



## Session 2.2

### Main water accounting tables

RW-2-REG

October 14<sup>th</sup> ,2020, Online

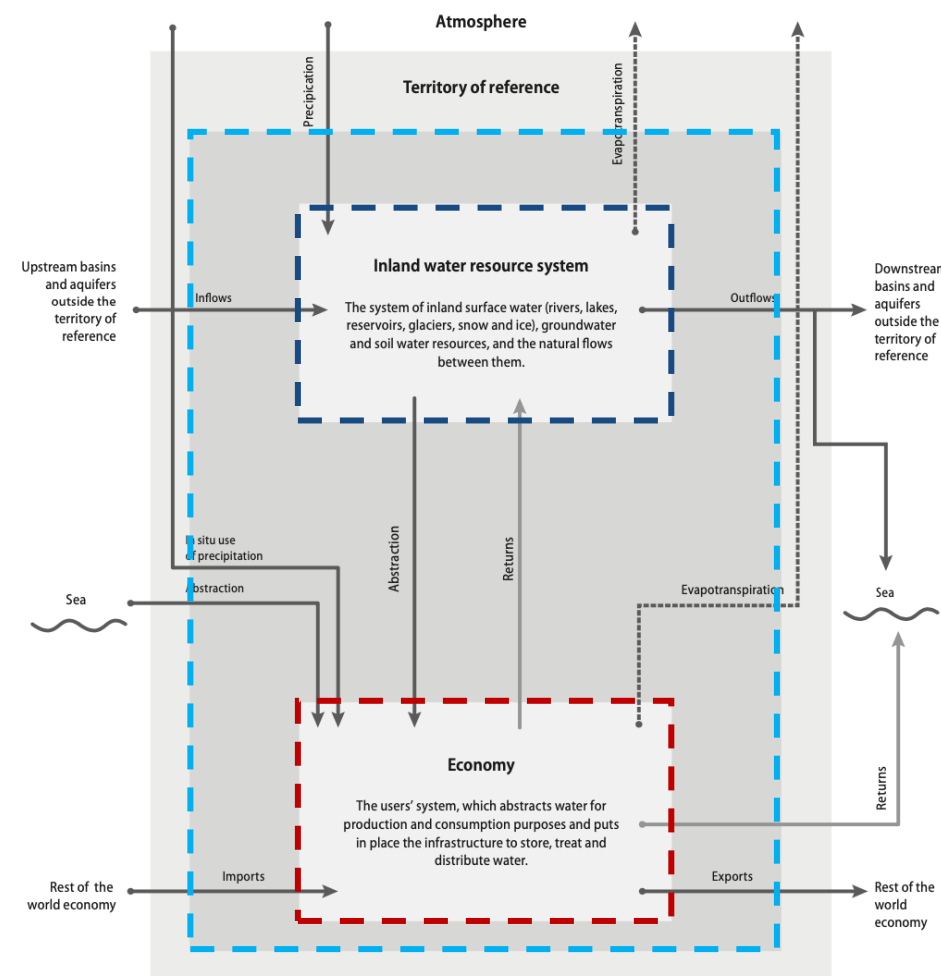
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NKE 2 – Senior Expert in Water Accounting





# Introduction

- Flow and asset accounts are **two major blocks** of tables in the SEEA – Water accounting system
- Flow accounts - also named as **Physical Supply and Use tables** (PSU Tables)
- Asset accounts describe the **stocks of water resources** at the beginning and the end of an accounting period and the changes in stocks that have occurred during that period.





