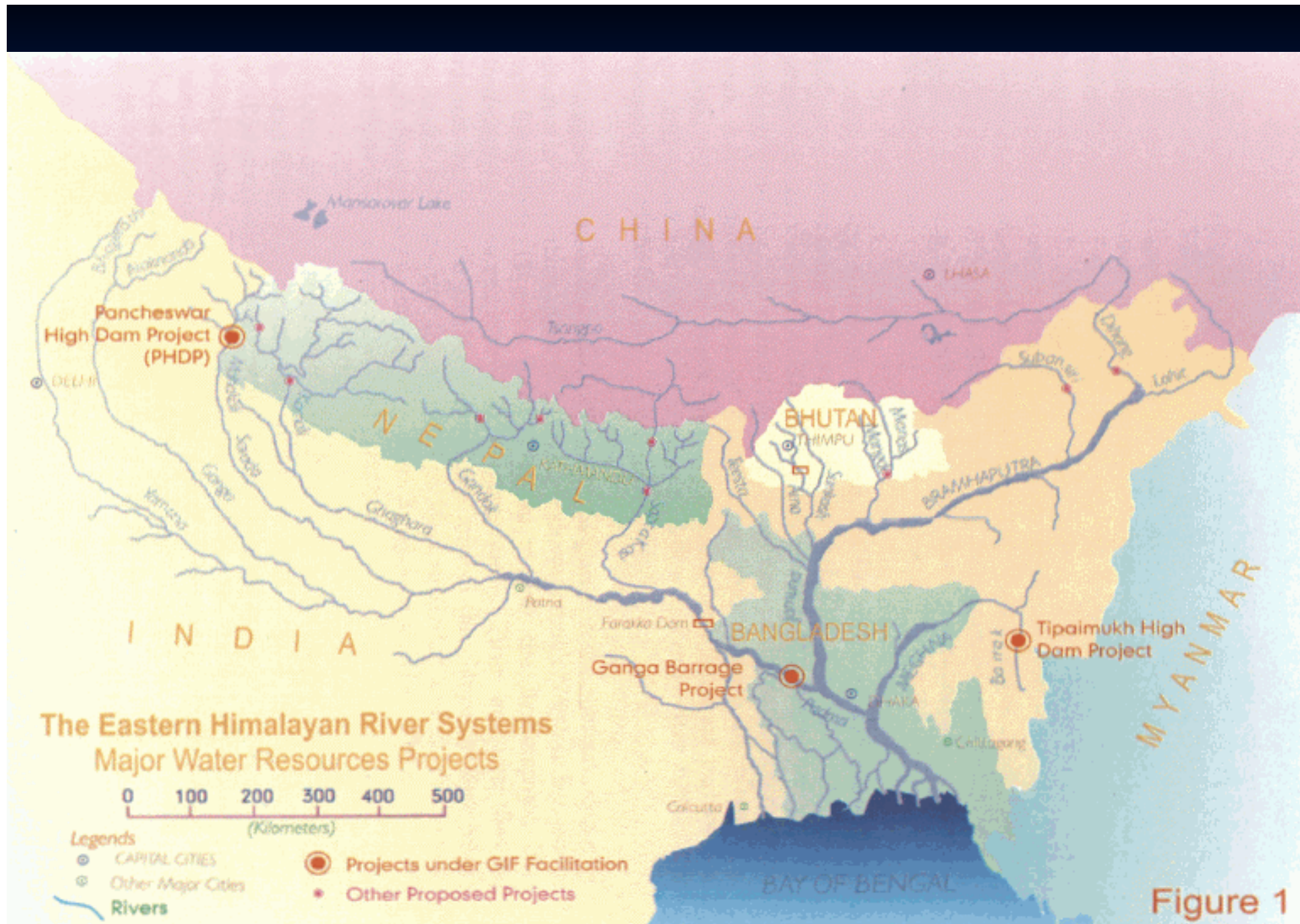


Flood Risk Management and IWRM in Nepal

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Map 7: IMPORTANT RIVER BASINS OF NEPAL



Prepared by: M. D. Acharya
 WECS, GIS/RS Unit, 2002

Note: Boundaries, features and value of basin areas shown in this map may not match with the authentic official map

26.25°N

National IWRM Plan:

