establish monitoring and evaluation mechanisms to enhance quality of service delivery in water supply and sanitation.*

4.1.3. Sustainable Financing

1. Ensure sustainable water supply and sanitation financing is based on established set of criteria.

Strategies:

- i. Establish life cycle costing criteria to determine the financing needs for both capital and operation costs of water supply and sanitation systems without undermining social values attached to basic needs.*
- ii. Establish a mechanism for financial and economic analysis of water supply and sanitation programs and/or projects.*

2. Promote self-financing and full cost recovery for water supply and sanitation systems with targeted subsidy as necessary.

Strategies:

- i. *Develop guidelines for full cost recovery (capital and operation and management) for urban water supply and sanitation systems.*
 - ii. *Develop a guide on category of urban areas with range of partial cost recovery (partial capital and full operation and management) based on their stage of development and financial economic situation that could be upgraded from time to time.*
 - iii. *Develop a guideline for full operation and management cost recovery in the rural context.*
 - iv. *Develop partial cost recovery (partial capital and full operation and management) guideline for rural water supply system.*
 - v. *Develop a guideline for targeted subsidy both in rural and urban contexts.*
3. Promote the creation of a dedicated financing system for water supply and sanitation undertakings.

Strategies:

- i. *Strengthen the existing water resources development fund,*
 - ii. *Establish sanitation fund to give emphasis for sanitation services and consider its specific characteristics;*
 - iii. *Create legal and regulatory framework to institutionalize and utilize traditional financing mechanisms such as loans from banks, microfinance institutions for WSS.*
4. Promote innovative financing mechanisms including Private-Public Partnership (PPP) for the WSS sector.

Strategies:

- i. *Establish a guide towards assessing innovative financing mechanisms and develop a guideline to apply PPP in water supply and sanitation.*
 - ii. *Establish and implement cost sharing arrangements to share the capital investment, O&M and capacity building costs between government, local communities, consumers, development partners, NGOs and CSOs.*
 - iii. *Provide incentives to local stakeholders such as community groups, manufacturers and consulting firms in terms of concessions in import duties, tax rebates, subsidies, credit facilities and through other similar economic instruments.*
5. Ensure transparency, fairness, responsibility and financial accountability in the management of water supply and sanitation services.

Strategies:

- i. *Develop legal framework to measure, monitor and evaluate issues of transparency, fairness and accountability on financial matters of Water Supply and Sanitation Services.*

- ii. *Set institutional arrangements to enforce and carry out periodic evaluation of the effectiveness of the developed legal framework.*
 - iii. *Strengthen the financial management capacity of WASHCOs and water utilities*
6. Ensure tariff for water supply and sanitation is determined based on the principles of cost recovery, considering the socioeconomic status of consumers and specific environmental condition of the watershed or basin.

Strategies:

- i. *Develop rural water supply tariff based on the objective of recovering total operation and maintenance costs and as applicable partial capital cost*
 - ii. *Set urban water supply tariff structures, as much as possible, based on progressive volumetric tariff rates to ensure full cost recovery unless and otherwise the urban area category is under partial cost recovery*
 - iii. *Set urban wastewater management tariff as much as possible based on full cost recovery tied to water consumption unless and otherwise the urban category of the specific town is under partial cost recovery.*
 - iv. *Establish cross-subsidies and "Social Tariff" based on flat volumetric rates for poor communities to cover operation and maintenance costs.*
7. Ensure review of water supply and sanitation tariff are regulated following pertinent approval procedures.

Strategies:

- i. *Establish guidelines and procedures for the development and approval of water supply and sanitation tariffs*
- ii. *Develop criteria and procedures for a periodic monitoring and evaluation and review of tariff.*
- iii. *Set legal framework and institutional responsibilities for the development, approval, monitoring, evaluation and review of tariff.*

4.1.4. Technology

1. Promote use of sustainable water supply and sanitation technologies which are efficient, affordable, durable, and responsive to community needs.

Strategies:

- i. *Prepare effective WSS social marketing strategy for water supply and sanitation technologies.*
- ii. *Carry out mapping of water supply and sanitation technologies, prepare catalogue of appropriate technologies.*
- iii. *Conduct studies and research on traditional and appropriate low cost WSS technologies.*
- iv. *Support the production of appropriate WSS technologies and spare parts locally.*
- v. *Regulate, manage and guide the importation of WSS technologies.*

2. Promote the participation of the private sector in the production, supply and maintenance of water supply and sanitation technologies.

Strategies:

- i. *Create functional enabling environment to strengthen public and private partnership in the production and supply of appropriate technologies for the water supply and sanitation sector.*
- ii. *Develop an institutional framework to encourage active participation of the private sector in the operation and maintenance of water supply and sanitation technologies.*

4.1.5. Service Delivery

1. Ensure effective and efficient water supply and sanitation service delivery

Strategies:

- i. *Prepare catalogue of key performance indicators and other factors that affect the degree of water supply and sanitation service delivery at the various stages of development: design, implementation, operation and management within built quality control mechanism at each stage.*
- ii. *Devise incentive mechanisms to encourage well performing utilities and WASHCOs.*
- iii. *Develop asset management system as part of water utility management guideline.*
- iv. *Develop a guideline on how to reduce and manage non-revenue water.*
- v. *Develop a guideline on how to reduce non-functionality of schemes considering environmental, technical, financial and social aspects.*

2. Promote water supply and sanitation services to low income urban areas.

Strategies:

- i. *Develop criteria to identify and screen low income urban areas that requires special consideration in the provision of water supply and sanitation services*
- ii. *Develop an incentive mechanism for service providers to provide water supply and sanitation services to low income and densely populated urban and peri-urban areas in collaboration with NGOs, donors, etc.*

3. Encourage participation of private sector actors in water supply and sanitation service delivery.

Strategies:

- i. *Develop a system that can regulate participation of private sector in the operation and management of water supply and sanitation system without compromising equity and inclusiveness.*
- ii. *Create conducive enabling environments for effective private sector engagement in water supply and sanitation services*

4. Ensure the availability of water supply nearer to pastoralists.

Strategies:

- i. *Map the status of pastoralist areas with respect to water supply and sanitation services and create priority lists and maps depending on the status to guide future interventions*
 - ii. *Develop and implement guidelines on provision of water supply services for pastoral areas considering their route of seasonal movement and availability of water resources.*
5. Promote regulated self-supply as one of the water supply service delivery models at household and community level where appropriate.

Strategies:

- i. *Identify and adequately address capacity gap for self-supply acceleration and supply chains for self-supply including technologies and services such as access to financial loan.*
 - ii. *Develop monitoring and reporting mechanisms which include self-supplies into overall water service monitoring framework at all levels.*
 - iii. *Design and implement a cross sectoral coordination mechanism at different levels to ensure the sustainability of self-supplies that involves capacity building for improved understanding of the water cycle, sustainable groundwater abstraction methods and aquifer recharge.*
6. Promote regulated self-supply of water by industries, commercial establishments and public institutions.

Strategies:

- i. *Develop a guideline that regulates the procedures and requirements for self-supply at large water users (industries, commercial entities, public institutions, etc.)*
 - ii. *Strengthen water abstraction monitoring mechanism for large water users in collaboration with pertinent institutions.*
7. Promote safe water supply from source to point of use.

Strategies:

- i. *Develop and implement comprehensive water quality monitoring system and strengthen the implementation of climate resilient water safety plan at water supply and sanitation service delivery level to ensure supply sustainability and water safety from water source to point of use.*
- ii. *Develop, implement and regulate water source protection areas depending on type of water sources and degree of susceptibility for depletion and contamination from environmental perspective.*
- iii. *Develop a security guideline to protect water supply and sanitation systems from accidental as well as intentional acts that compromise the proper service provision and endanger the wellbeing of the user community at large*

8. Ensure provision of effective and sustainable faecal sludge and liquid waste management service.

Strategies:

- i. *Establish a system that guides the provision of sustainable sanitation service delivery through faecal sludge and liquid waste management across the whole value chain;*
- ii. *Develop a monitoring and evaluation mechanism that can measure level of service delivery and customer satisfaction on sanitation services.*

9. Encourage and support households to have their own safely managed sanitation infrastructure.

Strategies:

- i. *Develop catalogue of sanitation infrastructure relevant for safely managed household service.*
- ii. *Introduce financial incentive and subsidy mechanisms to enable the extremely poor to own and properly use decent sanitation facility.*

10. Ensure that educational, health facilities and public areas are provided with safe, adequate and inclusive sanitation facilities and services.

Strategies:

- i. *Develop specific guide for provision of adequate, inclusive and safe sanitation infrastructure for educational and health facilities and public areas such as markets, bus terminals, railway stations, etc.*
- ii. *Introduce monitoring and evaluation of the level of service delivery in the educational and health facilities and public areas.*

4.1.6. Environmental sustainability

1. Promote appropriate appraisal and protection of water sources is carried out in the selection and management of water supply sources.

Strategies:

- i. *Develop a water source assessment and protection criteria and guideline for sustainable and safe water source development and management.*
- ii. *Develop legal and institutional framework for registry and preservation of water source protection areas during the management of water supply sources.*

2. Ensure appropriate appraisal is carried out in the selection of type and site of wastewater management infrastructure considering their environmental impact.

Strategies:

- i. *Develop wastewater management infrastructure type and site assessment criteria and guideline to minimize the environmental impact on receiving water bodies.*
- ii. *Develop legal and institutional framework for registry of and control of wastewater management infrastructure in order to closely follow their impact on the environment.*

3. Ensure water supply and sanitation systems are climate resilient.

Strategies:

- i. *Identify priority areas that are eligible for climate resilient water supply and sanitation interventions.*
 - ii. *Develop climate change adaptation plans for water supply and sanitation systems.*
 - iii. *Establish a CR-WASH unit at appropriate level and develop a business plan.*
4. Promote and encourage reuse, resource recovery and recycling from faecal sludge and liquid waste (wastewater).

Strategies:

- i. *Develop guidelines and regulations for reuse, resource recovery and recycling from faecal sludge and liquid wastes.*
- ii. *Establish incentive mechanisms to encourage reuse, resource recovery and recycling from faecal sludge and liquid wastes.*
- iii. *Develop catalogue of wastewater reuse and recycling methods and techniques that promote a circular economy.*

5. Ensure pre-treatment of industrial and other non-domestic wastewater to the required standard before releasing it to municipal sewerage system where applicable.

Strategies:

- i. *Develop standards and guidelines to categorize the type of treated industrial wastewater that could be connected to municipal sewage system.*
- ii. *Develop the mechanisms for releasing treated industrial and other non-domestic wastewater effluents to municipal sewerage system.*
- iii. *Establish a monitoring and control mechanism for release of treated effluents to municipal sewerage system.*
- iv. *Develop options for management of treated wastewater that could not be directly connected to municipal sewerage system.*

4.1.7. Governance

1. Ensure efficient and sustainable management of water supply and sanitation system.

Strategies:

- i. Create an enabling environment and institutional set up for decentralized urban and rural water supply system management.*
 - ii. Develop appropriate institutional arrangement at all levels to cater for the specific needs of livestock water demand.*
 - iii. Develop a regulatory mechanism that makes it mandatory to include proper water supply, sewerage and sanitation services in future urban development plans, especially the housing schemes and rehabilitate and upgrade the existing ones.*
 - iv. Establish an institution that develops standards and codes that guide the provision of water supply and sanitation services and monitor its proper application by all stakeholders.*
2. Ensure customers and community participation in water supply and sanitation development and service delivery.

Strategies:

- i. Establish a system that guides the involvement of customers and community in the planning, design and implementation of water supply and sanitation system,*
- ii. Develop a system that could create an environment for the participation of customers and relevant stakeholders in the operation and management of water supply and sanitation systems.*

3. Promote Public–Private Partnerships (PPPs) in appropriate water supply and sanitation undertakings.

Strategies:

- i. Create an enabling environment for PPP in the planning, design and implementation of water supply and sanitation undertakings.*
- ii. Create an enabling environment for the introduction of PPP in the service delivery of water supply and sanitation*

4. Ensure WASH data is properly recorded and managed.

Strategies:

- i. Establish and operationalize a comprehensive National WASH information management system and utilize for planning and decision making.*
- ii. Create strong coordination mechanism with regional stakeholders to have reconciled data that reflects the actual water supply and sanitation status*

5. Advocate for the deployment of qualified human resource at the grassroots level for the WASH sector.

Strategies:

- i. Establish a system that could train sufficient WASH extension workers*
- ii. Introduce qualified WASH extension workers at least at Kebele level.*

6. Ensure accountability of water supply and sanitation service providers to the public.

Strategies:

- i. Develop transparent performance measurement mechanism based on key water supply and sanitation level of service indicators that could be part of contract between the service provider and customer and be objectively measured and reported periodically to the public.*
- ii. Create a discussion forum and complaints mechanism between service provider and customers to evaluate the water supply and sanitation service delivery.*

4.1.8. Capacity Building

1. Promote comprehensive objective oriented capacity building in all water supply and sanitation undertakings at all levels.

