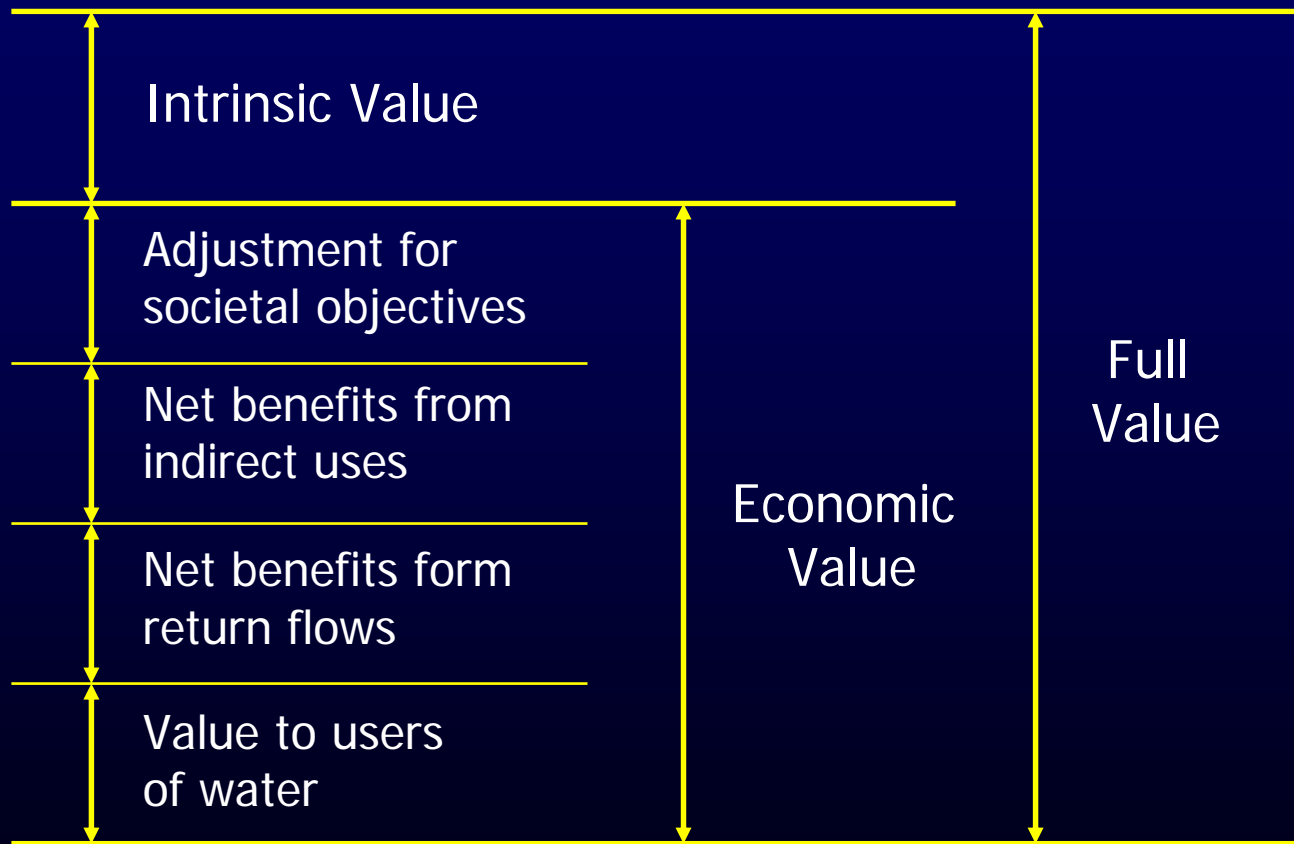


Water as an economic good /
Water markets /
Privatization

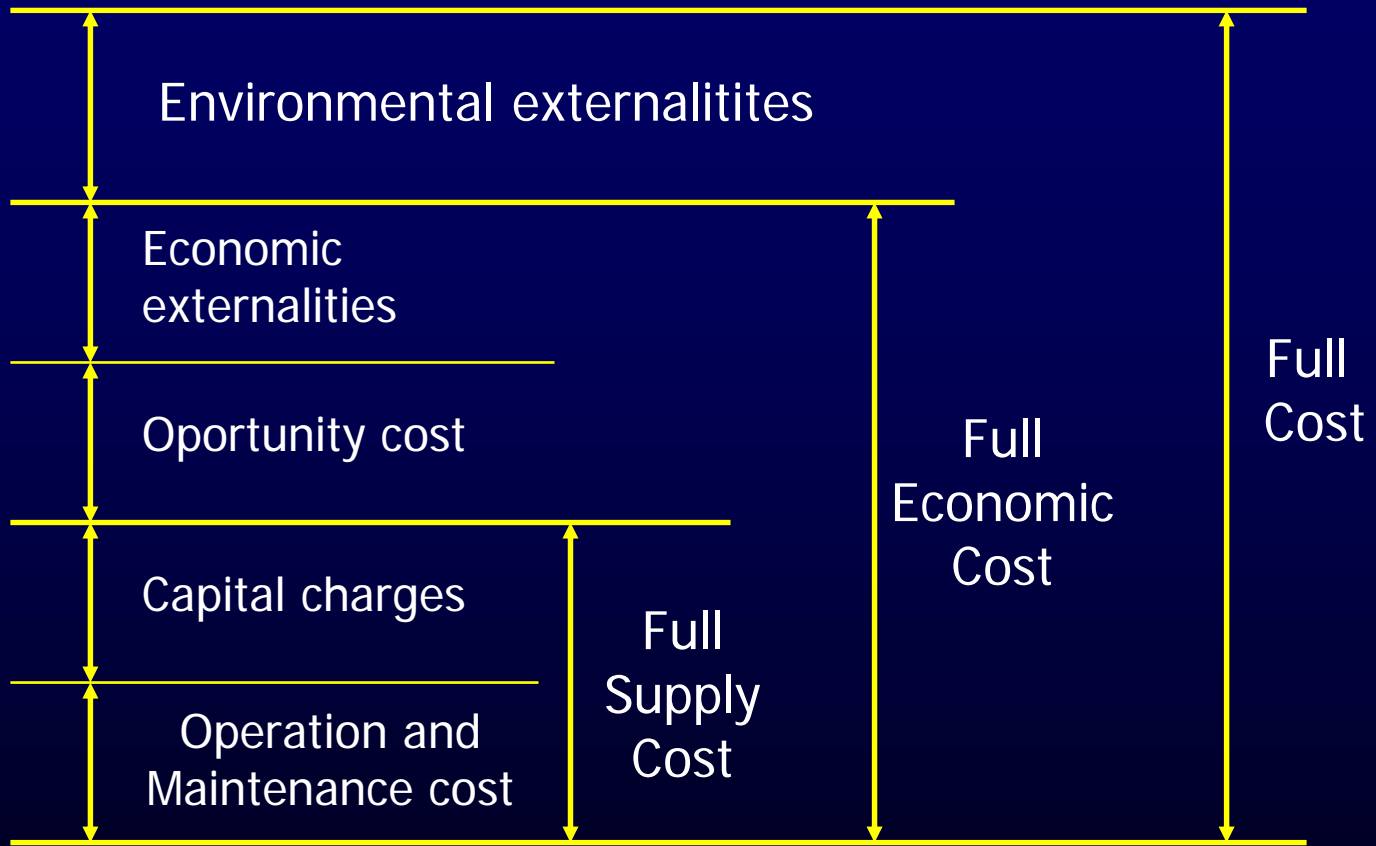
Ing. Humberto Peña T.