- Describes the current way in which water resources development and management decisions are made and actions taken.
- Outlines where the country wants to be in the future in terms of decisions made and actions taken to solve problems.
- Maps up how it plans to move from where it is now to where it wants to go, with milestones and time frames
- (GWP, IWRM Guidance, February 2004)

Nepal Water Resources Strategy

(approved by the Cabinet: January 9, 2002)

- Project: Water Resources Strategy Formulation Project
- Identification and analysis of issues (Phase I: 1995-1996)
- Formulation of strategy options and a preferred strategy (Phase II: 1999-2001)
- Preparation of an action-plan to implement the strategy (Phase III: on-going)
- Financial resources:
 - His Majesty's Government of Nepal
 - Japan Grant Fund of the World Bank
 - CIDA grant of Canada
 - The World Bank's NISP credit

Nepal Water Resources Strategy

(approved by the Cabinet: January 9, 2002)

- Professional inputs:
- Nepalese professionals supported by consultants and experts from the U.S., Canada and the World Bank
- Participatory process:
- 1997: National workshop on Phase I draft report
- 1999: National workshop to solicit comments on Phase II proposal
- 2000: Regional workshops on Phase II draft report (Eastern, Central, Mid-Western and Western regions)
- 2001: National workshop on the draft WRS document (draft circulated to 400 stakeholders)
- 2003: National workshop on the draft plan of action

Table 5.1
Summary of Strategy Outputs

GOAL		LIVING CONDITIONS OF NEPALI PEOPLE SIGNIFICANTLY IMPROVED IN A SUSTAINABLE MANNER			
TIMEFRAME		5-Year Strategy	15-Year Strategy	25-Year Strategy	
PURPOSE		The comprehensive Water Resources Strategy implementation providing tangible benefits to people in line with basic needs fulfillment, supported and managed by capable institutions of all stakeholders	Water Resources Strategy operationalized to provide substantial benefits to people for basic needs fulfillment as well as other benefits supported and managed by capable institutions of all stakeholders.	Sustainable benefits of water use to Nepal maximized	
OUTPUTS	SECURITY	1. Disaster Management	Institutional capabilities enhanced to manage water-induced disasters	Effective measures adopted to manage water-related disasters and mitigate their adverse effects	Effective water induced disasters management systems are functional
		2. Environment	Institution strengthened for watershed and ecosystem protection / management	Full scale watershed/aquatic ecosystems activities implemented	Watersheds and Aquatic ecosystems managed sustainably
	USERS	3. Water Supply	Access to water supply and sanitation expanded / enhanced	With increasing sanitation and drinking water coverage, service level and quality improved	Adequate supply of and access to quality potable water, sanitation and hygiene awareness provided for all people
		4. Irrigation	Irrigation systems planned, developed and continued for sustainable management.	Reliable irrigation service expanded on the basis of sustainability and wealth creation	Appropriate and efficient irrigation available for the optimal use of irrigable land in a sustainable manner
		5. Hydropower	Hydropower developed for domestic needs and viable exports	Hydropower development maximized for different uses (including energy intensive industries and export of power) providing substantial benefits	Hydropower optimally developed
		6. Other Economic Activities	Economic activities for fisheries, aquaculture, recreation, tourism, navigation, and industrial water uses implemented	Economic uses of water and water bodies by recreation, tourism, fisheries, aquaculture navigation and industries enhanced	Economic uses of water and water bodies by recreation, tourism, fisheries, aquaculture navigation and industries optimized
	MECHANISMS	7. Information Systems	Functional water-related information & Dissemination system strengthened/ established	Water-related information/ dissemination system functioning	Water-related information systems enhanced
		8. Policy & Legal	Appropriate policy and legal framework including equitable water use rights established	Adequate legal framework functioning	Adequate legal framework functioning and adopting to changing circumstances
		9. International Cooperation	Regional/ bilateral cooperation framework/ norms operationalized	Effective mechanism for regional/ bilateral cooperation functioning	Regional/bilateral cooperation for substantial mutual benefits achieved
		10. Institutional Mechanisms	Appropriate institutions established / activated	Institutional mechanism for integrated water management functioning	All institutions functioning efficiently in tune with changing circumstances

Note: The long-term Water Resource Strategy envisions a continuous process with some thresholds in between. Broadly speaking, the 5-year strategy is oriented towards fulfillment of basic needs of people, the 15-year strategy is for consolidation of sub-sector programs for maximization of these benefits and the 25-year strategy is for their optimization.