Strategies:

- i. Carry out periodic capacity gap assessment at different levels and design capacity building framework to enhance the performance of water supply and sanitation sector.*
- ii. Strengthen the capacity of WASHCOs and water utilities so that they may make independent informed choices and remain and serve as focal point in the WSS management structure which can ensure autonomous and decentralized management of the WSS systems.*

2. Ensure availability of adequate capacity for the provision of water supply and sanitation products and services at local level.

Strategies:

- i. Identify required technical service requirements at various levels and avail necessary trained professionals at pertinent levels.*
- ii. Establish basic maintenance inputs supply centres for water supply and sanitation services at studied centres.*
- iii. Build faecal sludge management and regulation capacities of local government institutions.*

3. Ensure effective human resources development and management for the WASH sector.

Strategies:

- i. Design WASH curriculum and deliver the subject in basic education in schools and awareness creation sessions in health facilities.*
- ii. Develop and implement continuous professional development programs and facilitate experience sharing on WASH.*

4.2. Irrigation and Drainage

The overall goal of the irrigation and drainage policy is to enhance irrigated agriculture production and productivity and make significant contribution to accelerated and sustained economic growth and development of the country. More specifically, the policy aims to guide and coordinate all irrigation development efforts towards achieving accelerated expansion of irrigation, enhanced performance and environmentally sustainable irrigation.

The policy draft encompasses four areas: (i) study, design and construction (ii) management, operation and maintenance of irrigation systems (iii) institutional and governance aspects; and (iv) sustainable finance.

4.2.1. Study, Design and Construction

1. Recognize irrigation as a catalyst for economic development and ensure that its implementation follows the growth-corridor approach and takes into account the backward and forward linkages with other economic sectors.

Strategies:

- i. Consider integrated planning of irrigation development with due emphasis to other infrastructural requirements for easy access to potential irrigation areas, accessing new technologies for irrigation development and marketing systems.*
- ii. Develop irrigation development plan including high resolution irrigation potential mapping and updating.*
- iii. Follow water-based growth corridor development approach in irrigation development studies and implementation.*
- iv. Identify, and prioritize river corridors with high resources potential for irrigation development to guide irrigation investment.*
- v. Promote commercial irrigation following production value chain approaches and employment opportunities in areas with potential linkage with agro-industrial parks.*
- vi. Assess and update irrigation potentials of river basins, map and prioritize the project study, design and implementation taking into account their relative advantage of contributing to food security, social equity, national economy and other criteria to be set.*
- vii. Give priority to those irrigation projects which are of multi-purpose in nature in that they contribute to food security, provide irrigated pasture in areas where cattle graze and watering of cattle is a problem, increase household incomes, and enhance regional integration and development.*

2. Ensure participatory, cooperative and integrated approaches at all levels of irrigation planning, design, implementation, operation and management.

Strategies:

- i. *Establish guidelines and regulations that encourage the implementers of irrigation development to consult stakeholders and consider their interests at all appropriate levels of planning and decision making.*
 - ii. *Promote and adopt bottom-up approach in irrigation planning*
 - iii. *Promote and ensure active and effective participation of women in irrigation development.*
 - iv. *Enable the local community to benefit from the irrigation schemes in terms of use of irrigation water and facilities, provision of social services, job opportunities etc.*
 - v. *Promote coordinated and cooperative planning and implementation of irrigation projects with the concerned Federal, Regional, River/Lake Basins Institutions, sectors and partners*
 - vi. *Facilitate greater participation of the regional states in collaboration with the federal government in the development of large and medium scale irrigated schemes in high irrigation potential basins/ lowland areas with low population density.*
 - vii. *Based on established federal and regional laws and regulations, facilitate smooth settlements of affected society, effect right-off and compensations to ensure timely commencement and completion of projects.*
 - viii. *Establish coordination arrangements to facilitate stakeholders' active and continued involvement.*
3. Promote conjunctive use of surface and groundwater and water conservation measures wherever feasible to enhance diversification of water sourcing and water security.

Strategies:

- i. *Carry out groundwater potential studies and aquifer storage mapping for irrigation and develop the resources to diversity irrigation water supply.*
- ii. *Consider development of groundwater resources as a supplementary means of irrigation in low rainfall and drought-prone areas.*
- iii. *Give emphasis to water harvesting and conservation for small scale irrigation development during rainy season and wherever feasible to sustain crop production.*
- iv. *Make sure that groundwater abstraction for irrigation is complemented by appropriate managed aquifer recharge approaches to ensure sustainability and long-term safe yields.*
- v. *Develop guidelines for managed aquifer recharge appropriate for local conditions.*

4. Make sure that appropriate drainage facilities are integrated in all irrigation schemes.

Strategies:

- i. *Plan, study and design irrigation projects that incorporates provisions for drainage and return flows facilities.*
 - ii. *In poorly drained lands affected by water- logging problems consider both surface and subsurface drainage system as a means to ensure the productive capacity of the land.*
 - iii. *Identify, delineate and reclaim saline and sodic soils of irrigated areas using appropriate technologies and approaches.*
5. Promote and ensure the development and use of standards, code of practices, guidelines and manuals for irrigation development planning, procurement, study, design, construction, contract administration, operation and management.

Strategies:

- i. *Develop standards, guidelines, manuals and procedures for irrigation development and ensure the adoption of the issued standards and code of practices at all levels of irrigation study, design and construction processes.*
 - ii. *Develop standard criteria and guidelines for prioritizing development of new irrigation schemes.*
 - iii. *Develop guidelines, standard technical specifications and criteria for tendering of consultancy services and construction works.*
 - iv. *Develop standards, guidelines, manuals and procedures for the sustainable operation, maintenance and revitalization of irrigation infrastructures while ensuring their successful application, monitoring and improvement.*
 - v. *Ensure that licenses of individual professionals and firms are renewed and certified every year and performance evaluations of consultants and contractors are conducted annually based on criteria to be established.*
 - vi. *Develop irrigation technology road map to guide future development plans and adoption of irrigation technologies.*
6. Ensure the correctness and completeness of irrigation project design, with respect to accepted guidelines, prior to approval for implementation.

Strategies:

- i. *Establish strong working system that ensures project planning, study and design are done in line with acceptable standards prior to commissioning for implementation.*
- ii. *Establish strong appraisal mechanism to ensure the viability, correctness and completeness of technical studies and project design documents prior to approval for implementation.*
- iii. *Adopt an approach to select competent professionals or firms with nationally and/or internationally recognized qualification and based on acceptable track records of previous performances.*

- iv. *Strengthen contract management, scheme design, construction and maintenance capacity of public institutions through specialized need-based trainings.*

4.2.2. Irrigation System Operation, Management and Maintenance

1. Enhance technical skills and knowledge of irrigation managers and irrigators to enhance the production, productivity and sustainability of irrigation schemes.

Strategies:

- i. *Develop technical skills of irrigation staff through provision of appropriate training on short and long term basis.*
 - ii. *Strengthen contract management, scheme design, construction and maintenance capacity of public institutions through increased on-the-job and external training.*
 - iii. *Develop mechanisms to engage irrigation development implementers operate and build the capacity of irrigators at least for two year after completion of the projects.*
2. Promote best practices in irrigation water management

Strategies:

- i. *Encourage the adoption of best practices that improve irrigation management.*
 - ii. *Establish and run training and demonstration centres (centres of excellence) for best irrigation practices.*
 - iii. *Promote improved management practices and the use of technologies with high water use efficiencies.*
 - iv. *Engage aggressively the private sectors in operation and management of irrigation infrastructures.*
3. Ensure the establishment and strengthening of Irrigation Water Users' Associations (IWUAs).

Strategies:

- i. *Enforce the establishment and strengthening of IWUAs and Irrigation Co-operatives in all schemes.*
- ii. *Ensure that all WUAs are legally established and registered*
- iii. *Continuously sensitize stakeholders to endorse and implement IWUA regulation and supporting guidelines and procedures*
- iv. *Establish national capacity building programs for IWUAs on effective operation and management of irrigation schemes as well as financial management and marketing*
- v. *Develop incentive mechanism to IWUAs to regularly conduct maintenance of schemes*
- vi. *Support the establishment of federation of IWUAs and unions especially for large scale schemes*
- vii. *Provide training to build the capacity of IWUA members (women and men)*
- viii. *Establish and capacitate irrigation management support unit at all levels*

4. Enhance improved performances and environmental sustainability of irrigation projects

Strategies:

- i. *Develop mechanism of transferring the operation, maintenance and management responsibility of main system in large and medium-scale irrigation schemes to service providing agency (wherever users lack the required capacity).*
- ii. *Develop guidelines and procedures for irrigation scheme performance management.*
- iii. *Introduce and promote improved water and agronomic management practices and the use of technologies with a high water use efficiencies improvement potential.*
- iv. *Develop and implement rehabilitation and revitalization mechanisms for irrigation schemes to ensure long-term sustainability and profitability of irrigation schemes.*
- v. *Develop and implement effective and continuous capacity enhancing programs on water use efficiency as an integral component of every irrigation development project.*
- vi. *Encourage the involvement of educated youth in the development and management of commercial irrigated farms.*
- vii. *Promote and enable use of improved technologies in irrigation with the objective to save water, increase productivity and irrigation efficiency.*
- viii. *Adopt improved and affordable systems and tools for water conservation, reducing seepage losses in canals, for water control, storage and retention systems.*
- ix. *Initiate and support research in irrigation with special focus to improve performances of irrigation and sustainability.*
- x. *Promote and support on-farm piloting of irrigation research findings and technologies to enhance crop production and productivity.*
- xi. *Promote the implementation of soil and water conservation works on the catchments of water sources before and after the construction of reservoirs dams and diversion works.*
- xii. *Adopt flow measurements in irrigation systems for knowledge based judicious water allocation and application, support water pricing decisions, and incentivizing efficient water use.*

5. Ensure the prevention and mitigation of degradation of water quality and maintain acceptable water quality standards for irrigation.

Strategies:

- i. *Conduct appropriate Environmental and Social Impact Assessment (ESoIA) Studies for the irrigation schemes, including the implementation of remedial measures.*
- ii. *Establish guidelines for evaluation and maintaining irrigation water quality and drainage effluent and establish a system to ensure adherence to the guidelines.*
- iii. *Develop and promote mechanisms of wastewater reuse for irrigation wherever necessary.*
- iv. *Establish drainage parameters/requirements, and integrate appropriate drainage facilities in all irrigated agricultural development schemes.*
- v. *Develop and implement mechanism for pollution control in irrigated agriculture.*

4.2.3. Institutions and Governance

1. Ensure the establishment and sustenance of appropriate institutional structures and capacity for irrigation development and management.

Strategies:

- i. *Design and implement appropriate irrigation development and management institutional structure.*
 - ii. *Define and implement institutional roles and responsibilities in relation to irrigation management (such as Ministry of Agriculture).*
 - iii. *Ensure operational sustainability of the small scale irrigation schemes by establishing and strengthening O&M departments within the regional bureaus.*
 - iv. *Equip the institutions with the necessary human and physical resources as well as legal arrangement to pursue their role.*
 - v. *Ensure that support units provide adequate and timely training to farmers/irrigators*
 - vi. *Strengthen contract administration and management capacity of the clients and national consultants to improve and upgrade the operational efficiency of existing and planned schemes.*
 - vii. *Promote the management of irrigation infrastructure by service providers in the private sector where farmers have demonstrated inadequate capacity.*
 - viii. *In collaboration with relevant stakeholders, support universities to continuously provide appropriate training to ensure the availability of adequate number of qualified professionals in the field of irrigation.*
2. Promote the development and adoption of appropriate irrigation and related farm technologies

Strategies:

- i. *Establish national standards and guidelines for supplies and use of irrigation technologies and equipment.*
- ii. *Promote the development and application of state-of –the art software for irrigation planning and management.*
- iii. *Demonstrate and promote irrigation technologies that are efficient, cost effective and affordable.*
- iv. *In collaboration with relevant stakeholders support the development of infrastructure for processing, storage and marketing of irrigated agricultural produces.*
- v. *Facilitate linkages between wholesalers and retailers, farmers’ cooperatives and financial institutions for irrigation equipment purchase.*
- vi. *In collaboration with financial institutions, facilitate enhanced credit access for irrigation equipment manufacturers, wholesalers and retailers.*

3. Ensure that irrigation management information system is established and implemented.

Strategies:

- i. *Develop, operationalize and regularly update Irrigation Management Information System (IMIS).*
 - ii. *Establish IMIS branch nodes at regional/ basin levels.*
 - iii. *Develop and use mechanism of irrigation data collection to regularly update the contents of IMIS.*
 - iv. *Strengthen the mechanism for irrigation data collection and management for effective planning, implementation and management of the irrigation intervention.*
4. Promote and ensure the establishment and strengthening of research and extension services in irrigation sector.