WATER AS AN ECONOMIC GOOD (AND NOT A FREE GOOD)

VALUE \neq CHARGES



General principles for valuing water
(Source: GWP, TAC paper N°4)

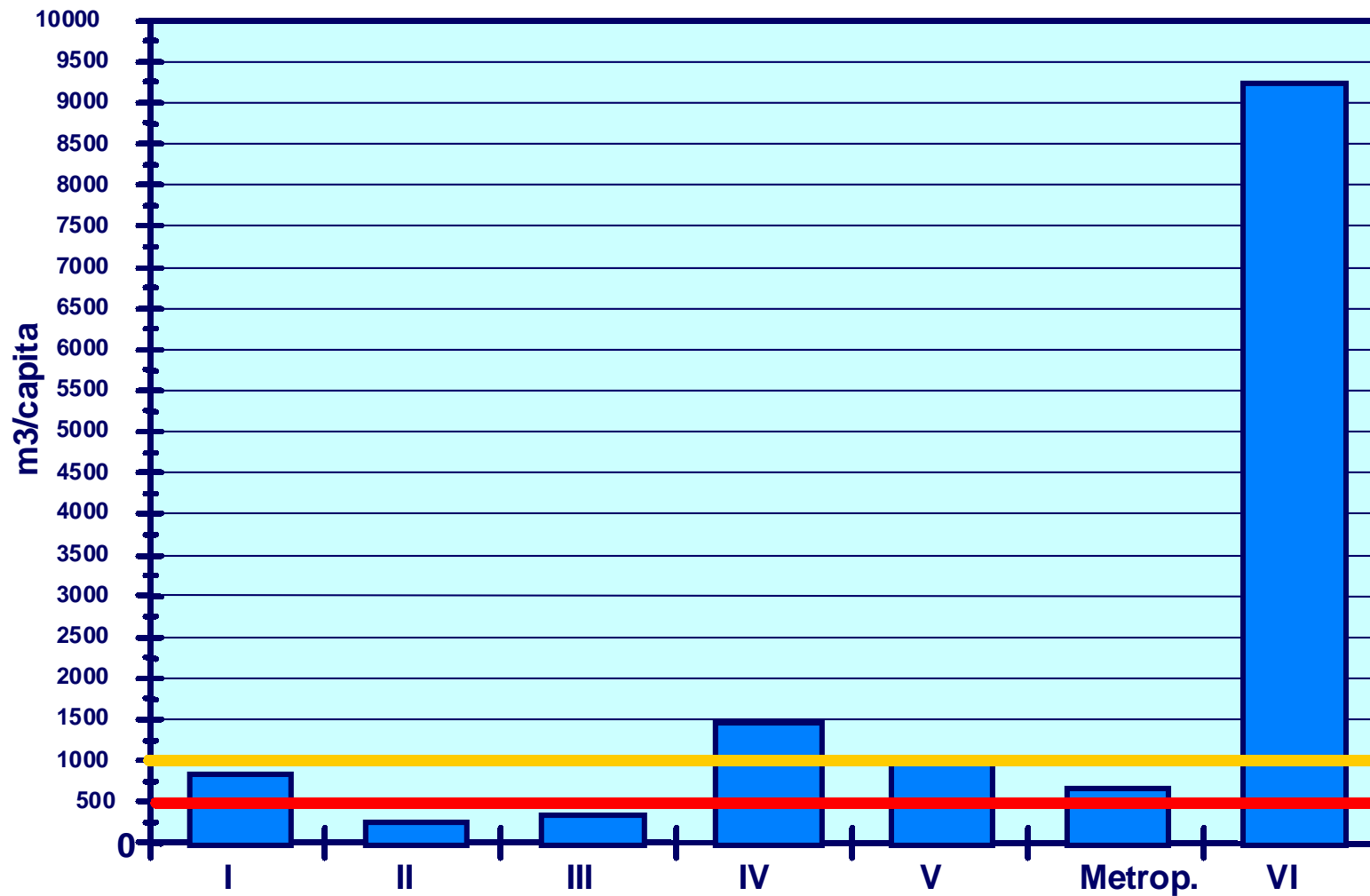


General principles for costing water
(Source: GWP, TAC paper N°4)

