

# **LAC WATER ENVIRONMENT**

## **WATER QUANTITY AND DISTRIBUTION**

**MOST HUMID REGION IN THE WORLD  
RELATIVE ABUNDANCE**

## **HIGHLY CONCENTRATED ECONOMIC ACTIVITY**

**URBANIZATION PROCESS  
METROPOLITAN AREAS  
POLLUTION PROBLEMS**

## **INSTITUTIONAL TRANSFORMATION**

**DECENTRALIZATION  
PRIVATE SECTOR PARTICIPATION**

## **CONFLICTING WATER USES**

**WATER SUPPLY  
IRRIGATION  
HYDROPOWER**

# **WATER MANAGEMENT EXPERIENCE**

## **SECTORAL APPROACH**

WATER ABUNDANCE  
SINGLE-PURPOSE LARGE PROJECTS  
WEAK WATER RESOURCES ASSESSMENT

## **WATER PLANS AND LAWS**

DISPERSION OF ROLES  
ADMINISTRATIVE ARRANGEMENTS FOR  
CENTRAL COORDINATION  
CENTRALIZATION OF AUTHORITY

## **NEW AND INNOVATIVE SCHEMES FOR WRM**

RIVER BASIN APPROACH  
WATER MARKETS  
POLLUTION AND USER FEES  
MASTER PLANS

## WATER PLANS IN THE REGION (dates)

COUNTRY	NATIONAL WATER PLAN		SECTORAL WATER PLANS		
	INITIATED	PUBLISHED	HYDROELEC	IRRIGATION	WS&S
ARGENTINA	1986	---	1979		
BRAZIL			1980	1982	
COLOMBIA	1982	---	1979		d.n.a.
CUBA	1970	---			
ECUADOR	1982	---	1980	1979	1980
EL SALVADOR	1979	1983			
HONDURAS	1979	1979		1978	
JAMAICA	1984	---			
MEXICO	1972	1975			
PERU	1977	---	1979	d.n.a.	
VENEZUELA	1968	1972			

d.n.a.: indicates the existence of a water plan which starting date is not known.

Panamá and Paraguay both have prepared irrigation water plans in 1990 and 1982

Source: ECLAC, los Recursos Hídricos de América Latina y el Caribe: Planificación, Desastres y Contaminación

## VOLUME OF TOTAL WATER USE BY CONTINENT

CONTINENT	MEAN ANNUAL RUNOFF (Km <sup>3</sup> )	WATER USE (Km <sup>3</sup> )		WATER USE (% RUNOFF)	
		1970	2000	1970	2000
		FULL	FULL	FULL	FULL
Europe	3,210	320	730	10.0	23.0
Asia	14,410	1,500	3,200	10.4	22.7
Africa	4,570	130	380	2.8	8.3
N. America	8,200	540	1,300	6.6	15.8
S. America	11,760	70	300	0.6	2.6
Australia	2,390	23	60	1.0	2.5
Total	44,540	2,600	6,000	6.8	13.0

Source: UNDTCD, Integrated Water Resources Planning, 1991.  
North America includes Mexico, Central America and the Caribbean.

## WATER BALANCE DATA BY CONTINENT

MEASURE	CONTINENT						
	NORTH AMERICA	SOUTH AMERICA	EUROPE	ASIA	AFRICA	AUSTRALIA	GLOBE (LAND)
AREA (millions km <sup>2</sup> )	24	18	10	44	30	9	146
PRECIPITATION (mm/year)	645	1,564	657	696	686	803	834
EVAPORATION (mm/year)	403	946	375	420	382	534	540
TOTAL RUNOFF (mm/year)	242	618	282	276	114	269	294
POPULATION (millions 1985)	264	405	492	2,818	555	25	4,559
RUNOFF (m <sup>3</sup> /person-day)	62	70	17	13	21	215	23

North America includes Mexico, Central America and the Caribbean

Global figures do not include the Polar Zone

Sources: UNESCO 1978, Charley 1969, van der Leen 1975, and Speidel et al. 1988.

# **BANK INVOLVEMENT IN BRAZIL WRM DEVELOPMENT**

## **WATER QUALITY AND POLLUTION CONTROL PROJECT**

### **GUARAPIRANGA RESERVOIR (SAO PAULO)**

WATER SUPPLY SOURCE PROTECTION  
LAND USE PLANNING AND CONTROL

### **CURITIBA METROPOLITAN (PARANA)**

FLOOD CONTROL  
DOMESTIC POLLUTION CONTROL

### **NATIONAL COMPONENT**

PIRACICABA (SAO PAULO)  
JUNDIAL (SANTA CATARINA)  
MANAUS (AMAZONAS)  
RECIFE (PERNANBUCO)  
MACEIO (ALAGOAS)

### **BELO HORIZONTE METROPOLITAN (MINAS GERAIS)**

INDUSTRIAL POLLUTION CONTROL  
FLOOD CONTROL

# **CONCEPTUAL FRAMEWORK**

**NATIONAL PROGRAM**

**WATERBASIN AS A PLANNING AND  
MANAGEMENT UNIT**

**INTEGRATED APPROACH**

**MOST POLLUTED METROPOLITAN AREAS**

**ALL POLLUTANT SOURCES**

**BENEFITS AND BENEFICIARIES**

# **KEY INSTRUMENTS**

## **DESIGN AND IMPLEMENTATION OF RIVER BASIN AUTHORITY**

STUDY OF INTERNATIONAL EXPERIENCES AND DEVELOPMENT OF COMPARATIVE SCENARIOS

EARLY INVOLVEMENT OF STAKEHOLDERS IN THE DESIGN AND IMPLEMENTATION PROCESS

## **ADEQUATE PRICING POLICIES FOR RESOURCES AND SERVICES**

SURCHARGE FOR WATER USES

INCREASE PROPERTY TAXES AND APPLY BETTERMENT LEVIES

## **INTEGRATED POLLUTION CONTROL ACTIONS WITH STRONG EMPHASIS ON ECONOMIC INSTRUMENTS**

## **DEVELOPMENT OF RECREATIONAL PARKS AND OTHER LAND USE SCHEMES TO PROTECT CRITICAL AND DAMAGED AREAS AND PREVENT FUTURE OCCUPATION**



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