Strategies:

- i. *Advance demand driven irrigation researches to improve productivity, efficiency and sustainability of irrigation interventions.*
- ii. *Develop and implement mechanism for coordination and dissemination of irrigation research results.*
- iii. *Ensure that an irrigation extension service is established, strengthened and sustained.*

4.2.4. Sustainable Financing

1. Promote mobilization of sustainable financing for irrigation development and management.

Strategies:

- i. *Promote higher budgetary allocations from the government sources for the implementation of irrigation.*
- ii. *Mobilise financial resources from external sources for undertaking the development of medium and large scale irrigation schemes.*
- iii. *Ensure that appropriate irrigation development funds are established with a legal status at both local and national levels.*
- iv. *Encourage the financing institutions to provide support for investment in development of commercial irrigated agriculture.*
- v. *Extend credit facilities and bank loans for development of irrigation projects, especially small scale irrigation schemes to be executed by local community groups.*
- vi. *Develop incentive mechanisms to encourage private sector investment in the irrigation development and management.*
- vii. *Promote and encourage PPP in the development and improvement of irrigation schemes, identification and dissemination of appropriate technologies.*
- viii. *In collaboration with relevant partners, make available grants or low interest loans for IWUAs to fund their activities.*

2. Ensure the development and implementation of appropriate cost recovery for operation and maintenances of water resources projects.

Strategies:

- i. *Establish and implement norms and procedures for financial sustainability and viability of irrigated schemes. For this purpose, implement a stage by stage cost recovery transition procedure (initial grace period; O & M costs borne by the beneficiaries from the beginning).*
 - ii. *Establish self-financing autonomous public institutions to undertake O&M activities of large scale irrigation schemes. Make these institutions responsible for all aspects related to irrigation water management in the area.*
3. Ensure the development and implement appropriate cost recovery systems and mechanisms for development of irrigation infrastructures.

Strategies:

- i. *Develop incentive mechanisms to attract provide investors to invest in irrigation development.*
- ii. *Share irrigation development costs with other sectors like power, road, health, education and agriculture etc. For this purpose, develop procedures for cost-sharing arrangements based on irrigation development contributions to other sectors.*

4.3. Hydropower

Ethiopia supplies its energy demand largely from hydropower and continues to be a dominant energy source in the coming decades. The country has tremendous potential for renewable energy source, with an estimated hydropower potential 45,000 megawatt, which is technically and economically feasible to be developed. The main objective of the hydropower policy is to provide a national framework for the development and utilization of Ethiopia's water resources for the development of hydropower and facilitate socio-economic development through renewable, sustainable and reliable energy supply.

4.3.1. Technical and Engineering Aspects

1. Ensure that hydropower development is an integral part of the multipurpose uses of water where appropriate, and technically acceptable.

Strategies:

- i. *Consider hydropower development as an integral part of the multi-purpose development projects to rationalise water use, co-ordinate activities, and achieve cost reductions in per unit of output produced.*
- ii. *Expand the supportive role of solar, wind and geothermal power in the grid to sustain the use of hydropower resources long into the future;*
- iii. *Conduct hydrological, geotechnical, hydropower, and etc. investigations for technical feasibility during study, design and implementation of the project.*

- iv. *Collect and analyse hydrological, sedimentation, topographical (surveying and mapping) data and continue updating the database until the feasibility studies have been carried out and beyond.*
2. Ensure that the development sequence of hydropower should be in line with the national hydropower development plan time horizon.

Strategies:

- i. *Provide that an adequate number of Hydro Power Development (HPD) candidate sites (small, medium and large) are studied over the planning horizon on a systematic basis so that implementation of feasible schemes is not delayed when financing becomes available.*
 - ii. *Ensure that successive national development Plans for the hydropower subsector are in line with the policy and strategy provisions, and that the policy and strategy provisions are implemented through the development plans.*
3. Ensure code of practice for study and design of hydropower development schemes adequately addressing technical, economic, environment and stakeholders' issues.

Strategies:

- i. *Issue guidelines with respect to approval criteria for hydropower development studies, design, construction, operation and de-commissioning, ensuring that interests of all stakeholders will be met to the extent possible.*
 - ii. *Define the size and scope of small hydro schemes based on their respective existing and projected capacities to undertake the tasks relevant to the design and implementation of these schemes.*
4. Ensure proper reservoir management for sustainable use of storage capacity of hydropower schemes and protecting reservoir's water.

Strategies:

- i. *Follow up sediment accumulation in existing reservoirs through sustained bathymetric survey programs.*
- ii. *Study and introduce sediment flushing and dredging technologies, sediment trap provisions, as well as reservoir operation rules, and many other options indicated in International Commission of Large Dams (ICOLD) publications, to reduce sediment build up in power dams.*
- iii. *Make greater allowance for sedimentation in the design of dams (including, raising dam height and increasing dead storage capacity at the design stage).*
- iv. *Implement appropriate watershed management measures to ensure long life of hydro dams by minimising siltation of water ways and reservoirs. Consider terracing and reforestation of reservoir boundary belt. Involve local populations in a win-win framework (whereby both the local people and the hydropower sub-sector reap benefits) to sustain the impacts of watershed management measures.*

- v. *Protect reservoir water from sediment and pollutant flows from the immediate surroundings.*
 - vi. *Protect reservoir water from invasive plant species like water-hyacinth.*
 - vii. *Introduce buffer zoning, for reservoir sustainability.*
5. Ensure that undertakings in all processes of project preparation, feasibility studies up to detail design of hydropower projects meet national and international standards.

Strategies:

- i. *Prepare inventories of the complete hydropower potential of the country, and identify the site specific conditions that should be put into place to exploit this potential. Take measures to create those conditions.*
- ii. *Monitor electrification levels, electrification needs and electrification means in demand centres in the various regions as a pre-requisite for developing small hydro schemes for electricity supply to small urban centres and rural areas.*

4.3.2. Financial and Economic Aspects

1. Ensure the economic feasibility and investment needs of hydropower schemes as per accepted national and international standards.

Strategies:

- i. *Conduct environmental and social impact assessment studies of hydropower projects that include proper costing of resettlement and compensation for project –affected people, so that these costs are accommodated in the total cost of the hydropower project and factored into the feasibility of the project.*
- ii. *Prioritize hydropower project with high rate of investment return.*
- iii. *Support investment needs in the hydropower development by:*
 - a. *Rationalising domestic demand using efficient demand management measures;*
 - b. *Enhancing supply side efficiency by reducing distribution losses and leakages;*
 - c. *Choosing appropriate schemes together with right timing for their commissioning;*
- iv. *Generate financial resources for future investments in the hydropower development by:*
 - a. *Rationalising the electricity tariff structure;*
 - b. *Allowing higher tariff charges for electricity consumption in the industrial and transport sectors where special care is taken to maintain supply availability and quality.*
 - c. *Revise electricity export tariff to reflect the full cost of hydropower production and supply, including hydropower reservoir site restoration costs.*
 - d. *Exporting the locally produced electricity to neighbouring markets;*
 - e. *Promoting conditions for the development of a diversified financial sector.*

2. Ensure conducive environment for energy market for hydropower is in place with due consideration of the national interest.

Strategies:

- i. Negotiate with the neighbouring countries possibilities and arrangements for exporting electricity.*
 - ii. Develop infrastructures that facilitate energy export market.*
 - iii. Ensure that power export undertakings on the availability of surplus generation on the local grid.*
3. Ensure the use hydropower as one energy source to minimize petroleum fuels based transport systems among others; generate direct and indirect revenue to the national economy.

Strategies:

- i. Place mechanisms for use of renewable energy from hydropower source in transport sectors.*
- ii. Allocate special fund from Government to encourage and incentivize electricity supply to different economic sector via developing hydropower potential of the country.*

4.3.3.Social and Environmental Aspects

Ensure hydropower projects are environmentally and socially feasible and proper environmental impact assessments are conducted.

Strategies:

- i. Collect and analyse socio-economic and environmental data for each of the hydropower candidate sites to facilitate subsequent feasibility studies and analysis and continue updating the database until the feasibility studies have been carried out and beyond.*
- ii. Conduct environmental and social impact assessment studies of hydropower projects to indicate the feasibility of the schemes.*
- iii. Enhance the multi-purpose beneficial use of hydropower reservoir waters for upstream and downstream communities to encourage these to protect reservoir waters and also improve their livelihood.*
- iv. Prepare standards for environmental and social impact studies to be used as a checklist during impact study and analysis.*
- v. Establish environmental monitoring and evaluation frameworks to follow up hydropower schemes performance in terms of environmental and social indicators.*

4.3.4. Institutional and Capacity Building Aspects

1. Promote national capacity building for professionals, consultants and contractors involved in all phases (study, design, construction, supervision, operation, and management) of hydropower development.

Strategies:

- i. *Develop and implement human capacity development programs.*
 - ii. *Introduce and expand University-Industry Linkage (UIL) in the hydropower sector.*
 - iii. *Create training opportunities for professionals, consultants and contractors involve in the hydropower subsector.*
 - iv. *Minimize reliance on foreign experts by strengthening technical capacities of the national staff using appropriate training modules. At the federal level, strengthen capacities in:*
 - a. *Study and design of medium and large scale hydropower development;*
 - b. *Licensing of operators to undertake hydropower development projects; and*
 - c. *Supervision of construction and operation of hydraulic structures.*
 - v. *Strengthen technical capacities of the regional staff and institutions in planning of appropriate electricity supply means to rural demand centres; and supervision of the study and design, construction and operation of small-scale hydro schemes.*
 - vi. *Strengthen hydropower development expert's capacities in bid evaluation, contract negotiation and administration in power supply infrastructure works and power purchase agreements.*
 - vii. *Strengthen the capacity of various institutions in the water sector to better implement hydropower development policy.*
 - viii. *Create a mechanism to establish small and medium hydropower enterprises.*
 - ix. *Streamline co-operation and co-ordination among the institutional stakeholders both at the federal and regional levels by redistributing the institutional responsibilities.*
2. Promote local industries to play increasing roles in the supply of material and equipment for hydropower development.

Strategies:

- i. *Adapt hydropower development technologies that encourage local level manufacturing of hydro-mechanical equipment and spare parts, create employment opportunities, and ensure technological self-reliance on sustainable basis.*
 - ii. *Create investment opportunities for local industries and strengthen manufacturing capacities of private sector in the hydropower sector.*
3. Promote the involvement of private sector in the development of hydropower.

Strategies:

- i. *Create conducive environment, legal framework, institutions, and incentives for private sector to develop hydropower;*
- ii. *Reduce public sector investment needs in the hydropower development by:*

- a. *Encouraging private investors in hydropower sector through conducive legal and regulatory mechanisms and incentives;*
- b. *Purchasing of power from the independent power producers who provide bulk-sale electricity, from renewable sources, to the public grid;*
- iii. *Create conducive economic conditions and enabling environment to encourage private sector participation in hydropower development projects, ranging from their participation in carrying out technical studies and designs to local manufacturing of spare parts.*
- iv. *Encourage local consultants and contractors in the design, implementation and management of hydropower schemes.*

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5. POLICIES ON OTHER WATER USES

5.1. Inland Water Transport

1. Encourage the development of inland water transport to supplement the national economy in due consideration of other economic uses.

Strategies:

- i. Explore through study of the development potential of rivers, natural and man-made lakes and reservoirs to contribute to the transport infrastructure of the country.
 - ii. Undertake hydrographic surveys for river reaches, natural and man-made lakes for production of navigation charts, installation and improvements of buoys, shore signals, optical signals.
 - iii. Use appropriate technology in matters related to channel clearance and maintenance of waterways.
 - iv. Enhance the use of boats and small vessels by transporting goods and services that contributes to the socio-economic development and transformation of the national economy.
2. Enhance institutional coordination mechanisms among stakeholders of inland water transport.

Strategies:

- i. Promote the effective development and management of inland water transport of the country
 - ii. Promote institutions providing training and services related to Maritime.
 - iii. Adopt appropriate legislations and regulatory environment for the protection and effective utilization of inland water transport.
 - iv. Develop Management Information Systems (MIS) to support policy implementation and operational decision-making on inland water transport.
 - v. Encourage the involvement of the private sector to improve the effectiveness and efficiency of inland water transport through tax exemptions, creating access to loans and providing technical advice.
3. Put in place a monitoring mechanism to ensure that inland water transport does not pollute water bodies.

Strategies:

- i. Strengthen the protection and conservation of riverbanks, reservoirs and lakes that are used for inland water transport.
- ii. Formulate and apply regulations, guidelines and manuals for monitoring and control of inland water transport infrastructure compliance.

4. Redress the adverse situations around large rivers, lakes and reservoirs to be used for inland water bodies.

Strategies:

- i. *Create public and stakeholders awareness on the adverse effects of inland water transport.*
- ii. *Put in place systems and institutions that manage the adverse situations created due to inland water transport.*
- iii. *Encourage the reclamation of adversely affected infrastructures and land due to inland water transport.*
- iv. *Ensure river channel management including hydrological and morphological observation and study for the dredging of local critical parts and bed -regulations by groyne, training walls and bank stabilization for difficult crossings and flats.*

5.2. Water for Tourism and Recreation

1. Promote the aesthetic and recreational uses of water bodies for national socio-economic development and promotion of health and wellbeing as well as tourism.