# Overview of accounting tables

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- Category 1 – **Physical supply and use tables** & emission accounts (flows)
- Category 2 – Hybrid and economic accounts
- Category 3 – **Asset accounts**
- Category 4 – Quality accounts
- Category 5 – Valuation of water resources

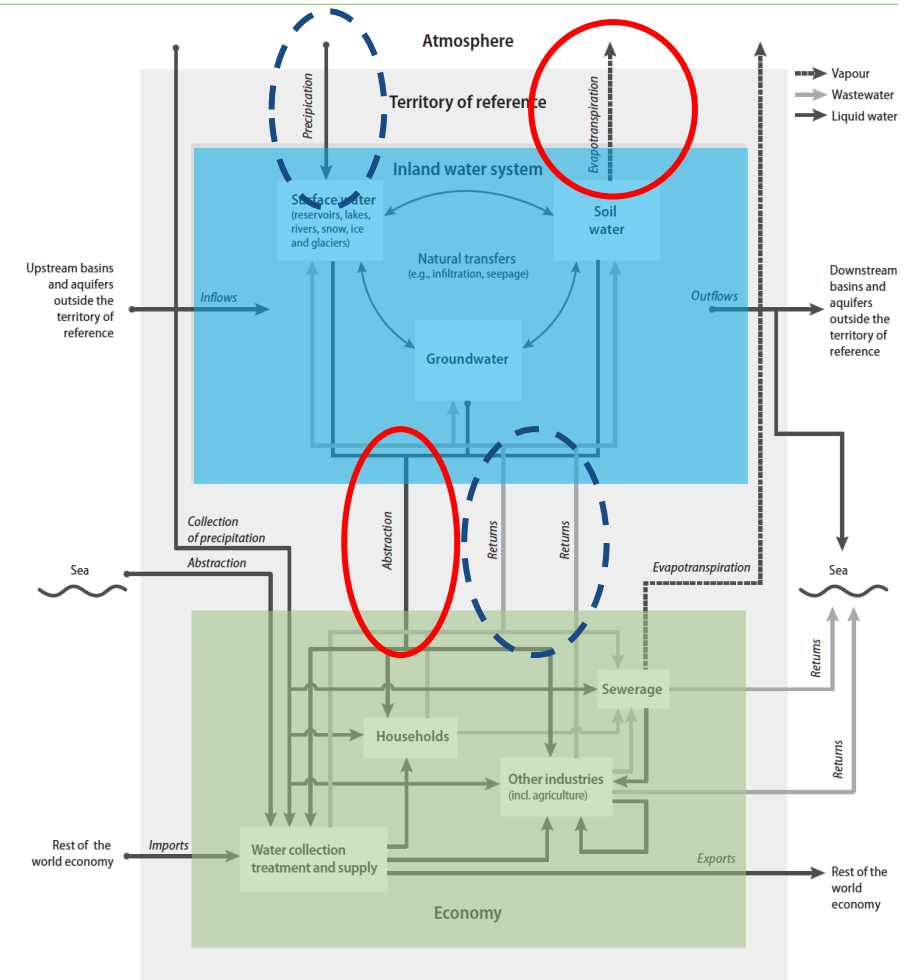


# Compilation of flow accounts



**Water and  
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- Allows
  - assessment and monitoring of the pressure on water quantities that is exerted by the economy
  - identification of the economic agents responsible for the abstraction and discharge of water into the environment
  - the evaluation of alternative options for reducing the pressure on water (efficiency/intensity indicators)