Output 1: Water Induced Disaster Management

Goal	Living Condition of Nepali people significantly improved in a sustainable manner		
	5-Year Strategy	15-Year Strategy	25-Year Strategy
Purpose	The Comprehensive Water resources Strategy implementation found providing tangible benefits to people in line with basic needs fulfillment, supported and managed by capable institutions of all stakeholders	The comprehensive water resource strategy implementation found providing substantial benefit to people in fulfillment of their basic needs as well as realization of other increased benefits of water use in a sustainable manner	Sustainable benefits of water use to Nepal maximized
Outputs	1. Institutional capabilities enhanced to manage water induced disasters	1. Effective measures adopted to manage water related disasters and mitigate their adverse effect	1. Effective water induced disasters management systems are functional
Indicators	<ul style="list-style-type: none"> . Lead agency designated for disaster prevention activities by 2002 with clearly defined tools for all government, non-government as well as private institution . Emergency Relief Materials available in all 5 regions by 2007 . Potential disaster zones identified by type and located in district maps by 2007 . Government commitment and public awareness increased by 2007 . Regulations and guidelines established by 2007 	<ul style="list-style-type: none"> . Warning systems established and functioning . Infrastructure for predictable disasters put in place by 2017 in 20 districts 	<ul style="list-style-type: none"> . Alleviation / reduction of damage / loss of life due to prevention measures by 2027 . Increased effectiveness of warning systems and reduced damages / loss by 2027

Output 1: Water Induced Disaster Management

Goal	Living Condition of Nepali people significantly improved in a sustainable manner		
	5-Year Strategy	15-Year Strategy	25-Year Strategy
Purpose	The Comprehensive Water resources Strategy implementation found providing tangible benefits to people in line with basic needs fulfillment, supported and managed by capable institutions of all stakeholders	The comprehensive water resource strategy implementation found providing substantial benefit to people in fulfillment of their basic needs as well as realization of other increased benefits of water use in a sustainable manner	Sustainable benefits of water use to Nepal maximized
Outputs	1. Institutional capabilities enhanced to manage water induced disasters	1. Effective measures adopted to manage water related disasters and mitigate their adverse effect	1. Effective water induced disasters management systems are functional
Major Activities	<p>1.1 Prepare and implement water related disaster management policy and plan</p> <p>1.1.1 Formulate disaster related laws/regulations/guidelines</p> <p>1.2 Conduct risk/vulnerability mapping & zoning (floods, landslides, debris flood, GLOFs)</p> <p>1.2.1 Make inventory of potential risk areas (disaster database)</p> <p>1.3 Strengthen disaster networking and information system</p> <p>1.3.1 Initiate warning systems on critical rivers/slopes</p> <p>1.4 Establish disaster relief and rehabilitation system at agency/ community level</p> <p>1.5 Carryout community awareness/education on disaster management</p> <p>1.6 Activate inundation committee with respect to neighboring countries</p> <p>1.7 Prepare and implement floodplain management plans.</p> <p>1.8 Implement disaster reduction/mitigation measures</p> <p>1.9 Strengthen institutional setup and capacity</p>	<p>1.1 Implement recommended plan of action</p> <p>1.2 Implement the laws/ regulations/ guidelines</p> <p>1.3 Continue risk/vulnerability mapping and zoning</p> <p>1.4 Update inventory of potential risk areas</p> <p>1.5 Prepare flood plain management plan for Critical rivers</p> <p>1.6 Extend rehabilitation system at agency/community level</p> <p>1.7 Expand Institutional set up</p> <p>1.8 Continue to raise awareness and education</p> <p>1.9 Implement flood plain management plan</p>	<p>1.1 Implement action plan</p> <p>1.2 Update laws / regulations/ guidelines</p> <p>1.3 Extend risk mapping to cover the hazardous areas in the country</p> <p>1.4 Review inventory of potentially risk areas</p> <p>1.5 Implement flood plain management plan</p> <p>1.6 Implement rehabilitation plans in the country</p> <p>1.7 Extend institutional set up in whole country</p> <p>1.8 Continue to raise community awareness</p>