Strategies:

- i. *Include the development of tourism and recreation resources associated with water bodies in all water resources development master plan studies.*
- ii. *Safeguard the scenic value of water bodies in all water projects, where appropriate.*
- iii. *Build institutional capacities (human, financial and structural) for developing and managing water bodies for tourism and recreational facilities.*
- iv. *Ensure the establishment of Management Information Systems (MIS) in the use of water for tourism and recreational facilities through research and collection of pertinent datasets.*
- v. *Facilitate establishment of inter-sectorial linkages and coordination of actors that operates within water and tourism sectors at all levels.*
- vi. *Strengthen the role of the private sector in the development and management of scenic values and recreational facilities around water bodies.*
- vii. *Ensure that community based eco-tourism infrastructure establishments such as resorts and hotels around water bodies comply with water resources and environmental guidelines and standards of the country.*

2. Ensure that design and development of reservoirs take into account water use for tourism and recreation.

Strategies:

- i. *Ensure inclusion of tourist attractions and recreational activities (such as hiking, camping, boating, fishing, swimming and other water sports, health and wellbeing) in the design of major water projects where reservoirs are involved.*

- ii. Encourage the use of innovative technologies in designing and developing water bodies used for tourism and recreation.*
 - iii. Encourage the design and development of water bodies to take into consideration the conservation and management of water resources used for tourism and recreational uses on sustainable basis.*
3. Ensure public access to recreational water bodies.

Strategies:

- i. Facilitate access to recreational water bodies for public use in collaboration with federal, regional and local administrations.*
 - ii. Promote the involvement of local communities such as youth and women to establish associations/enterprises to develop and invest in the long run over water bodies used for recreational purposes.*
 - iii. Encourage local communities to protect water bodies and its catchment areas for sustainable eco-tourism use.*
4. Ensure recreational institutions shall comply with national standards and pay water use charge for ecosystem services (PES).

Strategies:

- i. Initiate the formulation of national standards, preparation of operational directives, guidelines and manuals to be used by relevant actors on the water uses for tourism and recreational use.*
 - ii. Prepare regulations that impose and determine the payment for ecosystem services obtained from water bodies through touristic and recreational facilities.*
 - iii. Put in place regulatory systems that ensure the quality of water bodies used for tourism and recreational facilities is maintained.*
 - iv. Establish indicators for monitoring and evaluation of water for tourism and recreational uses (detection of leaks, investment in technical equipment, recycling of swimming pool water, installation of water saving equipment, organizational measures, raising of public awareness and staff training, raising of customer awareness).*

5.3. Water Use for Industries

1. Promote proper appraisal of the availability of water sources for industrial development sites, including through EIAs.

Strategies:

- i. Develop a guideline for the assessment of water requirement of various types of industries*
 - ii. Utilize the requirement guideline to check whether there is sustainable surface and/or groundwater source both in quantity and quality at feasible distance and cost for proposed industrial development sites.*

iii. *Introduce a regulation that upholds water availability to be the key precondition to consider any site for industrial development*

2. Encourage industries to develop their own water sources, and diversify their water sources.

Strategies:

- i. *Develop regulated and efficient water abstraction licensing system based on integrated sustainable water resource management principles.*
- ii. *Introduce incentive mechanism for industries that diversify their water source through rain water harvesting, desalination and water reuse and recycling.*

3. Ensure industries do not cause significant impacts water bodies.

Strategies:

- i. *Establish registry of the land use and environmental parameters or indicators such as river morphology, natural and manmade reservoir, buffer zones and groundwater recharge areas before industrial development and set acceptable landscape and environmental parameters to be considered before giving investment licenses.*
- ii. *Develop and implement monitoring and evaluation mechanism to audit industrial development impacts on water bodies.*
- iii. *Develop effective pollution prevention and control framework for point and non-point source of pollution.*

4. Ensure industries pay for water abstraction and use as well as for effluent discharge and municipal wastewater treatment.

Strategies:

- i. *Develop a guideline to charge industries for water abstraction and use*
- ii. *Establish a mechanism for collecting water abstraction and use charges by basin authorities in collaboration with relevant stakeholders*
- iii. *Develop portfolio of basin related activities for which the collected charges shall be used for environmental sustainability of the specific catchment in the basin.*

5. Encourage industries to introduce state of the art technologies and practices that conserve and optimise water usage and minimize wastewater generation.

Strategies:

- i. *Develop catalogue of water conserving and waste minimizing technologies and disseminate for industries.*
- ii. *Establish incentive mechanisms for industries that utilize technologies and practices that increase water use efficiency, decrease wastewater generation, practice reuse and recycling of wastewater and recover resources.*

6. Ensure untreated wastewater is not released to the environment.

Strategies:

- i. *Develop treated industrial wastewater effluent national standard corresponding to type and level of contaminants and status of receiving water body*
- ii. *Establish regulatory framework in collaboration with other concerned stakeholders for enforcement of the standards*
- iii. *Enforce treated wastewater effluent national standard and monitor its effectiveness periodically at basin scale.*

7. Encourage industries to engage in watershed conservation and water source protection.

Strategies:

- i. *Develop a guideline that coordinates the engagement of industries in watershed conservation and water source protection.*
- ii. *Develop proactive mechanism including targeted incentive for the involvement of industries in watershed conservation and water source protection.*

5.4. Aquatic Eco-systems and Resources

1. Establish and adopt water quality standards and proper assessment procedures that enhance preservation and enrichment of aquatic resources.

Strategies:

- i. *Adopt ambient water quality standards for aquatic ecosystem management.*
- ii. *Develop ecological assessment procedure for aquatic resources management.*
- iii. *In collaboration with the government knowledge institutions assess, categorize and monitor the overall aquatic ecosystem health of Priority Rivers and lakes.*

2. Ensure aquatic resources development activities incorporated in dams and reservoirs.

Strategies:

- i. *Dams and reservoirs should be designed and developed considering sustainable fish resource production opportunities.*
- ii. *Provide fish ladders at dams in order to ensure the passage of fish carry out studies in the pre-impoundment of dams to protect the ecology of reservoirs.*
- iii. *Ensure that newly planted dams guarantee the respect of the requirements of self-sufficiency in fish production.*
- iv. *Drainage provision should be provided for the transition period of aquaculture when water bodies are used.*
- v. *Enhance fisheries productivity through improved management of reservoir, dams and other water control structures.*
- vi. *Consider construction and modification of water control structures for appropriate fish passage to enhance fish migration and movement across dams.*

- vii. *Consider fisheries in dam operation and attempt to minimize changes to natural pattern of water fluctuation (depth, quantity, quality, flow), both within the reservoirs and downstream of the dams.*
- viii. *Manage the upstream watershed to reduce sediment and pollutant inputs and avoid excessive nutrient inputs, all of which can lead to loss of the fish habitat. Contamination of aquatic systems and eutrophication is essential to avoid negative impact on reservoir fisheries.*

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6. WATER RESOURCES MANAGEMENT

6.1. Integrated Water Resources Management (IWRM)

Planning, development and management of water resources will be based on the principles of IWRM and shall take full cognizance of the cross-cutting nature of water.

Strategies:

- i. Undertake integrated water resources management plans and update existing basin plans on a regular basis and get them approved and endorsed at appropriate level.
- ii. Develop and disseminate IWRM implementation guidelines and manuals for basin institutions.
- iii. Develop and apply management instruments that enable and help decision makers to make rational and informed choice between alternative actions to help to support the sustainability of institutions, infrastructure as well as the service they provide.
- iv. Establish legal and institutional frameworks to address the political, social, economic and administrative systems needed for managing the development and use of water resources in an integrated manner.
- v. Prepare investment plans and programs and mobilize finance to apply IWRM.
- vi. Delineate water management functions into more manageable and understandable parts and take specific conditions of the basin and institutional resources into account to implement integrated water resources management functions.
- vii. Establish and strengthen basin institutions; coordinate and engage relevant stakeholders at all levels to plan, implement, and monitor, evaluate and investigate and regulate water resources management functions with emphasis to IWRM at the river or lakes basin scale.
- viii. Integrated water resources management and water efficiency plans will be developed, as appropriate, in line with national priorities and objectives.
- ix. Fine-resolution basin information shall be timely organized and made accessible at scale of water resource development and management unit (basin or sub-basin or catchment).
- x. Assess and study the economic, social and environmental impact of improved IWRM and accordingly disseminate best practices and lessons.
- xi. Set criteria and develop indicators and measure the progress of integrated water resources management functions.
- xii. In collaboration with Federal and Regional institutions update and take follow-up actions on completed Integrated Rivers and Lakes Basin Development Master Plans (Gibie-Omo, Baro-Akobo, Abbay, Tekezie, Mereb, Wabi-Sbelle, Genale-Dawa, and Rift Valley Lakes), and prepare master plans for the remaining basins (Awash, Denakil Aysha, and, Ogaden, etc.).
- xiii. Follow up and ensure the implementation of water resource development and management programs and projects are in line with the Master Plans.
- xiv. In collaboration with Federal and Regional institutions Prepare "National Water Master Plan" on the basis of Basin Plans.

6.2. Water Conservation

Water conservation should be promoted to maximize water availability and quality.

Strategies:

- i. In collaboration with the concerned government institutions, enhance afforestation of upland areas and mountain areas to improve recharging of aquifer zones, increase water yields and maintain stream flows.*
- ii. Establish eco-hydrology demonstration sites and implement eco-hydrological technologies to ensure water availability and quality, healthy ecosystem and enhance water ecosystem services.*
- iii. Establish a mechanism for stakeholder collaboration for water storage and promote construction of more water-harvesting and storage facilities.*
- iv. Promote construction of rain-water harvesting, retention and storage facilities.*
- v. Strengthen participation of special interest groups including women and youth in water resources conservation management.*
- vi. Promote the utilization of efficient and evidence based modern technologies in water uses (irrigation, water supply and hygiene, industrial optimization, reuse and recycling etc.)*
- vii. Develop and implement water use efficiency standards in different water uses.*
- viii. Enhance and promote water conservation behaviour through well-aligned conjunctive and multiple uses of different behavioural influencing strategies, including water demand management.*
- ix. Promote Nature-Based Solutions (NBS) to manage water availability and water quality.*

6.3. Water Protection

Source water protection should be planned and regulated as integral parts of water resources management to prevent overuse and contamination.

Strategies:

- i. Promote adoption of appropriate technologies in protection and conservation of watershed areas of drinking water supply (integrate drinking water supply into watershed protection).*
- ii. Implement and enforce laws relating to protection and management water resource.*
- iii. Engage relevant stakeholders in source water planning to protect source water for sustainable utilization and better water resources management.*
- iv. Study, design and construct vegetation buffer zone to reduce pollutants and siltation entering the aquatic environment.*
- v. Rehabilitate, conserve and protect natural and artificial water bodies and related ecosystems.*
- vi. Promote role, integration and application of phytotechnologies in Integrated Watershed Management (IWM) to improve water quality and availability for sustainable water resource use.*
- vii. Implement climate resilient Water Safety Plan in all water resources development undertakings.*
- viii. Promote and implement water governance system to improve the sustainable development of water resources and services and influence water uses and management.*

- ix. Promote management of forest, wetlands and grasslands, as well as soils and crops, to properly play important roles in regulating water quality by reducing sediment loads, capturing and retaining pollutants, and recycling nutrients.*

6.4. Buffer Zones

Buffer zones should be delineated, demarcated and legally protected along water bodies to sustain and maximize environmental, social and ecological benefits.

Strategies:

- i. Issue and enforce legal framework for delineation of buffer zones.*
- ii. Prevent removal of riverine vegetation from buffer zone by law.*
- iii. Secure buffer zone along rivers, streams and natural drainage lines to filter out pollutants from surface runoff.*
- iv. Establish feasible distance of buffer zone along both sides of the river, streams and drainage lines; as well as around lakes, reservoirs and natural and manmade ponds.*
- v. Plant appropriate and indigenous tree, shrubs and grasses species to enrich buffer zone vegetation and biodiversity as well as to improve water quality.*
- vi. Create awareness among communities on environmental and social benefits of buffer zone vegetation.*
- vii. Prepare participatory buffer zone management plan for sustainable utilization and protection of buffer zones.*
- viii. Monitor and evaluate effect of buffer zone management on water quality, biodiversity, wildlife habitat and other unforeseen benefits.*
- ix. Prepare buffer zone guideline and manual to design and implement the buffer zone technologies.*
- x. Promote indirect benefits of buffer zone to community such as bee keeping, cut and carry grazing, fruit collection, recreation, tourism, use of traditional medicines, etc. in controlled areas.*

6.5. Environmental Flows

Ensure the release of environmental flow to downstream ecosystems.