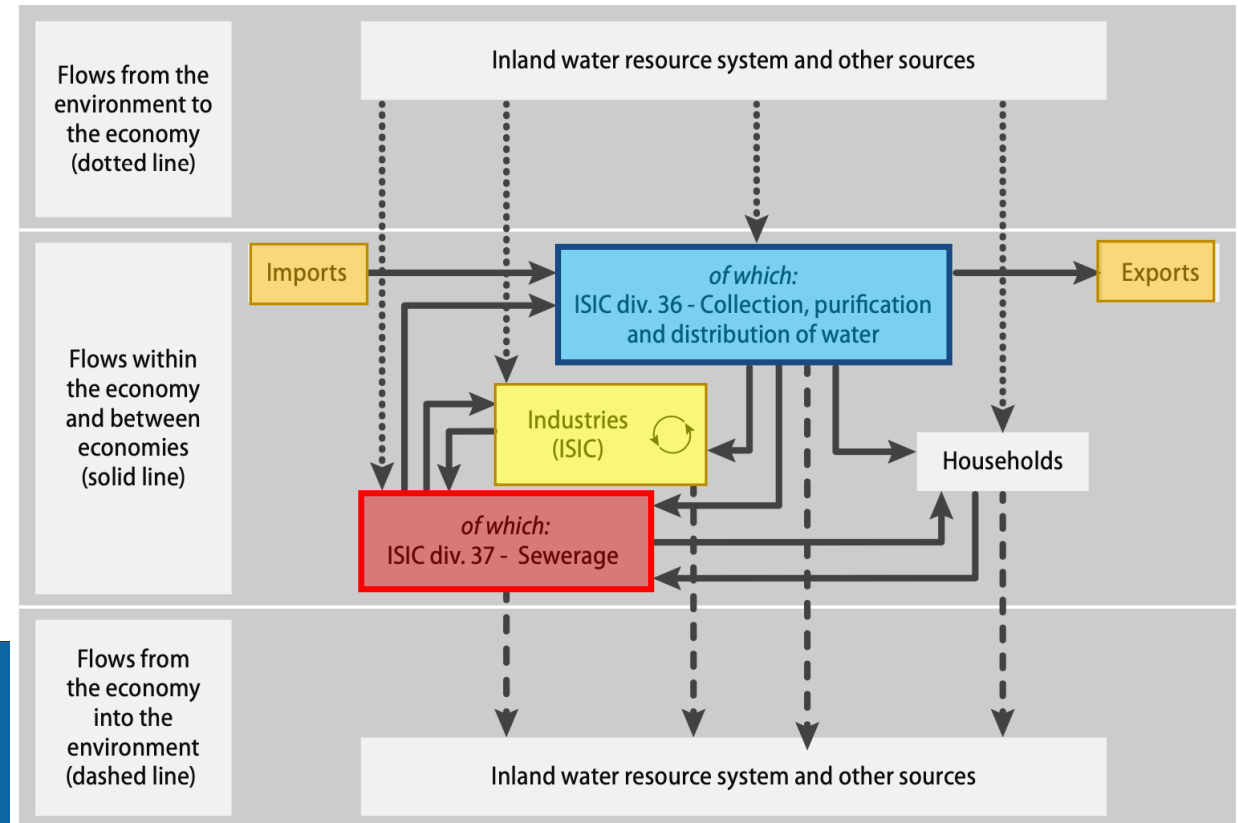


# Physical supply and use tables (PSUT)



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- Physical water supply and use tables describe water flows in physical units within the economy and between the environment and the economy.
- 3 types of flow (**ENV**  $\leftrightarrow$  **ECO**)
- Reused water  $\neq$  Recycled water





# Types of flows in PSU Tables

- Flows **from the environment to the economy** involve the abstraction/removal of water **(by water assets)** for production and consumption activities.
- Flows **within the economy** involve water exchanges between economic units which are usually carried out through mains (pipes), but other means of transporting water are not excluded.
- **Flows from the economy back into the environment** consist of discharges of water by the economy into the environment (residual flows). Thus, the supplier is the economic agent responsible for the discharge (and the destination of these flows is the environment).
  - The environment is assumed to use all the water that is returned to it  
use = supply.



# Standard physical use table



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## To Economy

### A. Physical use table (*physical units*)

From Assets	From the environment	1. Total abstraction (= 1.a + 1.b = 1.i + 1.ii) 1.a. Abstraction for own use 1.b. Abstraction for distribution 1.i. From inland water resources: 1.i.1. Surface water 1.i.2. Groundwater 1.i.3. Soil water 1.ii. Collection of precipitation 1.iii. Abstraction from the sea	Economic sectors											
	Within the economy	2. Use of water received from other economic units of which: 2.a. Reused water 2.b. Wastewater to sewerage												
	3. Total use of water (= 1 + 2)													