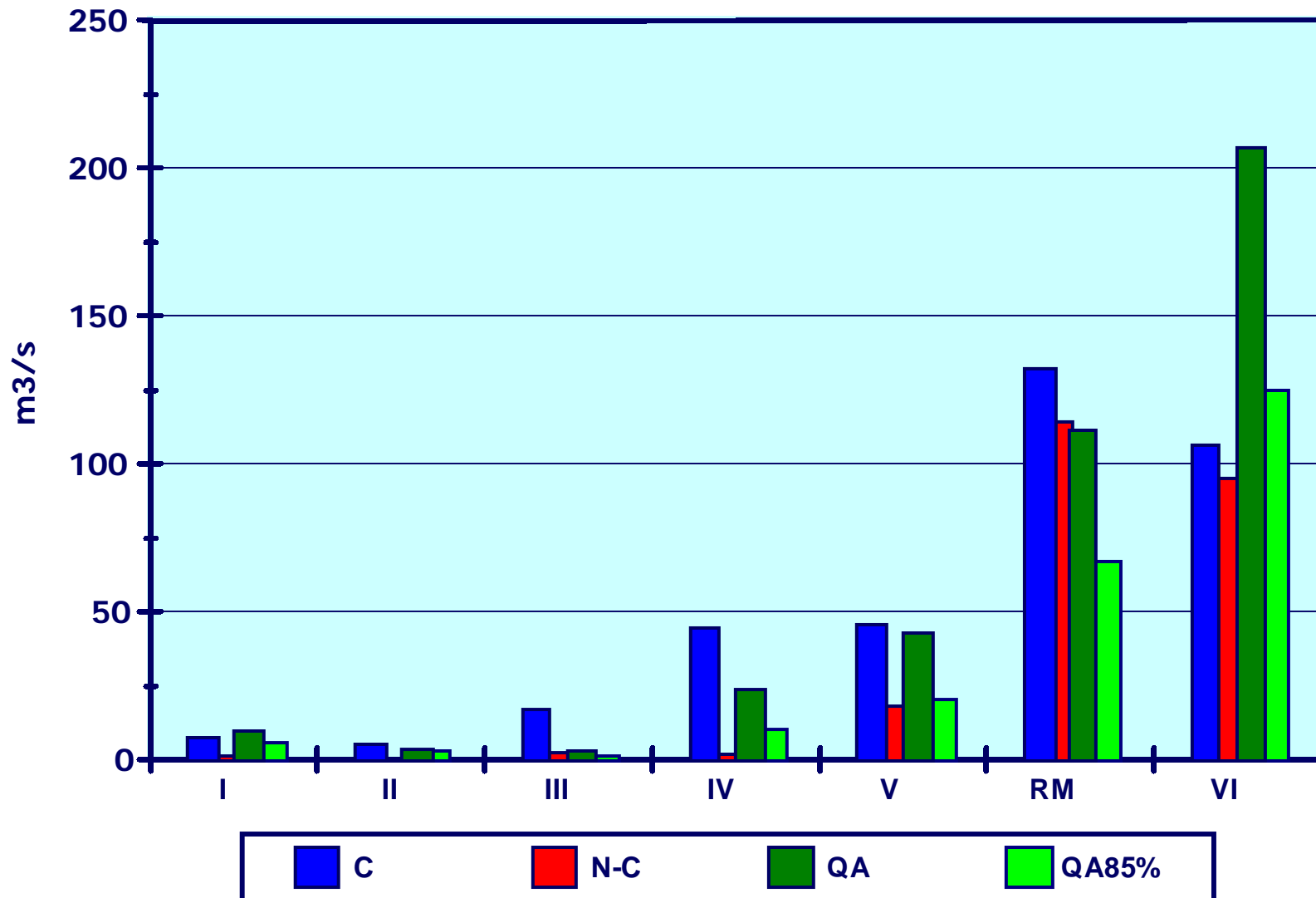
Principal Consequences

- The goal of full cost recovery
- Managing demand through economic instruments
- Financial self-sufficiency vs water as a social good