Strategies:

- i. Develop and implement an environmental flow management framework for the country.*
- ii. Assess, plan, implement, monitor and evaluate environmental flows for water resources development projects.*
- iii. Allocate adequate ecological/environmental flow whenever there is abstraction or diversion or damming of naturally flowing river or stream.*
- iv. Assess ecological flow demand based on the water demand for the most sensitive aquatic species and adopt nationally accepted water demand allocation models.*
- v. Before deciding the amount of ecological flow, consider seasonal variability of ecological water demand and mimic natural flow cycle.*

6.6. Watershed Management

Integrated watershed management should be promoted to ensure the sustainability, quality and quantity of water infrastructure, and water bodies and related ecosystems.

Strategies:

- i. In collaboration with the concerned institution implement appropriate watershed management measures to ensure long life of water resources infrastructures such as dams & reservoirs by minimizing siltation of water ways and reservoirs. Consider terracing and reforestation of reservoir buffer belt. Involve local populations to sustain the watershed management measures.*
- ii. In collaboration with the relevant institution promote community based watershed development that improves conservation of water, soil and biological resources.*
- iii. In collaboration with the relevant institution design watershed management technics that best fit for farm land, grazing land, degraded land, buffer zone, steep slopes, hill sides etc.*
- iv. In collaboration with the concerned institution promote agroforestry activities in watersheds. Promote indigenous and multipurpose tree plantation in the watershed and buffer zones.*
- v. Ensure that any proposed introduction of alien species into water ecosystems are subject to detailed ecological studies and environmental impact assessment.*
- vi. Increase capacity at federal, regional and basin level manpower to properly manage the watershed activities.*
- vii. Increase capacity of community to conserve watershed through training and awareness creation at lower administration levels.*
- viii. Devise water centered watershed management activities.*
- ix. Link watershed management activities with carbon trade business.*
- x. Assess and study the impact of implementation of watershed management on natural resources and socioeconomic changes.*
- xi. Improve the recharging capacity of the lakes, wetlands and groundwater.*
- xii. Protect the downstream communities from flood hazards through integrated watershed management.*
- xiii. Promote formulation and scale up of best watershed management practices into other watersheds.*
- xiv. Promote equitable share of watershed management benefits between upper and downstream users.*
- xv. In collaboration with the concerned institution, promote establishment of watershed community associations to conserve and protect water source catchment areas.*

6.7. Water Quality Management

Water pollution prevention and control should be enhanced to ensure good water quality and protect people's health and the ecosystem.

Strategies:

- i. Protect aquatic environment from pollution by preventing release of hazardous substances and untreated waste water from municipalities, industries, hospitals and farming activities into water bodies.*
- ii. Assess the impact of disposal systems on local water sources, when they discharge directly or indirectly to the nearest watercourses such as a stream, river or lake.*
- iii. Conduct sound water quality analysis before construction of WSS schemes to ensure that the water is potable and establish baseline water quality status of rivers, streams and lakes.*
- iv. Adopt affordable treatment process like artificial wetland wherever possible.*
- v. Protect surface and ground water bodies from pollution by industrial wastewater and other wastes through establishing legal framework and strong enforcement of legislative measures.*
- vi. Develop and enforce standards and guidelines for maintaining water quality in all recognized water uses; e.g. water supply (domestic, industrial, livestock, others etc.) and sewerage and sanitation.*
- vii. Make it mandatory to include proper sewerage and sanitation services in future urban development plans, especially the housing schemes and rehabilitate and upgrade the existing once.*
- viii. Develop and enforce regulations to ensure that future housing schemes or individual dwellings are subject to approval by authorized organization or agency to prevent ground and surface water pollution.*
- ix. Integrate and co-ordinate the development of industrial water supply and waste water treatment with other water sector development objectives including, irrigation, hydro-power, etc.*
- x. Promote improvement of environmental sanitation in urban centres and rural areas and protect water bodies from being polluted and contaminated.*
- xi. Implement the "polluter pays" principle to ensure the responsibility and accountability of polluters and define fees, fines, and other charges to reflect the impact and cost of pollution that can be assigned to the polluter.*
- xii. Force industries and municipalities to treat effluent to the level that complies with the set effluent standard before discharging into receiving water bodies and drainage lines.*
- xiii. Collect irrigation drainage water and treat and reuse or discharge to receiving water body only if it complies with the treated effluent discharge standard.*
- xiv. Establish legal standard for sanitary installation of urban houses and enforce the standard during the new house construction (standard for septic tank construction, sewerage line connection, etc.)*
- xv. Prevent direct connection of septic tanks and sewerage lines into nearby rivers, streams and drainage lines.*

- xvi. *Conduct periodic water quality monitoring to assess its compliance with set standards and baseline data.*
- xvii. *Assess water quality and quantity before giving water use permission for industries, agriculture, aquaculture or any other use and conduct periodic monitoring to check its compliance with the standard.*
- xviii. *Confiscate water use permission/license whenever the user violates allowable water quality standard.*
- xix. *In addition to the existing drinking and bottled water quality standards, establish water quality standards for various uses and update/revise standards when it requires or new concepts and scientific findings suggest stringent standards or vice versa.*
- xx. *Promote pollution prevention rather than treating symptoms of pollution.*
- xxi. *Promote treating, recycling and reuse of waste water for various uses when it fulfils specific water use standards and safe to health.*
- xxii. *Establish safe limits for the location of sanitary landfill sites in the vicinity of boreholes, wells, and dams; and issue regulations to enforce them.*

6.8. Groundwater management

1. Development of groundwater should be based on abstraction of the maximum amount equal to the sustainable yield, to maintain long-term, dynamically stable storage of high-quality groundwater as determined.

Strategies:

- i. *Groundwater use must be carried out in the context of an adequate basin management plan, based on an understanding of the sustainable yield of the groundwater resources.*
 - ii. *Develop shallow wells for irrigation and water supply with caution and in controlled manners with due account to uncertainties and unpredictability and variability in geographical conditions to avoid intensive pumping and over-abstraction.*
 - iii. *Foster conjunctive use of surface and groundwater as appropriate to diversify water sourcing.*
2. The spatio-temporal occurrence and distribution as well as quality of groundwater resources should be mapped to identify their character and support climate-resilient decisions about abstraction, recharge, source protection and treatment.

Strategies:

- i. *Map, characterize and model the geohydrological conditions and assess the groundwater resources situation, based on existing well drilling logs and reports, geological and hydrogeological maps and satellite images (remote sensing).*
- ii. *Build capacity for improved mapping and assessment; support community-based monitoring and ground-truthing initiatives to complement formal observations.*
- iii. *Ensure that private drillers deposit groundwater data with the Basin institutions.*
- iv. *Establish and maintain a database and an information system to keep track of groundwater data, including groundwater levels measured in boreholes or wells, aquifer properties calculated from test pumping data, estimated sustainable yields, measured*

groundwater chemistry and microbiological parameters, as well as usage and withdrawals, both those with permit and those without.

3. Protection and minimum modification of groundwater recharge areas, including their natural eco-system, should be ensured to enable replenishment of aquifers and to reduce vulnerability to climate change and hydrological variability.

Strategies:

- i. Introduce guidelines for suitable recharge measures and structures and for designated aquifer rejuvenation zones.*
 - ii. Adopt Managed Aquifer Recharge measures when and where appropriate.*
4. Legislations, standards and guidelines for sustainable management of groundwater should be established as part of the legal framework to foster conservation, precaution and protection balanced with development to support economic development and human health.

Strategies:

- i. Establish and enforce legislation, standards and guidelines for efficient and sustainable development and management of groundwater.*
 - ii. Put in place an effective and enforceable permit system to regulate abstraction of groundwater, discharge of pollutants and treatment of effluents that can affect groundwater resources.*
 - iii. Make exemptions in the permit process for de minimis uses of groundwater for domestic purposes alongside small-scale irrigation, and for customary law, social courts and traditional decision-making processes for groundwater allocation.*
 - iv. Control bulk groundwater abstraction and usage through mandatory installation of automated flow meters.*
5. Groundwater development and management should be coordinated among concerned stakeholders and institutions.

Strategies:

- v. Equip the Basin institutions with the capacity to take strategic decisions for planning of groundwater resources, to carry out watershed development activities, plan for allocation through abstraction licensing and exemptions, model demand, monitor water pollution and coordinate protection measures, organize stakeholder fora, and ensure implementation of policy and regulation.*
- vi. Ensure that the federal level administration supports the river basin institutions in adopting and revising, as necessary, Management Plans that properly integrate groundwater resources.*
- vii. Ensure that the Basin institution supports the Regions in administering groundwater permits for abstraction and effluent discharges.*

- viii. *Encourage the private sector and local communities to become actively involved in groundwater management through participatory monitoring and hydro-meteorological evaluations for improved understanding of water quantity and quality conditions and watershed water balance, to ensure sustainable use.*

6.9. Wetlands Management

Wetlands of significant importance for the benefit to nature and humans should be identified, delineated, demarcated and protected to sustain healthy ecological functions and ensure sustainable ecosystem benefits.

Strategies:

- i. Map and make periodic inventory of wetlands of the country; identify which are to be considered of significant importance and ensure that information is stored in appropriate database.*
- ii. Protect, rehabilitate and maintain hydrological, ecological and livelihood functions of wetlands of significant importance.*
- iii. Prevent wetlands of significant importance from draining out and being converted into farm lands*
- iv. Avoid exploiting wetlands beyond their sustainable limit.*
- v. Promote research on protection and sustainable management of wetlands.*
- vi. Allocate adequate flow of water whenever the feeding river is abstracted at the upstream of any wetland.*
- vii. Establish and enforce legislation, standards and guidelines to protect wetlands and their ecosystem.*
- viii. Prevent discharge or dumping of solid and liquid waste into wetlands or their buffer zones.*
- ix. Prioritize restorations of wetlands of significant importance based on desired outcomes, specifically, water quality improvements, habitat gains, flood damage reduction, and other hydrological benefits.*
- x. Improve coordination of wetlands restoration efforts.*
- xi. Design and produce better wetland restorations that stand the test of time, and provide lasting functional benefits.*
- xii. Empowering local stakeholders for the wise use, protection and restoration of wetlands, with accountability to the society they live in.*

6.10. Water Allocation

1. Ensure water allocation gives highest priority to domestic water supply and sanitation, thereafter livestock and agriculture for food security followed by allocation of water resources for the environment. Allocation for other uses and sectors should be based on their socio-economic benefits and in accordance with applicable law and policy.

Strategies:

- i. *Adopt the principle that water allocation (after fulfilling domestic water supply, sanitation, livestock and agriculture) shall not be made on permanent basis, but rather on an agreed time horizon that fits best with the socioeconomic development plans, especially pertinent to water resources, subject to a renewal process based on appraisals and revisions in light of the state of the art and due respect to the water resources availability situation at the time in question.*
 - ii. *Raise the awareness and understanding of water institutions and the public about on water allocation priorities.*
2. Enhance and encourage water allocation that is based on efficient use of water resources that harmonizes greater economic and social benefits.

Strategies:

- i. *Develop national framework and guidelines for water allocation.*
 - ii. *Develop and implement criteria to allocate water among different uses at basin/sub-basin level with consideration to need for trans-regional transfers.*
 - iii. *Develop a national water allocation plan and revise the plan periodically based on water use efficiency survey, hydrological data, permit and water use data, water balance analysis, water allocation efficiency, etc.*
3. Ensure that water allocation shall be based on the basin and sub-basin and other hydrological boundaries and take into consideration the needs of drought prone areas.

Strategies:

- i. *Develop water allocation plans at lowest possible water management unit while recognizing that the basic minimum requirement (basic human and livestock needs) has the highest priority.*
- ii. *Give special consideration to drought-prone areas in water allocation plans to the extent of transferring of water from water-surplus to water deficit areas.*
- iii. *Strengthen the capacity of basin institutions in water allocation and apportionment.*
- iv. *Strengthen the use of water resources management tools/decision support systems for effective water allocation.*

6.11. Supply and Demand Management of Water

1. Recognize water is a natural resource with an economic and social value and ensure that fees are paid for services rendered.

Strategies:

- i. *Conduct socioeconomic analysis of water use demand in various sectors and monitor the development and trends over time*
- ii. *Establish sector-based criteria and guidelines for the determination of water use and abstraction charges or fees in line with the polluters pay and users pay principles, and monitor their implementation.*

- iii. Create database of water use and abstraction charge at basin level for various sectors and monitor.*
2. Promote the construction of storage infrastructure to minimize the negative impact of seasonal variability of water.

Strategies:

- i. Develop updated masterplan of all basins citing feasible storage dam locations for multipurpose use of water*
 - ii. Develop realistic long-term implementation program for cascaded development of the proposed storage dam in line with national socioeconomic development plan.*
3. Promote the use of alternative water sources to conserve freshwater.

Strategies:

- i. Develop guidelines for comprehensive water conservation that incorporates the use of alternative water sources*
 - ii. Undertake and encourage efforts towards use of alternative water supply sources such as rainwater harvesting, wastewater reuse and recycling and saline water desalination.*
4. Ensure that water supply infrastructure minimizes loss of water and all water consumers reduce water wastage.