# Standard physical supply table



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		Industries (by ISIC category)						Households	Rest of the world	Total
		1-3	5-33, 41-43	35	36	37	38, 39, 45-99			
<b>From Economy</b>										
<b>B. Physical supply table (physical units)</b>										
Within the economy	4. Supply of water to other economic units of which: 4.a. Reused water 4.b. Wastewater to sewerage									
Into the environment	5. Total returns (= 5.a + 5.b) 5.a. To inland water resources 5.a.1. Surface water 5.a.2. Groundwater 5.a.3. Soil water 5.b. To other sources (e.g., sea water)									
6. Total supply of water (= 4 + 5)										
7. Consumption (= 3 - 6)										

**To Assets**

**Economic sectors**





# Remarks on PSU Tables



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- Most of the water is generally supplied by industry ISIC division 36, water collection, treatment and supply;
- the physical supply of water by households generally represents a flow of wastewater to ISIC division 37, sewerage.
- The collection of wastewater by ISIC division 37, sewerage, is recorded as use of wastewater under ISIC division 37, and as supply of wastewater by the industry or households generating the wastewater.



# Panoramic land cover in the MENA region

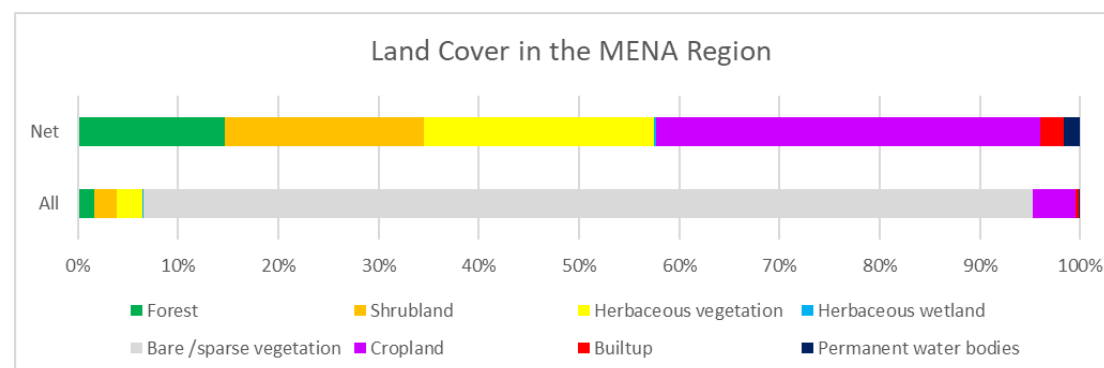
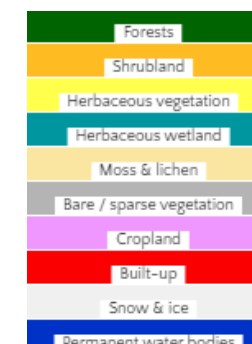
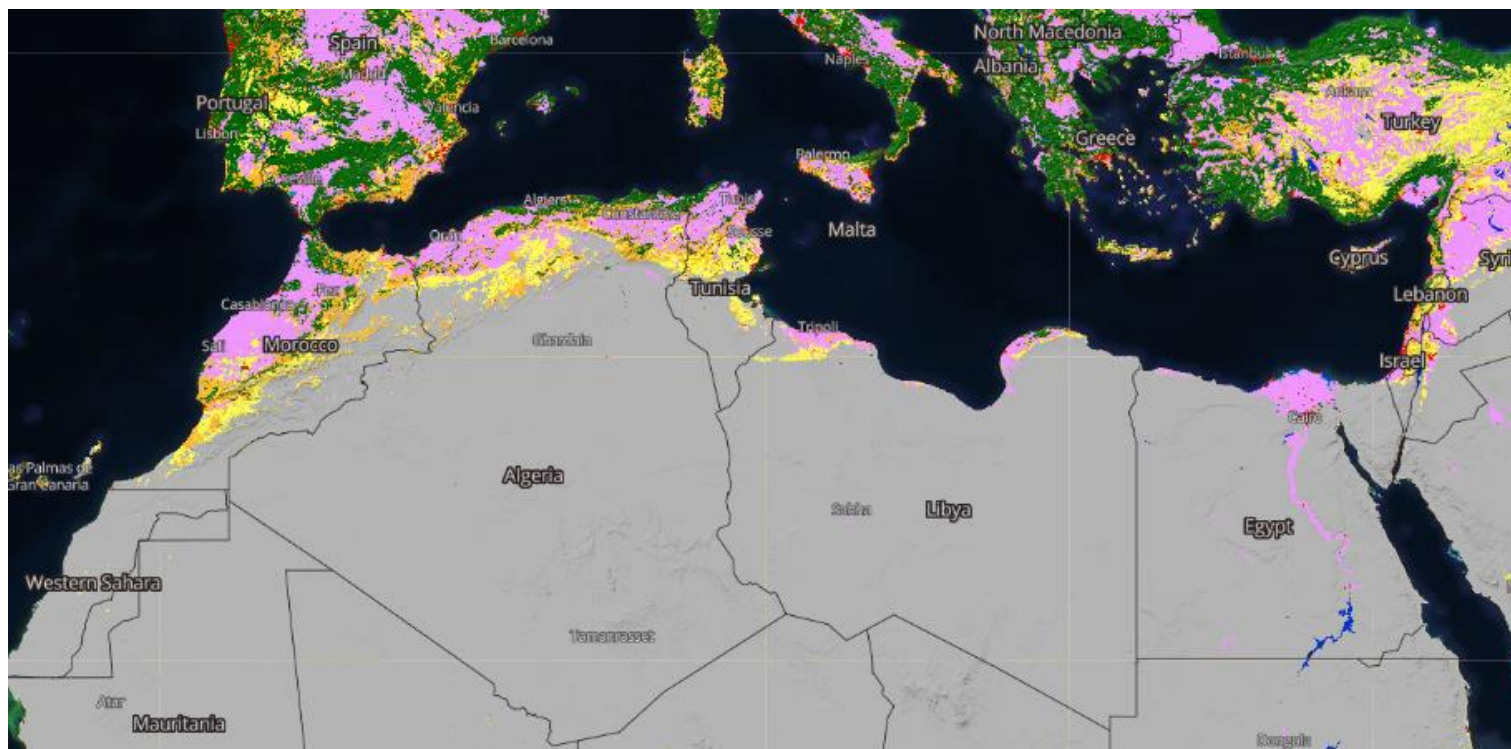