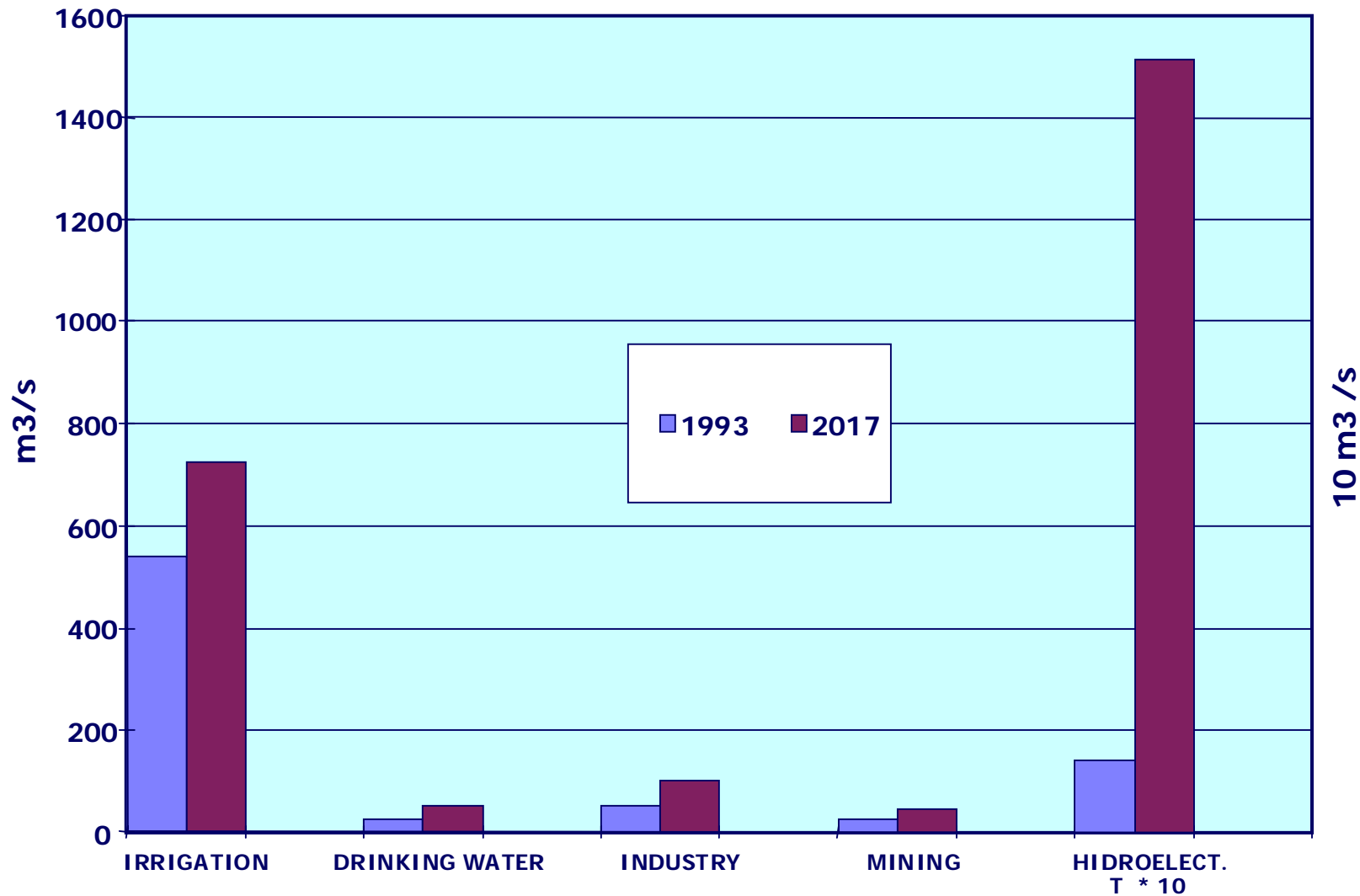
WATER AVAILABILITY PER HABITANT AT A REGIONAL LEVEL. REGION I - VI



REGIONAL AVAILABILITY AND DEMAND CURRENT SITUATION



WATER DEMAND TRENDS (1993 - 2017)



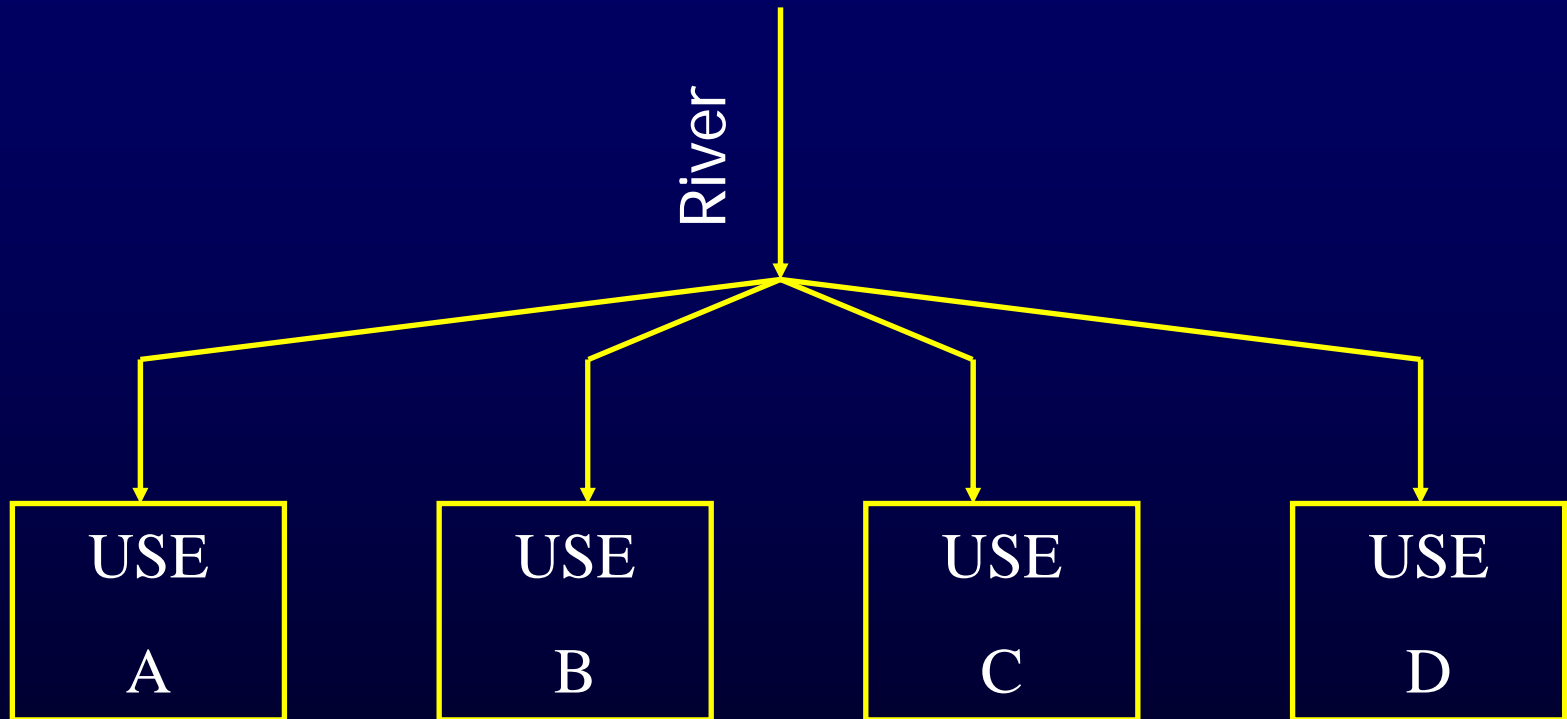
ALTERNATIVES TO SUPPLY NEW WATER DEMANDS

- TO TRANSFER WATER RIGHTS (WATER MARKET) AND IMPROVEMENTS IN USE EFFICIENCIES
- TO USE GROUNDWATER RESOURCES
- SURFACE RIVER FLOW ACCUMULATION IN RESERVOIRS
- REUTILIZATION OF WATER RESOURCES ALREADY USED THROUGH WATER TREATMENT AND DESALINIZATION

LEGAL FRAMEWORK (CHILE)

- Water is a national resource for public use, with water rights granted to private individuals
- Water use rights are “real” rights; individuals are given control by the government and are able to sell or transfer these rights.
- Water usage rights are not linked to the type of usage.
- No priority is given to the establishment of water usage rights.