Strategies:

- i. Develop stringent design criteria and guideline that minimizes the loss of water from supply side - at source, water storage and water transport infrastructures.*
 - ii. Establish a system that introduces catalogue of technologies and behaviour changes that reduce water wastage by consumers on the demand side.*
 - iii. Create a culture of water conservation and water demand management for all consumers and users.*
5. Ensure and promote that all pricing systems and mechanisms should be geared towards conservation, protection and efficient use of water as well as promote equity of access.

Strategies:

- i. Develop and institute economic instruments for water conservation and demand management.*
- ii. Establish tariff which is site specific, depending on the particulars of the project, location, the users, the cost and other characteristics of the schemes.*

6.12. Trans-boundary Water Resources

6.12.1. Access and Use of Trans-boundary Waters

1. Recognize that trans-boundary water resources are vital sources of livelihood and significant for the socio-economic development of the people of Ethiopia.

Strategies:

- i. Set water as strategic resource for the socio-economic development of Ethiopia and reflect the national interest in all stages and areas of trans-boundary water negotiations.*
 - ii. Establish a National Consultative Group on trans-boundary issues.*
 - iii. Raise public awareness and incorporate in the educational curriculums about trans-boundary issues.*
2. Recognize that lack of addressing water security in Ethiopia can lead to national security issues.

Strategies:

- i. Organize and follow up on implementation of national efforts towards guaranteeing water security as one of pivoting points to address national security problems.*
 - ii. Promote the inclusion of water security issues in other national sector policies.*
 - iii. Prepare national roadmap in addressing national security problems emanating from lack of addressing water security.*
3. Ensure that Ethiopia utilizes its shared water resources in an equitable and reasonable manner.

Strategies:

- i. Make use of trans-boundary waters effectively and efficiently with the principle of accepted international principles for the social and economic development of the people of Ethiopia.*
- ii. Develop large scale storage structures to satisfy sectoral water demands and reduce supply deficit.*

6.12.2. Institutional and Capacity Building

1. Encourage the establishment of Knowledge/Data Base and Decision-Support System at the basin; sub-basin and national levels in order to support planning and management of the trans-boundary water resources of the country as well as to consider the opportunities and constraints of cooperative bi-lateral and multi-lateral projects.

Strategies:

- i. Strengthen national and regional infrastructures for the collection, storage, processing and management of hydro-meteorological data as well as socio-economic, demographic and water use data for monitoring and assessment of the transboundary resource base and for the purpose of decision-making in transboundary water resources management.*

- ii. Build capacity of the relevant national and sub-basin agencies with respect to information management and data analysis.*
2. Promote the involvement of basin institutions in the respective river basins of the country in the planning and management of the transboundary water resources of the country as well as in decision-making concerning same.

Strategies:

- i. Encourage the involvement of basin institutions in the policy and strategy formulation for transboundary water resources management of the country and in providing inputs to negotiations on Transboundary Rivers*
- ii. Build the capacity of the basin institutions so that they effectively carry out their responsibilities with respect to transboundary water resources.*

6.12.3. Cooperation and Coordination

1. Promote mechanisms for peaceful settlement of disputes; prevention, management and resolution of conflicts in the development and management of the transboundary water resources of the country in accordance with accepted principles.

Strategy:

Build capacity of relevant institutions and decision-makers on negotiation and conflict resolution through short and long-term training programs.

2. Promote, as appropriate, the development of multi-purpose projects in bi-lateral or multi-lateral joint projects with other riparian countries when it is in the national interest of Ethiopia and mutually beneficial to all concerned riparian countries.

Strategies:

- i. Develop projects on trans-boundary waters that are in the best national interest of Ethiopia, & are consistent with the international covenants adopted by riparian countries.*
- ii. Develop and implement projects that falls within the framework of bi-lateral or multi-lateral basin-wide programs.*
- iii. Actively participate in basin-wide or sub-basin trans-boundary cooperative initiatives.*

6.13. Trans-regional Water Resources

1. Ensure that trans-regional rivers, aquifers, lakes, artificial reservoirs, and other water bodies that cross two or more regions, and the utilization of water thereof shall be determined and administered by the Federal Government.

Strategies:

- i. Establish legal and institutional frameworks that guarantee equal right of citizens for the utilization of trans-regional water resources.*
- ii. Develop mechanisms for building trust among federal and regional authorities in administering water resources of the nation.*

- iii. *Define clear mandates between the federal and regional governments in managing water resources of the country.*
2. Ensure that regional water resources development plans shall be in accordance with the federal laws and reconciled with the basin plans that ascertain Integrated Water Resources Management principles.

Strategies:

- i. *Implement coordinated development among sectors in regions that share the same river basin.*
 - ii. *Incorporate regional development plans into the basin's strategic development plan as appropriate.*
3. Promote optimal use of water resources through inter-basin transfer whenever and wherever necessary under the jurisdictions of the federal government.

Strategies:

- i. *Make efficient use of water resources of Ethiopia through inter-basin transfer from water excess basins to water stressed basins and from basins suffering from flooding, as appropriate.*
 - ii. *Rehabilitate and rescue endangered water bodies through water re-allocation from neighboring basins.*
 - iii. *Develop guidelines and legal framework on how to study, design and implement inter-basin transfers between two or more basins.*
4. Ensure conflict emanated from the use of trans-regional waters shall be resolved by appropriate federal body and promote inter-regional cooperation in the management of trans-regional waters.

Strategies:

- i. *Institute conflict resolution mechanisms and frameworks in case of disagreements for the utilization and administration of water resources between regional states.*
- ii. *Establish cooperative and multi-stakeholder discussion platforms at federal level with active engagement of regional states.*

6.14. Disasters and Emergencies

1. Recognize and adopt that management of disasters associated to fluvial (River floods) and pluvial (flash floods and surface water) floods shall form an integral part of water resources management.

Strategies:

- i. *Establish a national standard and guideline that describes the different types of flooding, risk levels and early warning systems.*

- ii. *Forecast floods by installing automatic stage recorders at the strategic sites in the flood-prone areas.*
 - iii. *Determine flood characteristics of an area by systematically recording flood levels, and issue timely flood warnings.*
 - iv. *Establish flood-plain zones and land use types along the main flooding rivers in the country.*
 - v. *Formulate and enforce legislation that bans construction along flood plains.*
 - vi. *Facilitate identification and building of appropriate flood control structural measures such as levees, floodwalls, channel improvements, flood ways, etc in flood-affected areas in collaboration with stakeholders and development partners.*
 - vii. *Support flood affected communities in the implementation of mitigation and rehabilitation strategies in collaboration with stakeholders and development partners.*
 - viii. *Promote bio-engineering measures along with structural and non-structural measures to control flooding.*
2. Promote coordinated planning and interventions to combat drought and growing desertification.

Strategies:

- i. *Facilitate studies on the recurrent droughts and damages caused with an objective of guiding water resource development in drought prone areas.*
 - ii. *Plan ahead of time for combating droughts proactively rather than going into crisis management of their effects,.*
 - iii. *Set up a forecasting and alert system for meteorological and hydrological droughts that directly affect water supply for different uses.*
 - iv. *Strengthen climate resilient groundwater exploration; formulate a comprehensive program for the selection of wells, boreholes, stock ponds, sub-surface dams etc in drought-affected areas.*
 - v. *Ensure emergency water supply during drought and emergency by putting in place Emergency Water Supply Systems in consultation with the relevant emergency service providers and affected communities.*
 - vi. *Monitor the distribution of water points and cattle troughs in order to reduce desertification and environmental degradation.*
 - vii. *Identify and implement schemes that are used in mitigation of droughts,*
 - viii. *Encourage voluntary resettlement of people from water-scarce to water surplus areas.*
3. Ensure the safety of water retaining, transmission and diversion structures such as weirs, barrages, dams, reservoirs and pipelines, against natural and man-made disasters.

Strategies:

- i. *Develop a system that ensures the quality of water retaining, transmission and diversion structures during study, design and construction to avoid disasters.*
- ii. *Supervise the application of sound construction methods and use of appropriate construction materials by contractors towards the prevention of disasters.*

- iii. *Apply state-of-the-art design standards and construction practices towards the prevention of disasters.*
 - iv. *Put in place periodic safety checks and maintenance on existing water retaining and transmission structures.*
 - v. *Establish and implement safety guidelines, manuals and regulations for major water retaining, transmission and diversion structures.*
 - vi. *Safeguard the environment, human settlements, flora and fauna and socio-economic infrastructures during the construction of water retaining, transmission and diversion structures.*
4. Ensure that water quality objectives and water supply standards are maintained during emergency water supply.

Strategies:

- i. *Monitor regularly the quality of emergency water supply in order to prevent the outbreak of epidemic diseases such Acute Watery Diarrhea (AWD).*
 - ii. *Put in place monitoring mechanisms for detecting, controlling and communicating spilling of toxic products from industries and warehouses to prevent disasters.*
 - iii. *Set standards and establish regulations that address water qualities in the context of disasters and emergencies.*
 - iv. *Distribute public health information and advice on appropriate drinking water sources, treatment of water for domestic use and safe sanitation practices during heavy rainfall and at the end of the dry season/after drought episodes, through utilities, WASHCOs and community-based water supply schemes and media.*
5. Strengthen collaborative initiatives within the Ministry and across stakeholders working on disasters and emergency.

Strategies:

- i. *Undertake institutional gap assessment and stakeholders' analysis to identify areas of collaboration with stakeholders and partners working on disaster risk management.*
- ii. *Establish ministry-wide disaster and emergency coordination unit that provides strategic and coherent inter-directorate support.*
- iii. *Equip the coordination unit with the necessary logistics, technology and human resources.*
- iv. *Mobilize stakeholders to act in a concerted manner during disasters and emergency by creating a joint platform.*
- v. *Establish preparedness and contingency plans for disasters and emergencies.*
- vi. *Facilitate provision of support to regional water bureaus where water related disaster risks are very high.*
- vii. *Coordinate all water related disasters interventions with the National Disaster Risk Management Commission.*

6.15. Dam Safety

1. Protect dams from early decommissioning arising from debris, sedimentation, structural failures and natural disasters such as infestation by invasive plant species, seismic hazards, landslides, etc.

Strategies:

- i. Develop national standards, guidelines, protocols and codes that guides the design and construction of different types of dams in Ethiopia.*
 - ii. Establish standard site selection and construction guidelines for dams and its appurtenant structure during pre-design, design and construction.*
 - iii. Put in place a regular dam safety monitoring system including establishment of a regulatory body.*
 - iv. Use appropriate technology and means to remove sediments and debris from reservoirs.*
 - v. Develop national standards that define sediment threshold in the design of reservoirs.*
 - vi. Develop a national guideline and protocols that can be applied in decommissioning of old and non-functional dams.*
2. Institute a national level early warning and emergency preparedness management system to handle flood situations arising from dam failures and above maximum design inflows into reservoirs.

Strategies:

- i. Develop national standards for design floods while developing hydro-infrastructure*
 - ii. Put in place an early warning and emergency action plan, based on international best practices to accommodate design floods and protect settlements and properties*
 - iii. Set mechanisms to manage flood that could occur in the event of dam failures*
3. Ensure continuous surveillance, inspection and monitoring that technical, environmental and safety standards, among others are met during the study, construction, and operation phases for dams and appurtenant structures under normal conditions, and to take pre-emptive actions against potential failures.

Strategies:

- i. Use long-term hydrological records and carefully correlated data while undertaking the design of water structures.*
- ii. Take special care in the design of water structures on unstable and difficult foundations;*
- iii. Apply sound construction methods and use appropriate construction materials.*
- iv. Provide corrective measures at the lowest practical cost while retaining project and environmental benefits.*
- v. Apply state-of- the art design standards and construction practices.*
- vi. Carry out periodic performance and safety checks, at least once in three years, on existing water systems, dam structures and reservoir conditions to take preemptive actions against potential failures.*

4. Ensure national dam safety and security guidelines and regulations are prepared and updated in accordance to national interests and conditions and international standards.

Strategies:

- i. Establish and implement safety regulations and monitoring guidelines for major water structures.*
- ii. Develop and implement inspection and maintenance programs for hydro-structures.*
- iii. Put in place a national dam security strategy and plan in collaboration with the national security institutions in order to avert any malicious attacks on dams.*

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7. POLICES ON CROSSCUTTING ISSUES

7.1. Capacity building

1. Put in place a long-term and comprehensive institutional and human capacity development plan and strategy for the water sector at all levels.

Strategies:

- i. *Strengthen and expand the capacity of the existing water training institutions like the Ethiopian Water Technology Institute (EWTI) and others.*
 - ii. *Strengthen the strategic orientation and coordination capacity of the national universities, and EWTI to ensure a demand-driven skills planning mechanism that caters for short-, medium- and long-term sector needs.*
2. Device appropriate strategies for the development and enhancement of local capacity in water resources development and management.

Strategies:

- i. *Finding, engaging, harnessing and developing un-utilized or under-utilized capacity in the sector, including tracing past graduates and recognition of prior learning for semi-skilled artisans and professionals.*
 - ii. *Provide tailor-made capacity support for the private sector involved in water resources development and management.*
3. Enhance the capacity of the water sector through and linkage with industries, learning and research institutions.