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GLOBAL LAND COVER

**Land use in an indication of  
water intensity**





# Asset accounts

- Asset accounts describe the stocks of water resources at the beginning and the end of an accounting period
  - Increases in stocks  
(*e.g. returns, inflows and precipitation*)
  - Decreases in stocks  
(*e.g. abstraction, outflows and evapotranspiration*)

**Opening  
Stocks**

+

**Increases in  
stocks**

-

**Decreases in  
stocks**

=

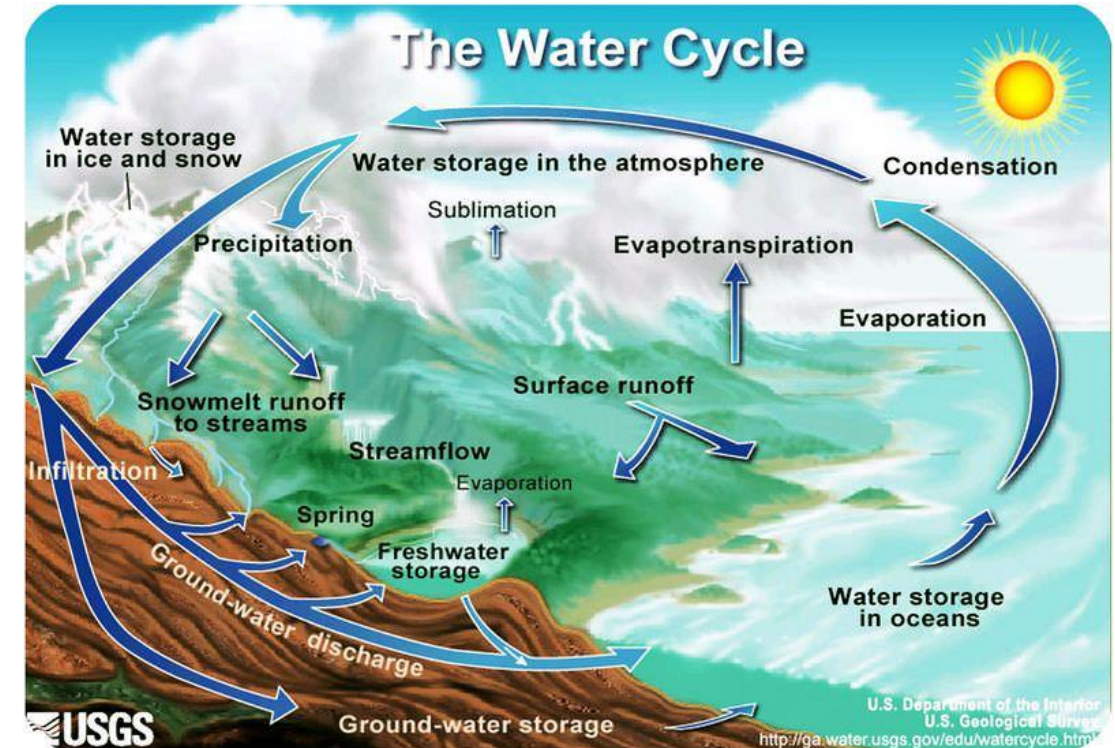
**Closing  
stocks**





# The hydrological cycle

- **Water is in continuous movement.** Owing to solar radiation and gravity, water keeps moving from land and oceans into the atmosphere in the form of vapour and, in turn, falls back onto land and into oceans and other bodies of water in the form of precipitation.



# Water assets typology



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- 3 Major Categories: Surface, Groundwater and Soil water

- **EA.131: Surface water**

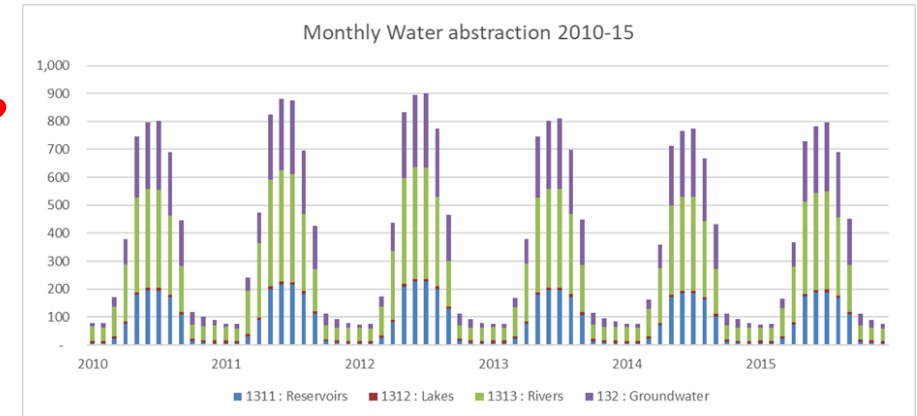
- ✓ EA.1311: Artificial reservoirs
    - ✓ EA.1312: Lakes
    - ✓ EA.1313: Rivers and streams
    - ✓ EA.1314: Glaciers, snow and ice

- **EA.132: Groundwater**

- **EA.133: Soil water**

- The asset classification of water resources excludes water in oceans, seas and the atmosphere because the stocks of these resources are enormous compared with the abstraction. These assets, in general, do not incur depletion.