Input Flow (Q)



Ideal Hydrological System

Perfect Competency : Quantity of buyers / sellers ,
mobility , transparency , homogeneity

WATER MARKETS IN CHILE

- CHARACTERISTICS OF WATER MARKETS THROUGHOUT THE COUNTRY ARE DIVERSE AND DERIVED FROM LOCAL SITUATIONS

TYPES OF TRANSACTIONS:

- WATER RIGHTS (PERMANENT) FROM AGRICULTURE AND ABANDONED LAND TO DOMESTIC AND MINES.
- TEMPORARY WATER TRANSACTIONS (LEASE IN PERIODS OF DROUGHT) BETWEEN LAND OWNERS

NUMBER OF TRANSACTIONS

- IN GENERAL, LOW NUMBER OF TRANSACTIONS IS OBSERVED (LESS THAN 3 % OF WATER RIGHTS)

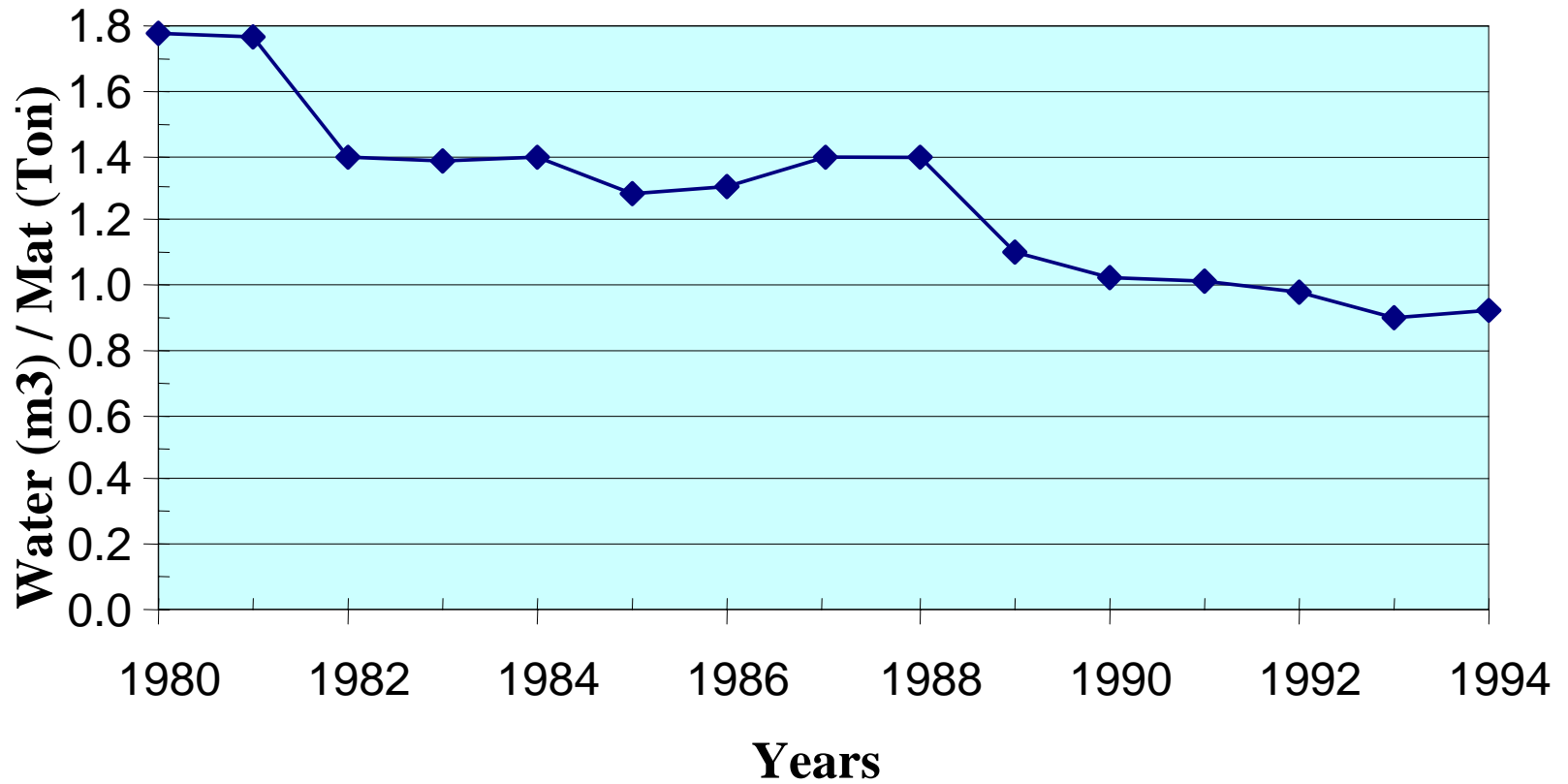
SPECIAL CASES:

- SANTIAGO (UPPER AREA): 18% OF THE WATER RIGHTS ORIGINALLY ASSIGNED TO AGRICULTURE HAVE BEEN REALLOCATED FOR DOMESTIC USE.
- PALOMA SYSTEM: DURING THE DROUGHT PERIOD 1995/1996 THERE WAS A REALLOCATION OF 16% OF THE TOTAL VOLUME OF WATER DELIVERED

WATER RIGHT MARKET PERFORMANCE PROBLEMS FOR TRANSACTIONS

- Alternatives sources of water (groundwater)
- Low proportion of registered water rights
- Unclear and incomplete description of water rights
- Transaction costs:
 - Rigid infrastructure
 - Legal costs - bureaucracy
- Cultural aspects / Hydrological uncertainty of the discharge

Relation Between Treated Material and Fresh Water Flow Used in Chuquicamata



Water Market and Supply Options in Chile

Supply Options	REGIONS						
	I	II	III	IV	V	MR	VI to South
Available surface waters							■
Available groundwaters					■	■	■
Water market (water right poorly used)		■		■	■		
Development of water resources with highly expensive infrastructures (reservoirs, nearby basins, etc)	■	■		■		■	
Salty waters desalination sewage water reuse, etc.	■	■	■				
Water market (high productive use)			■				

I Region (Arica)

II Region (Calama/Tocopilla/Antofagasta)

III Region (Copiapo)