Strategies:

- i. *Strengthening partnerships for innovation between role players along the skills pipeline (TVETs, colleges and HEIs), public, private providers, and workplaces, and between local and international providers (in areas where Ethiopia does not have the relevant expertise).*
 - ii. *Strengthen and promote national water research capacity.*
4. Build national policy and institutional set-up review, reform and implementation capacity on sustainable basis.

Strategies:

- i. *Develop management capacity needed to support good water governance in all water institutions.*
- ii. *Strengthen the existing mechanisms and processes for the EWTI to provide strategic sector leadership in capacity building and training.*
- iii. *Establish a sector supported institutional model for the effective coordination of institutional capacity building, education, training and skills development (formal and informal).*

7.2. Research

1. Ensure that national water research capacity is progressively built.

Strategies:

- i. *Establish "National Water Resources Research Centre" (NWRRC) with facilities and professional staff.*
- ii. *Develop a comprehensive multi-disciplinary National Water Research Roadmap/strategic Plan that guides the water research undertakings in the sector.*
- iii. *Develop centers of excellence in water research across the country that considers the specific needs and priorities of the different basins.*
- iv. *Develop thematic research areas that consider the global development agenda and climate compatible approaches.*
- v. *Support the establishment of the Ethiopian Water Research Society and actively engage them in national water researches.*

2. Ensure adequate financial resource for water research.

- i. *Establish water research fund and encourage water sector stakeholders to contribute to research and development.*
- ii. *Apply small levy on all water services to have improved and sustainable funding for water research.*

3. Ensure that research priorities and undertakings address water resources development and management challenges.

Strategies:

- i. *Align water research undertakings with sectoral plans.*
- ii. *Regularly evaluate the state of water research undertakings in the sector with the objective of ensuring their alignment with the challenges in water resources development and management.*
- iii. *Establish an effective mechanism to ensure information flow between the water sector development actors and the research institutions.*
- iv. *Promote strategic and problem solving research in water sector.*

4. Promote knowledge management in water research undertakings.

Strategies:

- i. *Develop mechanisms to ensure that water research outputs are well documented, accessible and beneficially applied to improve water resources development and management drawbacks.*
- ii. *Promote the effective transfer of knowledge and ensure the linkage between research and development.*

iii. *Employ appropriate knowledge management technologies and tools to document and share research findings.*

5. Promote coordinated and effective water research.

Strategies:

- i. *Develop a protocol for water research collaboration and partnerships between national and international institutions.*
- ii. *Encourage joint research among different national and international researchers, universities, and other learning institutions.*
- iii. *Establish partnership and collaboration between NWRRC and international water research institutions.*

7.3. Technology Transfer

1. Promote the transfer and adaptation of appropriate technologies in the water sector.

Strategies:

- i. *Develop standards for water technologies based on economic, social, environmental and sustainability factors.*
- ii. *Enable local enterprises to acquire technology from abroad through various channels of technology transfer and ensure that the transferred technology contributes to innovation capability-building.*
- iii. *Promote effective utilization of mobile technology and satellite imagery in water resource monitoring, compliance monitoring and enforcement procedures.*
- iv. *Regularly evaluate the performance of adopted water technologies and inform the sector.*
- v. *Put in place procedures for customization and successful transfer, adaptation and assimilation of imported technologies to the local circumstances.*
- vi. *Establish and foster partnerships among academics, research institutes, industries and the water sector for effective technology transfer and adaptation.*

2. Encourage the full or partial substitution of imported water technologies by local technologies.

Strategies:

- i. *Invest in building the technical skills necessary to operate and maintain imported water technologies*
- ii. *Promote local assembly and manufacturing of water technologies.*
- iii. *Provide targeted incentives for local industries that are willing to engage in water technology importsubstitution in collaboration with the concerned federal institutions,.*

7.4. Innovation

1. Encourage and support indigenous knowledge and innovation that address water resources development and management challenges.

Strategies:

- i. Develop mechanisms to support institutions engage in water related innovations.*
 - ii. Establish water innovation fund to promote innovation on water development and management challenges.*
 - iii. Support research on indigenous knowledge in water resources development and management.*
 - iv. Establish and foster partnerships among academics, research institutes, industries and the water sector development actors for effective local innovation.*
 - v. Promote innovation in the private and public sectors and support innovative pilot projects.*
 - vi. Develop incentive and recognition mechanisms for outstanding achievements in local water related innovations.*
2. Ensure standardization of water technologies.

Strategies:

- i. Conduct inventory of the main water technologies in use and update it periodically.*
- ii. Based on comprehensive research and assessment standardize the main water technologies used in the country and regularly update it.*
- iii. Ensure imported technologies are environmentally acceptable, lowcost and latest technology*

7.5. Water Information Systems

7.5.1. Data, information and knowledge generation:

1. Ensure appropriate, feasible and financially viable basin level data collection and monitoring system for climate, surface water resources, groundwater resources, water quality, and land resources among others based on the involvement of users and stakeholders.

Strategies:

- i. Upgrade and modernize the existing climate, hydrology, and water quality data collection and monitoring system.*
- ii. Expand and redesign hydrometric networks and prepare master plan for hydro-climatological observations and establish mechanisms to update with pre-defined time horizon.*
- iii. Establish new gauging stations for hydro-climatological monitoring*
- iv. Use remote sensing applications and data-product for real time monitoring of land and water resources and establish linkage with data producers.*

v. *Design a platform to involve stakeholders during the installation and application of hydrometric stations.*

2. Ensure an integrated water resources information management system with a network of monitoring systems and databases regarding water availability, actual water use, and comprehensive and reasonably reliable projections of future demands of water for diverse purpose.

Strategies:

- i. *Develop basin scale databases and information management system for water availability and actual water use across all river basins and sectors*
- ii. *Develop a system that link ground observation with central database system*
- iii. *Develop system that can be used to forecast near-future and long-term water demands per sector*

3. Ensure raw data are processed, formatted, analysed and interpreted in a form that can be understood and used by decision-makers and the end users.

Strategies:

- i. *Develop standard formats for data and information delivery to be used by decision makers and end users*
- ii. *Use appropriate tools and database systems to process and analyze hydro-metrological and water resources data.*
- iii. *Generate a hydro-metrological forecast and prediction data and information for disaster risk management.*

4. Ensure to create an enabling environment to access, develop, and allocate the water resources for multi-sectorial needs and advance development in the water sector while guaranteeing equity, efficiency and environmental integrity.

Strategies:

- i. *Develop water allocation models for each river basin.*
- ii. *Make use of data and information to develop strategic water resource development plan that ensure IWRM.*
- iii. *Develop basin performance indicators and conduct user satisfaction survey.*
- iv. *Improve water use efficiency through real time monitoring and updated information.*
- v. *Generate river basin atlas indicating spatial distribution of resources and demand centers.*
- vi. *Establish reservoir operational management systems for optimal water resource utilization.*
- vii. *Produce climate change related information to facilitate adaptation and create resilience.*
- viii. *Support aquatic ecosystem protection through reliable environmental database system.*
- ix. *Conduct regular collection and archiving for environmental and socio-economic data and ensure their Integration into water resources database for efficient water resources management.*

7.5.2. Data and information access, security and dissemination

1. Ensure data and information assets are accessible to user with the required quality, timeliness, and protected against misuse.

Strategies:

- i. Develop quality assurance framework for water data and information.*
 - ii. Establish mechanisms to control misuse of water data and information.*
 - iii. Develop web-portal and online system for data access and acquisition.*
 - iv. Enhance data discovery through publishing meta data on portals.*
2. Ensure establishing a state of the art information and decision support system promoting exchange of data, information, and knowledge among various agencies while establishing classifications, cods, protocols and standards for national and international exchanges.

Strategies:

- i. Establish transparent platform for data and information dissemination.*
 - ii. Establish national decision support system that integrate all sector's data and information*
 - iii. Develop protocols and policy for exchange of data and information among internal and external stakeholders.*
 - iv. Develop secured systems in disseminating hydro-meteorological data and information of trans-boundary nature.*
3. Ensure maximum security, access control, and authorization of data, information, and knowledge during data collection and processing, generating information, knowledge management, and information communication.

Strategies:

- i. Establish secure information management platform for data processing and communication.*
- ii. Establish information management system that apply hierarchical authorization and approval.*
- iii. Guarantee local ownership of technologies or systems in managing water resources data and information.*

7.5.3. System Development

1. Establish Information technology platforms for collection, storage, processing, modeling and dissemination of various water resources data, information, and knowledge at national and basin level.

Strategies:

- i. Establish national water data and information archiving and storage system*
- ii. Make use of state of the art information technology systems (software and hardware) for data processing, modeling, and dissemination*
- iii. Use modern tools and high resolution data for geo-spatial and water resources analysis*

2. Ensure the development and design of the Ethiopian Water Resources Information System (EWRIS) in an integrated and coherent manner.

Strategies:

- i. Establish national Water Resources Information Centre*
 - ii. Establish a system that guarantee institutional and system sustainability and longevity*
 - iii. Develop a system that inter-link region's water information system and databases*
 - iv. Establish basin-wide water accounting and auditing system that:*
 - a) Perform scheduled water accounting and auditing in critical river basins and large scale water users*
 - b) Enforce water users to submit water and water related data and information they extracted and registered during development and operation of hydro-infrastructures*
3. Ensure national standards for hydro-meteorological network establishment is developed and sustainability of the network system is guaranteed.

Strategies:

- i. Prepare standards and code of practices for site selection and use of technology for hydrometric and meteorological network design,*
 - ii. Apply service charges for hydrological and meteorological data delivery.*
 - iii. Establish economic and technical frameworks to sustain and value ground monitoring systems.*
4. Promote and assist water institutions and regions in the development of appropriate legislation, manuals, guidelines, and supporting infrastructures for generating and sharing water data and information.

Strategies:

- i. Develop guidelines for collection and sharing of water data and information that serve as national standards.*
- ii. Provide capacity development activities to similar institution across the country.*

7.6. Climate Change Mitigation and Adaptation

Climate change mitigation and adaptation should be mainstreamed in all water sector development and management undertakings, planning and management of water resources structures, such as dams and flood embankment should incorporate coping strategies for possible climate changes. Combat climate change by adopting and promoting mitigation and adaptation activities, strategies and preparedness measures at all levels.

Strategies:

- i. *The distortion of the water cycle including the increase in variability of precipitation because of climate change should be addressed by rain water harvesting, increasing water storage in its various forms including soil moisture, ponds, and groundwater magazines, small and large reservoirs.*
- ii. *Strengthen the ability of communities to deal with impacts of too much and too little water and build resilience through disseminating climate change adaptation information, enhance water conservation behaviour, technological options and ensuring financial mechanisms.*
- iii. *Encourage existing irrigation and drainage systems to adjust their engineering facilities, technical approaches and management strategies to respond climate impacts.*
- iv. *Encourage adoption of Water-Saving Irrigation (WSI) to improve water use efficiency and productivity focusing on reducing water losses.*
- v. *Promote multiple uses of water systems aims at maximizing the benefits of water systems through diversified services, including irrigation and drainage, hydropower, generation, fishery and aquaculture, navigation and culture and ecosystem conservation.*
- vi. *Encourage Climate-Smart Agriculture system through improved water management.*
- vii. *Adopt Climate-Smart Planning in water resource projects to reduce future climate risks.*
- viii. *Preserve and protect aquifers to reduce the risk of short-term water shortage and increase water security through Managed Aquifer Recharge (MAR).*
- ix. *Promote joint management of surface and groundwater to boost resilience to drought and address water scarcity.*
- x. *Conserve, maintain or rehabilitate wetland and wetland ecosystem to play buffering against flooding or other extreme events.*
- xi. *Reduce urban and rural exposure through engaging communities in integrated planning, risk management and early warning system.*
- xii. *Adopt Nature Based Solution use or mimic natural process to enhance water availability (e.g. soil moisture retention, groundwater recharge and constructed wetlands, riparian buffer strips), and reduce risks associated with water-related disasters and climate change.*
- xiii. *Encourage installation of energy- efficient pumps to save the energy demand in water supply and wastewater treatment.*
- xiv. *Conduct Water-energy-food nexus assessment of the independences among water, energy and food and to inform nexus-related responses in terms of strategies, policy measures, planning and institutional setup or interventions, such as how to address the competition between bio-energy development and food production for land and water resources use and Water, Energy and Food security and resource use efficiency.*

8. POLICY ON WATER SECTOR GOVERNANCE

8.1. Legal frameworks

1. Ensure the existence of appropriate and comprehensive legal instruments for effective and sustainable development and management of the water resources of the country.

Strategies:

- i. Regularly review existing laws and enact appropriate and comprehensive laws that will provide an enabling framework for sustainable and effective water resources development and management.
 - ii. Regularly review and update existing legal instruments to avoid conflicting interests and overlapping mandates among different water sector institutions and other appropriate federal and regional government bodies.
2. Ensure the development and management of all water resources should comply with appropriate legal provisions.