Figure 7.1
Nepal's Water Sector Investment Requirements

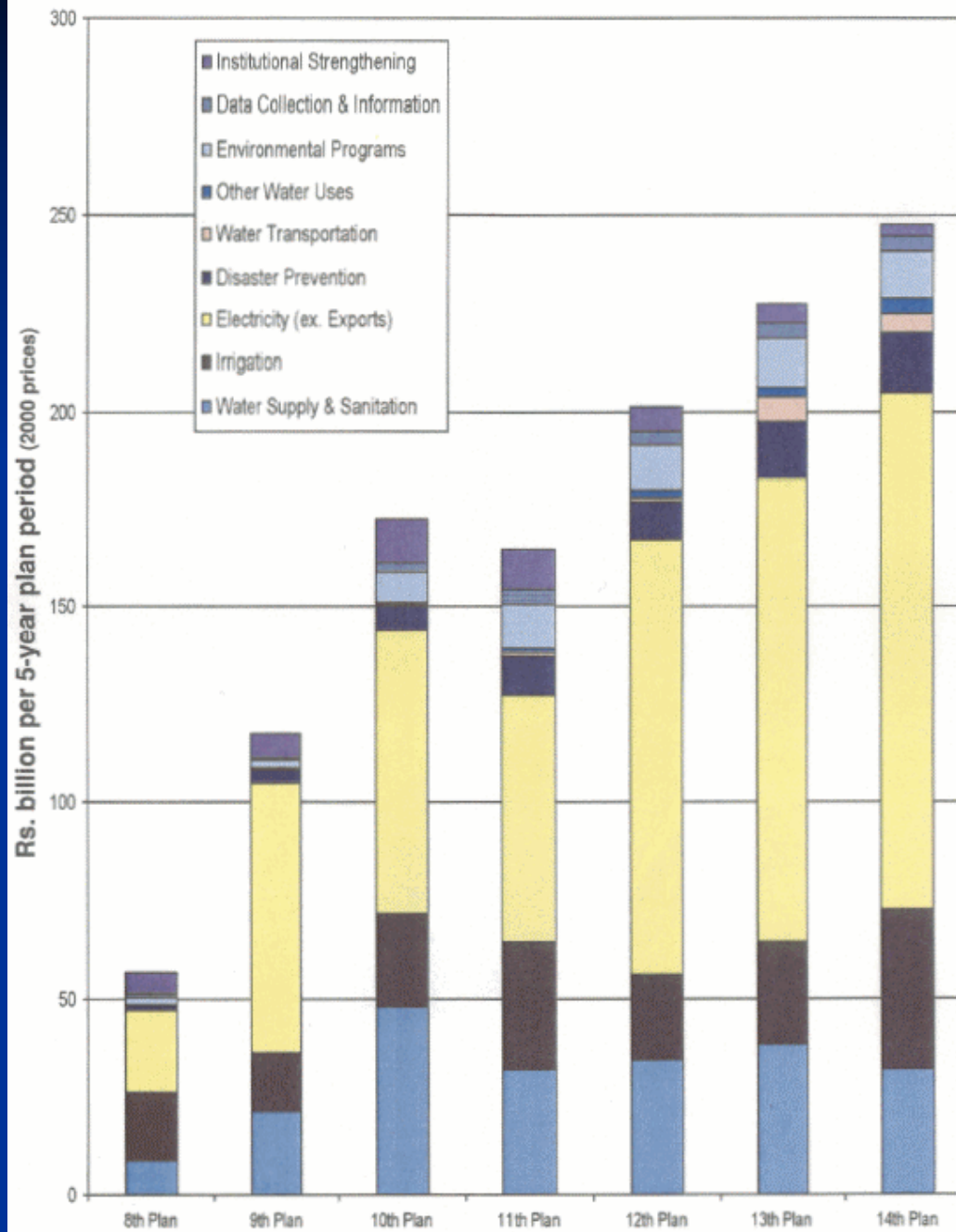
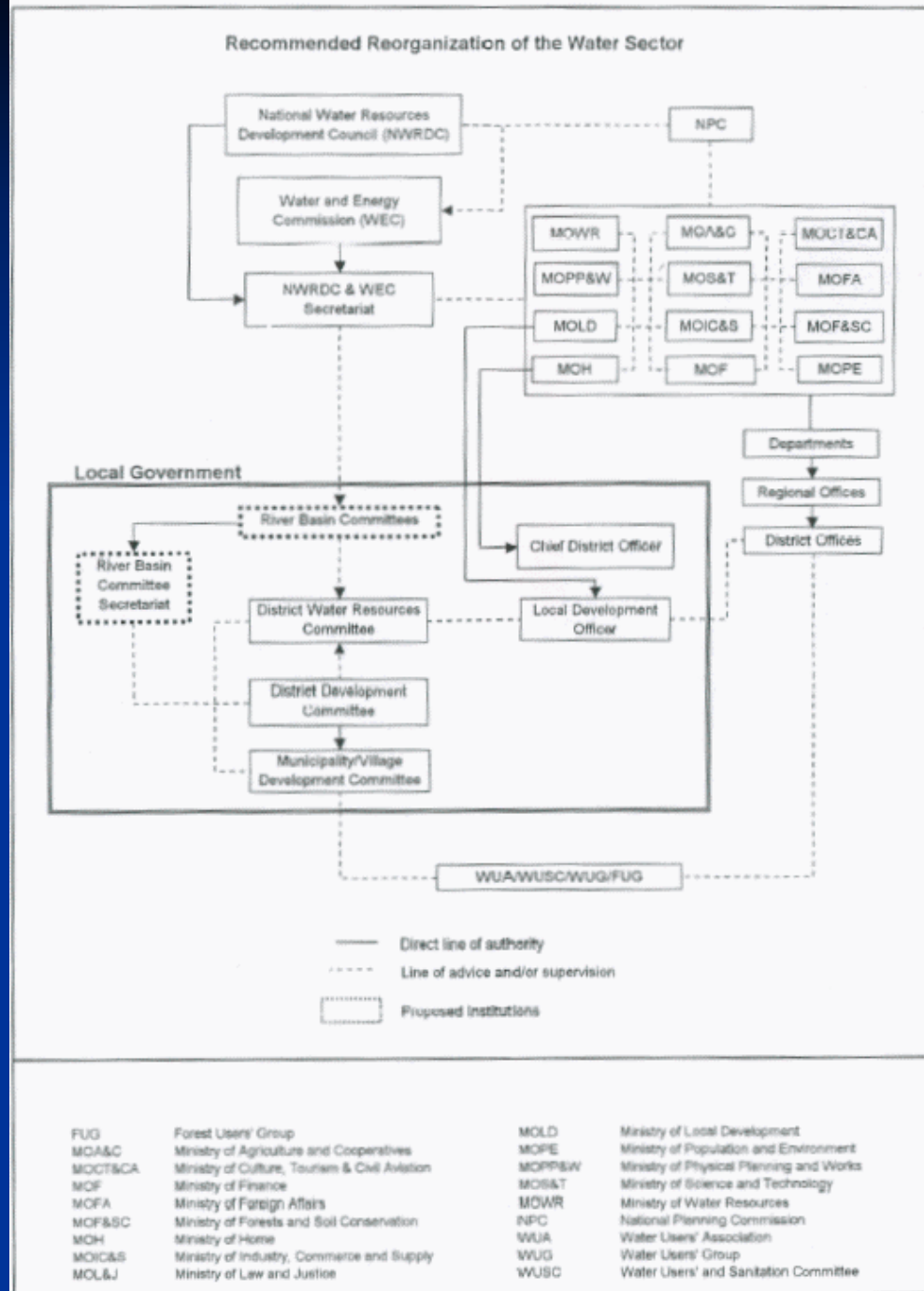


Figure 6.1



IWRM:

- is the management of surface and subsurface water in a qualitative, quantitative and environmental sense from a multidisciplinary and participatory perspective. There is a focus on the need and requirements of society at large with regard to water at the present and in the future, thus aiming at maximum sustainability in all senses.
- (Frank Jaspers, World Water Council's Water Policy, 5, 2003)

Integrated River Basin Management:

- can be understood as the management of all surface and subsurface water resources of the river basin in its entirety with due attention to water quantity, water quality and environmental integrity. A participatory approach is followed, focusing on the integration of natural limitations with all social, economic and environmental interests.
- **(Frank Jaspers, World Water Council's Water Policy, 5, 2003)**

IWRM

- is an approach towards an end, rather than an end itself.
- IWRM is incremental and builds on what already exists.
- On the natural system front, IWRM might involve integration of land and water management, of surface water and ground water management, of quantity and quality, and of upstream and downstream water related interest.
- And, on the human system front, IWRM might involve ensuring that policies and priorities take account of water resource implications, that there is integration across the sectors in policy development, and that macroeconomic effects of water resource development are properly accounted for.
- (GWP, IWRM Guidance, February 2004)