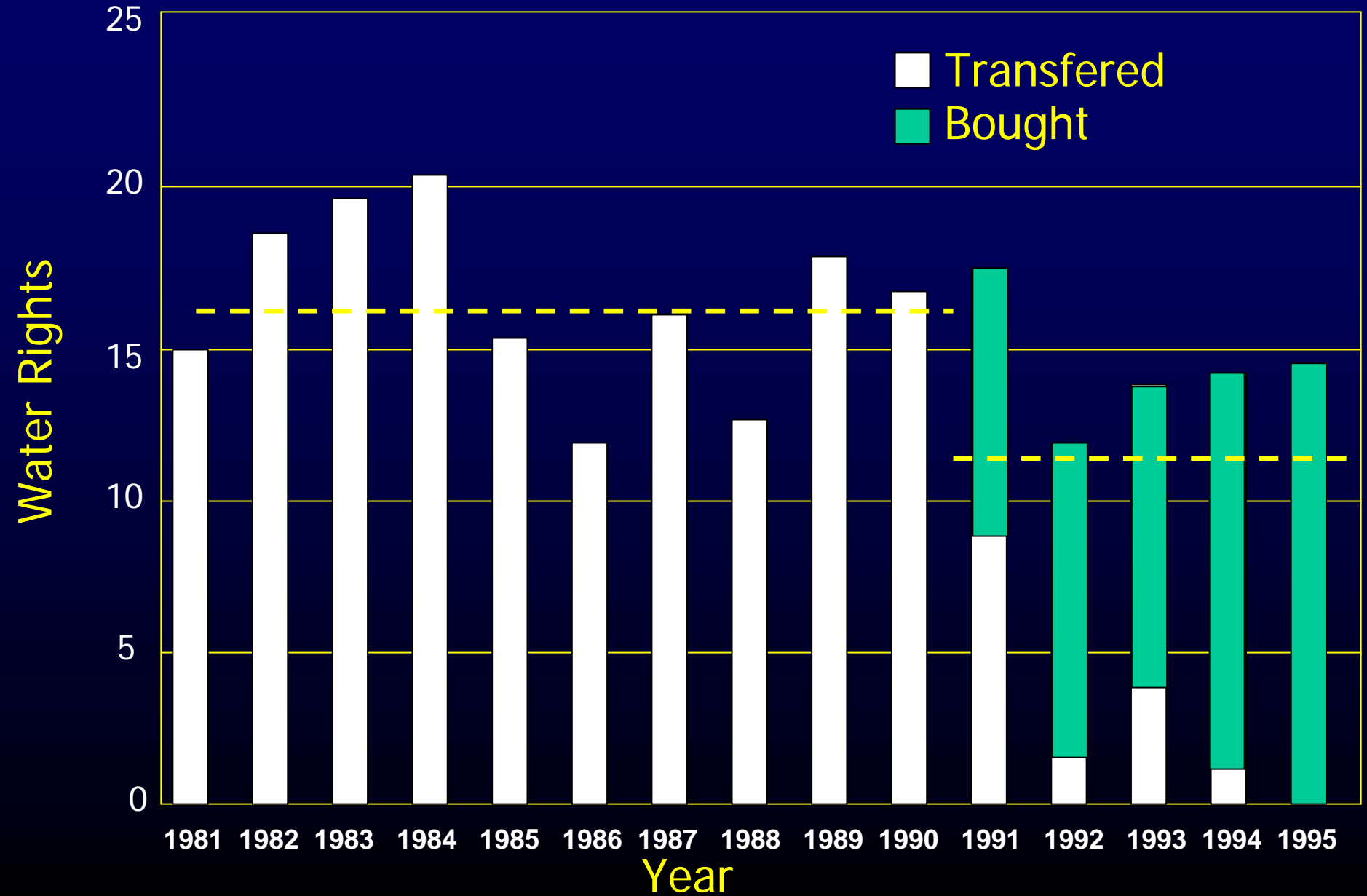
IV Region (La Serena)

V Region (Valparaiso/Viña del Mar)