Strategies:

- i. Strengthen enforcement capacities of government institutions at federal and regional levels to ensure that the enacted laws are put in practice.
- ii. Provide the necessary legal instruments for penalties commensurate with the violation of legal provisions relating to water resources development and management.
- iii. Follow up and take legal action against offences committed in breach of water resources laws.

8.2. Institutional arrangements

1. Ensure the existence of appropriate institutional arrangement that enhances integrated water resources management.

Strategies:

- i. Strengthen existing basin institutions and establish new ones, as appropriate and deemed necessary, to ensure integrated and sustainable development and management of the country's water resources.
- ii. Develop appropriate institutional arrangements for each basin institution with particular focus on water information management, stakeholders' engagement, water quality monitoring, surface and groundwater management and basin planning.
- iii. Establish horizontal coordination platforms and mechanisms for water-related institutions at all levels.
- iv. On the basis of the constitution create a conducive environment for the enhancement of linkages and partnerships between the Federal Institutions and the Regional States for the realization of efficient, sustainable and equitable water resources development and management.

2. Ascertain comprehensive institutional reform that ensures stability and continuity in the water sector.

Strategies:

- i. *Periodically review the mandates of all water sector institutions and redefine their respective roles, as necessary, to ensure efficient and effective institutions commensurate with changing needs and priorities.*
- ii. *Regularly review the human resources development and management plan and practices to attract and retain skilled manpower.*

3. Ensure water resource development and management institutions are efficient and effective at all levels.

Strategies:

- i. *Decentralize water resources management mandates in ways that efficiently and effectively support responsibilities at the basin, regional and local levels.*
- ii. *Develop services that are readily accessible, timely, efficient, effective, and of the highest quality.*
- iii. *Employ leading-edge technology and staff development strategies to achieve service excellence.*

4. Ensure proper institutional arrangement and capacity to manage water infrastructures, schemes, and facilities for sustainable, equitable and effective service provision.

Strategies:

- i. *Promote clustering approach in water schemes or infrastructure management to ensure economic viability, effective service delivery and sustainable management.*
- ii. *Allocate adequate resources to strengthen the asset management and service provision capacity of water institutions.*

8.3. Stakeholders' Engagement

1. Ensure active and meaningful participation of relevant stakeholders at all levels and in all aspects of water resources development and management.

Strategies:

- i. *Provide appropriate legal framework and venue to ensure the active and meaningful participation of all stakeholders in water resources development and management.*
- ii. *Apply participatory approaches in water resources project identification, planning, implementation, operation and maintenance, monitoring and evaluations.*
- iii. *Conduct regular multi-stakeholder analysis in the water sector and accordingly use it to ensure stakeholders active engagement.*
- iv. *Involve stakeholders in decision-making in water resources projects management from inception to completion.*

- v. *Support community self-initiatives and direct involvement in water resources development.*
 - vi. *Involve the user community in water resources and services management to assure the quality and sustainability of services provision.*
 - vii. *Enhance and encourage the devolution of water resources and infrastructure management responsibilities to appropriate stakeholders.*
 - viii. *Establish units or departments within federal and regional water sector institutions that deal with stakeholders' engagement.*
2. Ensure the active and meaningful engagement of water professional associations in the sector.

Strategies:

- i. *Promote the establishment of water professional associations in the sector.*
- ii. *Establish a platform to regularly engage and collaborate with water professional associations.*

8.4. Sector Coordination

1. Ensure coordination and partnerships among key water sector stakeholders and promote sector-wide approach.

Strategies:

- i. *Promote and strengthen partnerships among community, government, private sector, and development partners by providing platforms to discuss water resources development and management issues.*
- ii. *Develop appropriate guidelines and terms of references to effectively steer sector coordination platforms.*
- iii. *Establish units or departments within federal and regional water institutions that deal with sector coordination.*
- iv. *Undertake regular sector assessments and joint sector reviews.*
- v. *Make sure the sector is managed using a sector-wide approach and incorporates a functional sector-wide stakeholder working group.*

8.5. Equity and Inclusion

1. Ensure all water resource development and management undertakings consider equity.

Strategies:

- i. *Develop guidelines, manuals and tools that enable water experts and decision-makers to incorporate equity in water project management cycle.*
- ii. *Raise awareness in equity concepts, tools and monitoring techniques.*
- iii. *Make sure water resources development undertakings are equitably distributed among regions, between rich and poor, between urban and rural populations and highland and*

lowland areas; and disparities in terms of infrastructure and access to services are progressively minimized.

- iv. Levels of subsidies per household are commensurate with available resources and affordability of services.*
 - v. Develop an accountability framework to monitor the implementation of equity in all water resources development and management undertakings.*
2. Ensure the involvement and empowerment of women, persons with disabilities and other vulnerable groups in water resource development and management.

Strategies:

- i. Apply affirmative actions to ensure the active participation of women, persons with disabilities and other vulnerable groups in decision making.*
- ii. Design and implement special training programs to strengthen the technical and managerial capacities of women, persons with disabilities and other vulnerable groups.*
- iii. Make sure water project preparation and appraisal processes consider social survey and detailed gender analysis to better understand the role and challenges of women, persons with disabilities and other vulnerable groups.*
- iv. Develop and disseminate appropriate guidelines, manuals and procedures that support experts and decision makers in mainstreaming gender and disability in water resources development and management.*
- v. Develop water sector gender policy and strategy and ensure effective implementation.*
- vi. Select and introduce appropriate technologies, designs and infrastructures to address the need of women and persons with disabilities.*
- vii. Develop an accountability framework to monitor the inclusiveness of all water resources development and management undertakings.*

8.6. Monitoring and Evaluation

Ensure reliable and effective water sector monitoring and evaluation system that supports decision making and forms part of the broad knowledge management and water sector information system.

Strategies:

- i. Strengthen the data collection, analysis, monitoring, evaluation and reporting capacity within the water sector.*
- ii. Strengthen water infrastructure inventory and make available the result for the public and decision-makers.*
- iii. Develop and regularly update Key Performance Indicators (KPIs) for the sector and make available information for review and use by all stakeholders.*
- iv. Develop sector monitoring and evaluation guidelines and manuals that support decision-makers and experts at all levels in the sector.*
- v. Employ appropriate data collection and processing technologies which improves the effectiveness and reliability of the monitoring and evaluation system.*

- vi. *Develop monitoring and evaluation data and report exchange mechanism among sector stakeholders.*
- vii. *Develop a mechanism to capture lessons and knowledge acquired in the sector and ensures its utilization at all levels.*

8.7. Water Project/programme management

1. Ensure that project/programme results are achieved at minimal risk to stakeholders.

Strategies:

- i. *Conduct a comprehensive and meticulous water project and programme planning and designing supported with adequate feasibility studies.*
 - ii. *Follow a participatory approach by actively engaging key stakeholders in project/programme planning exercise.*
 - iii. *Strengthen water project/programme management systems at Federal and Regional levels.*
 - iv. *Make sure water project/programme planning, design and implementation consider environmental and social aspects and comply with relevant environmental laws, policies, regulations and procedures (including environmental impact assessments (EIAs) and social safeguards).*
 - v. *Develop and use national standards and code of practices for design, construction, installation, operation management and maintenance of water resources development projects/programmes.*
 - vi. *Develop proper project/programme monitoring and evaluation systems that provide adequate and reliable information for decision making.*
 - vii. *Conduct regular independent audit, including value-for-money or comprehensive audit.*
 - viii. *Make sure water project/programme outcomes are achieved within time and cost constraints.*
 - ix. *Make sure all water resources projects/programme planned to the extent feasible as multi-purpose projects/programmes with provision of storage to derive maximum benefit from available topology and water resources.*
2. Ensure effective, efficient and transparent contract management across all water sector projects/programmes.

Strategies:

- i. *Strengthen the contract management capacity of the government at all levels.*
- ii. *Develop detailed contract management guidelines, manuals and procedures.*
- iii. *Enhance the capacities of local consultants and contractors through the development of training programs and other capacity building interventions.*
- iv. *Employ different contract management software and tools.*
- v. *Make sure the engagement of different levels of national and /or foreign consultancy & construction services based on adequate experience, qualifications, equipment & facilities.*
- vi. *Promote sound stewardship of Project/programme funds.*
- vii. *Develop project/programme quality control mechanisms and strategies.*
- viii. *Put in place transparent accountability mechanism for Project/programme outcomes.*

9. WATER SECTOR FINANCING

9.1. Government financing

1. Ensure the Government earmarks adequate financial resources for water sector development and management.

Strategies:

- i. *Develop a strong business case for water sector investment and accordingly lobby the concerned government organs.*
 - ii. *Regularly conduct investment needs assessments and investment plan for the sector.*
 - iii. *Prepare strategic water resources development and management projects/programmes relevant to the overall socio-economic development plan of the government.*
2. Ensure effective and efficient public financial resources utilization in the sector.

Strategies:

- i. *Undertake proper financial planning and budgeting by forecasting the funding requirements.*
 - ii. *Regularly review and maintain a strong financial control system.*
 - iii. *Strengthen financial management capacity in the water sector at all levels.*
 - iv. *Conduct proper value for money analysis for major water sector investments.*
3. Ensure the self-reliability of public water financing institutions and waterworks enterprises to address strategic financing gaps in the sector.

Strategies:

- i. *Facilitate access to revolving funds and concessional loans.*
 - ii. *Build the institutional and technological capability of water financing institutions and water works enterprises.*
 - iii. *Create enabling environment for public financing institutions and waterworks enterprises to expand their scope and work.*
4. Ensure sustainable water financing through cost recovery, to the extent possible (full or partial).

Strategies:

- i. *Develop water pricing strategy which considers the specific requirements of the poor and the vulnerable groups in the form of social tariff, direct subsidy or cross-subsidy.*
- ii. *Develop appropriate laws, procedures and guidelines for water tariff setting and collection and put in place the necessary institutional capacity.*
- iii. *Make sure water tariff are reasonable to endusers and sufficient for recovery of costs.*
- iv. *Make sure water tariff setting and revision are site-specific, depending on the particulars of the project, location, the users, the cost and other characteristics of the schemes or water source.*

- v. *Conduct periodic willingness and ability to pay study and accordingly revise water tariff.*
 - vi. *Communicate transparently and timely water tariff and charges revision to the customers or the public at large.*
5. Ensure adequate revenue is collected from water abstraction and licensing charges to finance water resources management undertakings.

Strategies:

- i. *Strengthen the water charge collection system in all the basin institutions.*
- ii. *Reinvest the revenue collected from water abstraction charges into water resources management.*

9.2. Community financing

Ensure appropriate community contribution to water resource development and management undertakings.

Strategies:

- i. *Develop national guideline on community contribution and accordingly apply it in all water resources development and management projects/programmes.*
- ii. *Actively engage community associations, cooperatives and other self-help groups in water resources financing.*

9.3. Development Partners (DPs) and NGOs financing

Ensure that DPs and NGOs provide funding for water conservation and protection, operation and maintenance, rehabilitation and renewal of existing assets as well as capacity building.

Strategies:

- i. *Prepare detailed water sector investment plans as part of the national development planning and budgeting process.*
- ii. *Develop a resource mobilization strategy for the sector with clear priorities and financing needs.*
- iii. *Regularly avail water sector financing information and properly communicate it to DPs and NGOs.*
- iv. *Strengthen coordination mechanisms with DPs and NGOs.*
- v. *Strengthen pooled and coordinated financing mechanisms for DPs and NGOs.*

9.4. Private sector financing

Enhance private sector financing in water resources infrastructure development and management.

Strategies:

- i. *Create an enabling environment for local Banks, and Micro Financing Institutions (MFIs) to invest in the water sector.*

- ii. Promote Public Private Partnership (PPP) in the water sector and develop appropriate mechanism to leverage private sector technical and managerial expertise, as well as finance for the development and management of the water sector and associated services.*
- iii. Establish an appropriate and effective regulatory and management framework for PPP so as to ensure adequate performance-based service delivery, maintenance, rehabilitation and extension works.*
- iv. Develop bankable water sector project proposals.*

10. MONITORING AND EVALUATION OF THE NATIONAL WATER POLICY

The Ministry of Water, Irrigation and Energy is responsible for promoting the National Water Policy and accordingly monitoring and evaluating its implementation. It is also responsible for ensuring the alignment of regional level water resources development and management undertakings with the National Policy and strategy.

The goal of policy monitoring and evaluation is to track implementation progress and assess impacts on the overall socio-economic development of the country and accordingly revise the policy as needed.

For effective monitoring and evaluation of the National Water Policy and Strategy, the Ministry shall:

1. Develop and implement appropriate policy monitoring and evaluation system and plan.
2. Regularly collect, compile and analyze information on the implementation of the policy provisions.
3. Allocate adequate resource for policy monitoring and evaluation.
4. Organizing regular stakeholders meetings to review progress and bottlenecks

The National Water Policy and Strategy will be revised as necessary, based on the findings of the policy monitoring and evaluation.