**Standardized coding**





# Exceptional cases



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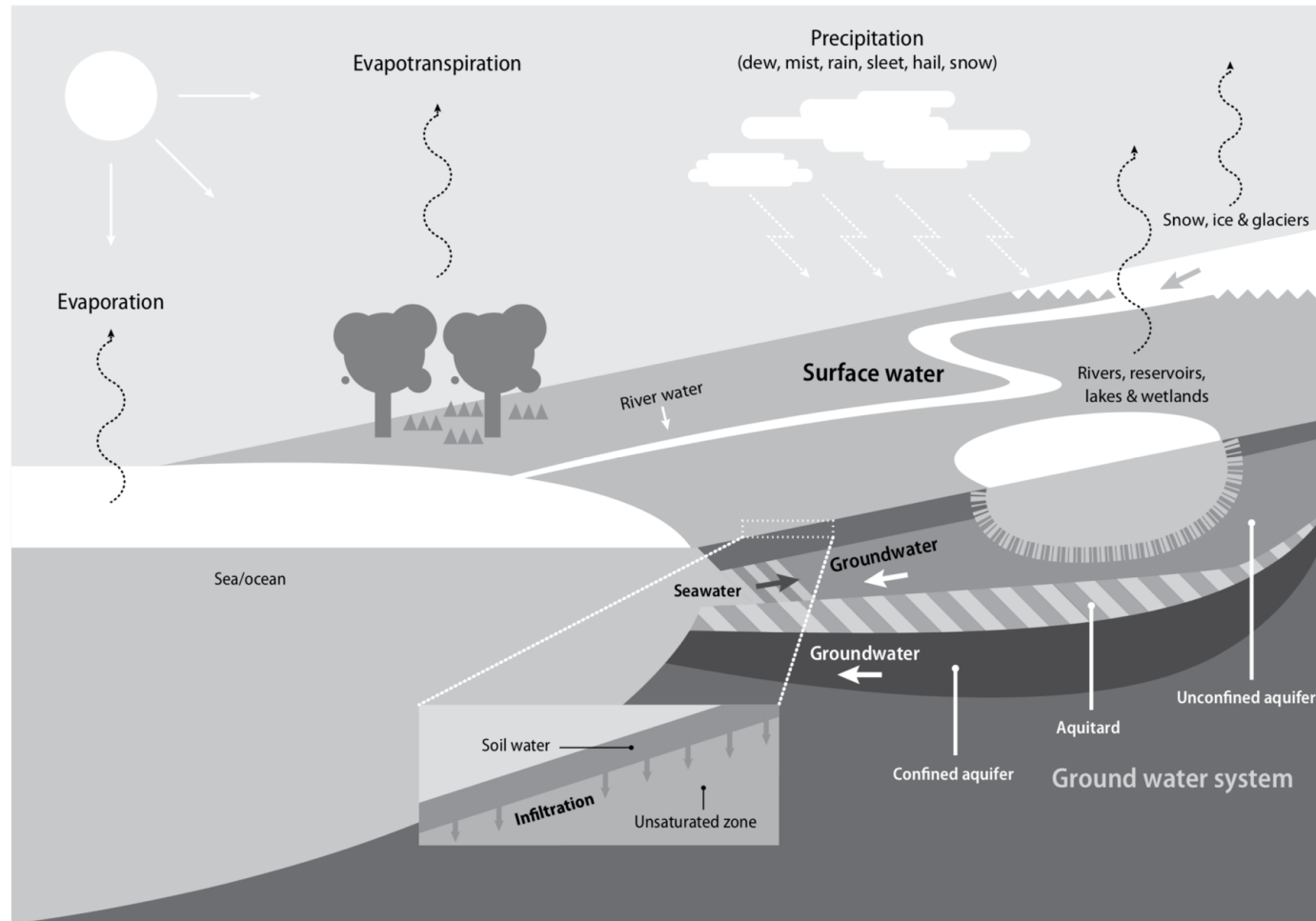
- River water stocks
- Opening/ closing stocks in transboundary areas