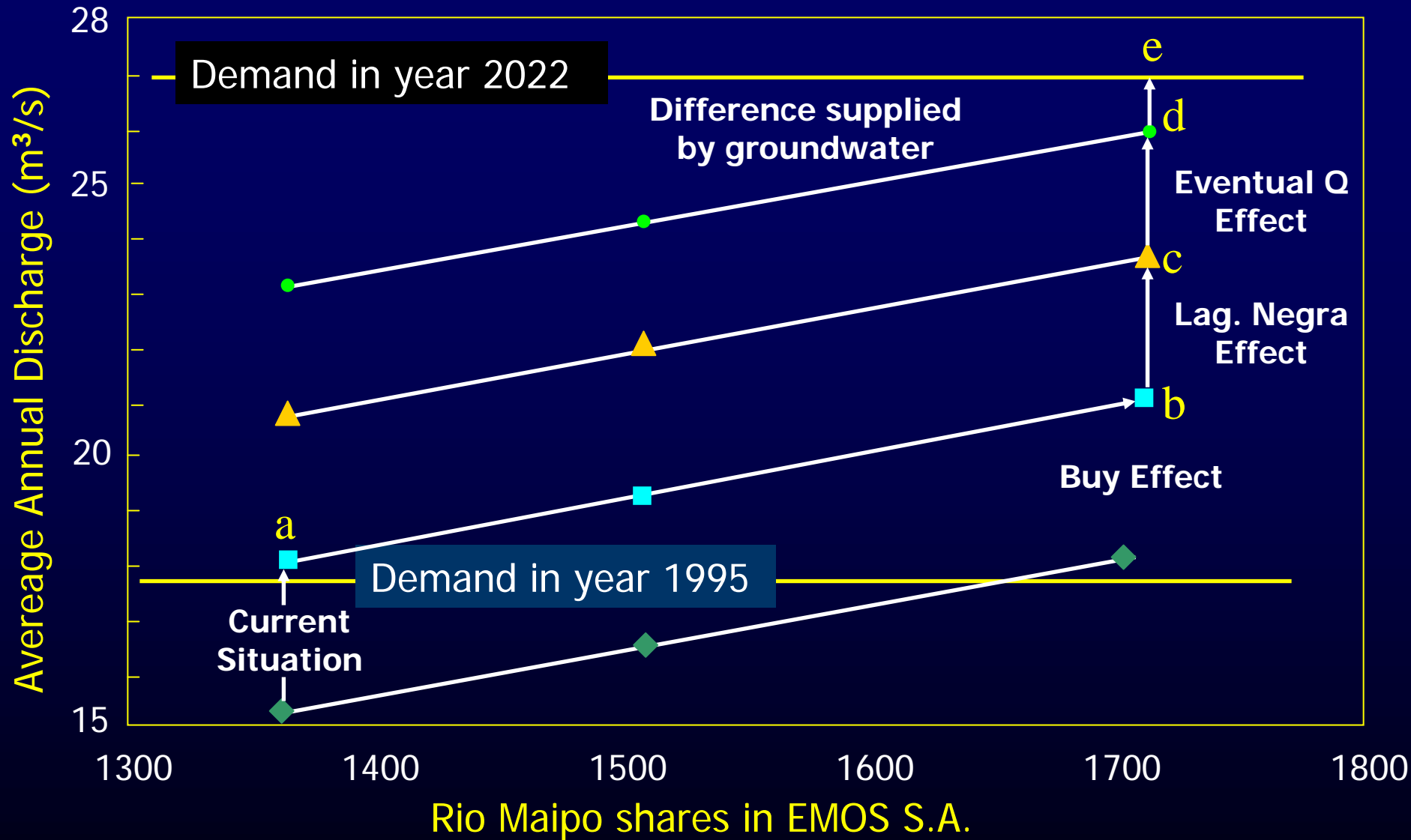
MR Metropolitan Region

VI Region to South

Water Right Acquired by EMOS

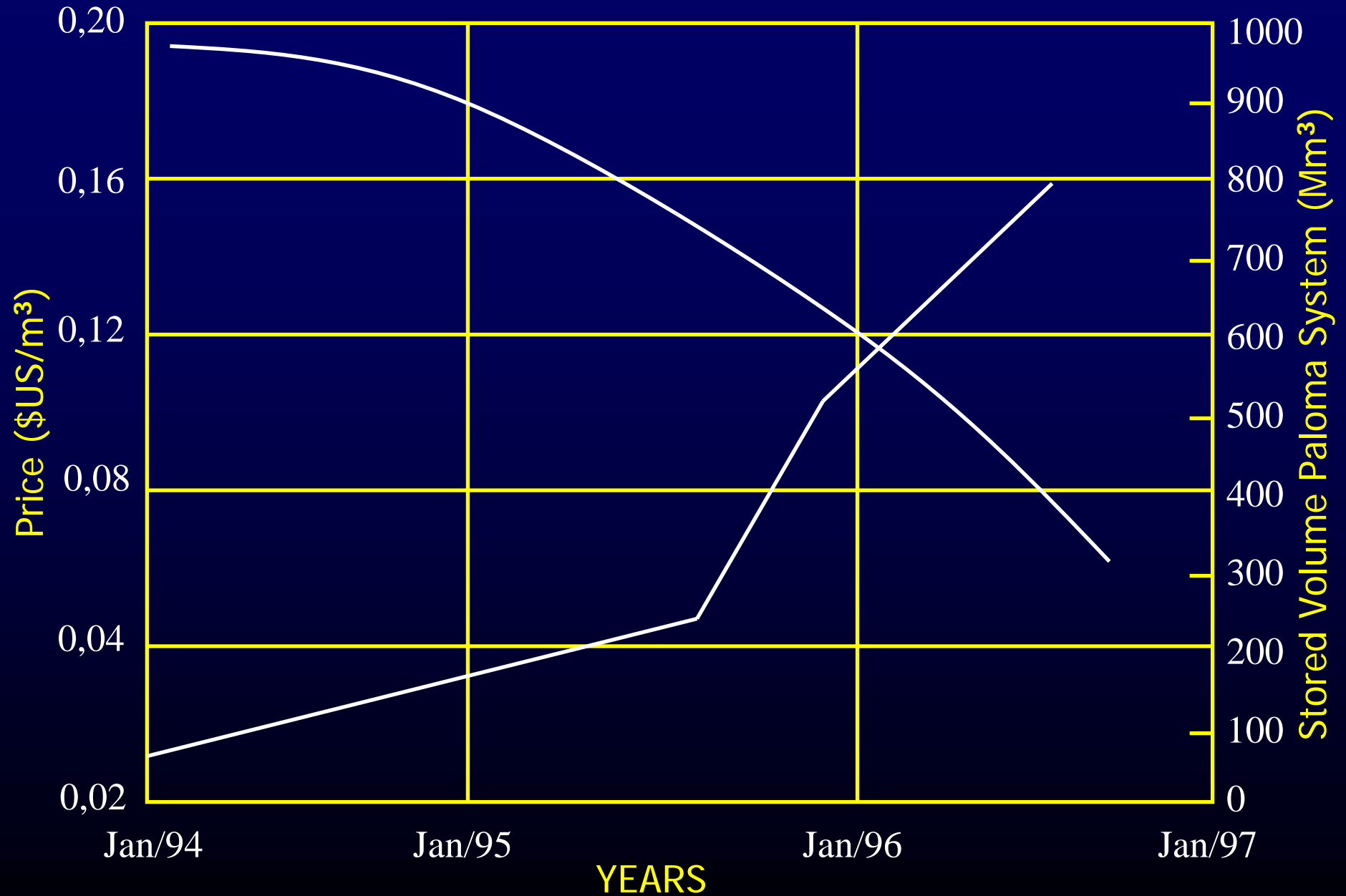


Metropolitan Region Development Program

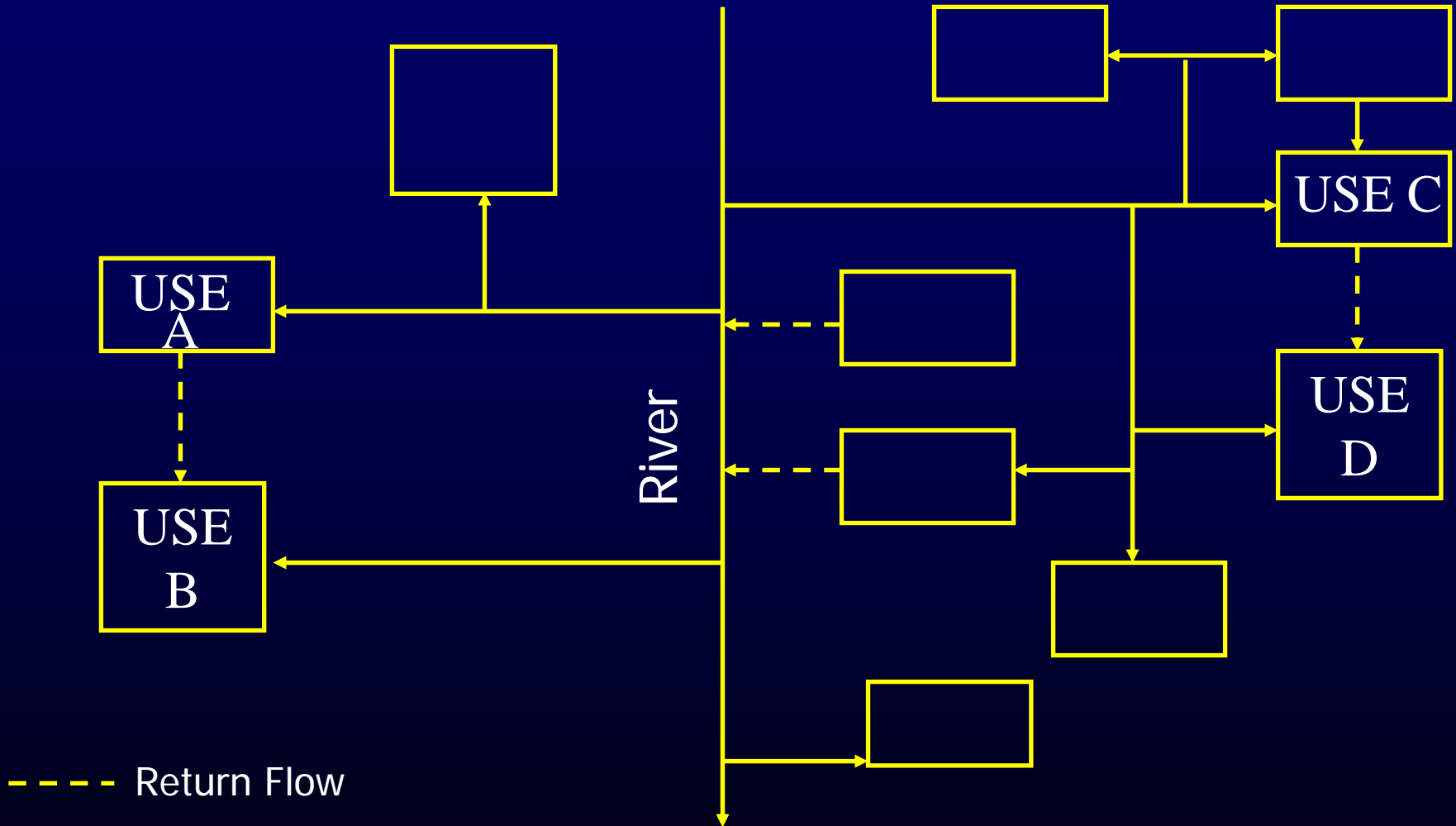


- ◆ River Maipo + res. El Yeso
- ▲ River Maipo + res. El Yeso + 9 streams + Lag. Negra
- River Maipo + res. El Yeso + 9 streams
- River Maipo + res. El Yeso + 9 streams + Lag. Negra + Eventual Q

Water Rights Rent Evolution



Input Flow $Q(t)$



Real Hydrological System

WATER RIGHT MARKET NEGATIVE IMPACTS

- Third party effects
 - return flows
 - changes in water distribution system
- Speculation and hoarding
- Environmental aspects

Consensus Points (IDB 1996)

- Countries have individual characteristics and specifics. There are no universal “cookbook”
- When water is truly scarce, current systems of administration based on public administrative decision making result in inefficient allocations of water and alternative mechanisms for reallocation should be considered.
- Water markets are an economic tool that provide a method to reallocate water from low value users, resulting in economic efficiency gains.
- Water market transactions must recognize third party effects
- Water markets have an impact on public goods

Consensus Points (IDB 1996)

- Water users associations play a significant role in functional market and should therefore be strengthened.
- Transaction costs must be minimized
- Any water market should limit individual or cartel market power
- Are certain conditions necessary to implement a successful water market: adequate legal framework, a minimum institutional setting that warrants transparency and credibility and a competent system of information
- Sufficiently broad definition of beneficial use is not incompatible with water market.

PRIVATISATION

Problems of government owned services

- State organizations are insulated from the competitive incentives
- State enterprises are exposed to short-term political and interest groups interventions
- State firm managers can pursue their own utility rather than the public interest

FACTORS INFLUENCING THE RESULTS OF PRIVATISATION

- The form of private involvement
- The competitive structure of the sector
- The type of private company involved
- The post-privatization regulatory-regime

SOME DIFFICULTIES OF THE WATER SECTOR PRIVATISATION

- The level of natural monopoly and the lack of substitute products
- The public and merit goods supplied by the sector
- The crucial relationships between water infrastructure and urban/economic development
- The highly capital-intensive nature of the sector and the presence of sunk costs
- The nature of the water resources systems

THE HISTORIC EVOLUTION OF CHILEAN SANITARY SECTOR

- 1953 SANITATION WATER WORKS DEPARTMENT
- 1977 NATIONAL SERVICE OF SANITATION WATER WORKS
 - Autonomous organization of the state
 - all the water works companies are integrated
- 1988 THE GENERAL LAW OF SANITARY SERVICES
 - regulatory framework
 - law of tariffs
- 1989 REGULATORY AGENCY AND REGIONAL COMPANIES
 - law of subsidies
- 1995 FIRST PRIVATISATION (X REGION)
- 1998 NEW REGULATORY FRAMEWORK
 - to avoid monopolies
 - to regulate conflict of interests
 - to enforce control
 - to improve methodology of tariffs fixation.

SOME ANTECEDENTS

- 1988 drinking water coverage 98%
 wastewater collection 81%
 wastewater treatment 10%
- Tariffs increased a 60% between 1989 and 1998.
- The mean rate of benefits in 1998 was 6.5%
- State subsidies 20% of population (between 25 to 85% of tariff) with 5% of the total charge

DRINKING WATER AND SEWAGE CHARGES (CHILE)

OBJECTIVES:

- Economic efficiency
- Financial feasibility
- Equity (not crossed subsidies)
- Intelligibility (signals to users and lender)

DETERMINATION OF TARIFFS (CHILE)

- Refers to the model company
- Reflect the marginal cost to provide the service
- Cover costs (efficient) and finance the new works
- Give benefits rate and over actives
- Give adequate information to the users and lenders
- Enhance the efficient operation

CONCLUSIONS

- The most commonly cited causes of the failure of state enterprises do not magically vanish when private sector involvement occurs.
- The private sector needs cost recovery questions to be addressed
- Privatization may provide the catalyst for needed sector reforms
- The efficiency savings requires the form of privatization, industry structure and regulatory arrangements provide competitive incentives
- The success of privatization will critically depend on how well the regulatory regime operates