# Inland water system



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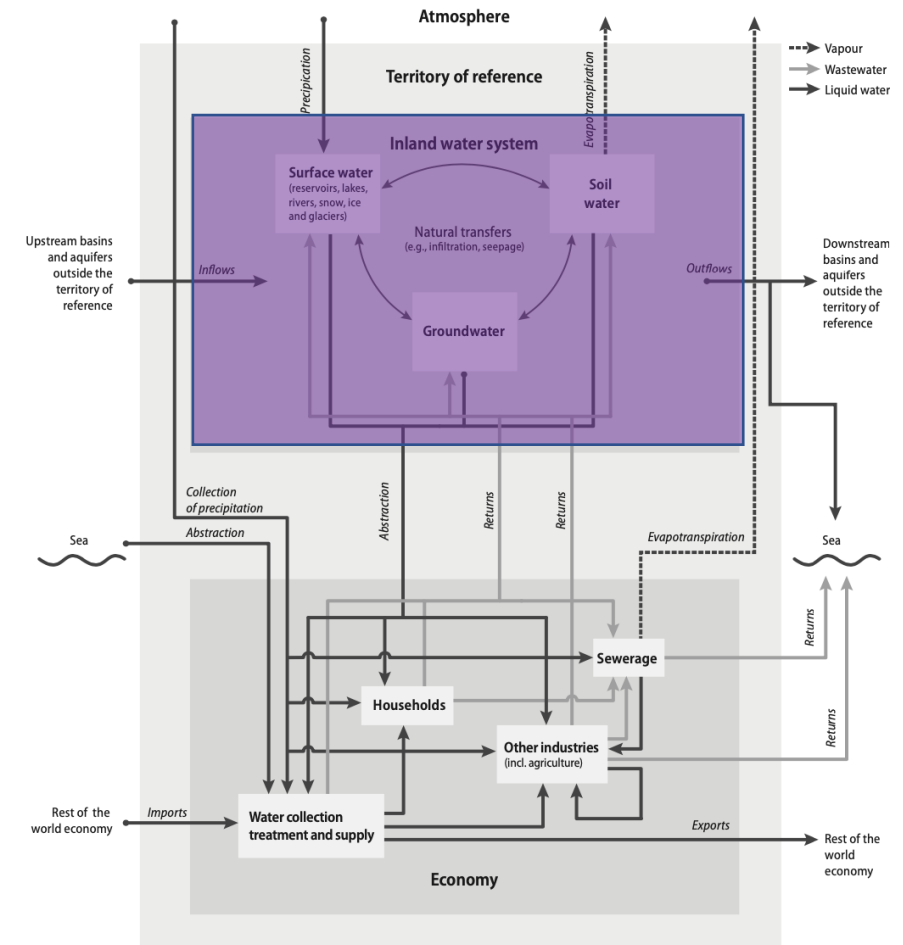


# Exchange among water resources



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- Exchanges of water among water resources to
  - better identify the dynamics of hydrological cycle
  - Planning infrastructure
- Usually it is an outcome of hydrological models





# Water exchanges table



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- This table is also useful for the calculation of internal renewable water resources and for reducing the risk of double counting when separately assessing indicator for surface and groundwater due to the water exchanges between these resources.
- assists in identifying the contribution of groundwater to the surface flow, as well as the recharge of aquifers by surface run-off.



	EA.131. Surface water				EA.132 Groundwater	EA.133 Soil water	Outflows to other resources in the territory
	EA.1311 Artificial reservoirs	EA.1312 Lakes	EA.1313 Rivers	EA.1314 Snow, ice and glaciers			
EA.1311. Artificial reservoirs			1 000				1 000
EA.1312. Lakes			100				100
EA.1313. Rivers	1 000	293			50		1 343
EA.1314. Snow, ice and glaciers							0
EA.132. Groundwater			87				87
EA.133. Soil water	54	46	1 300		387		1 787
<b>Inflows from other resources in the territory</b>	<b>1 054</b>	<b>339</b>	<b>2 487</b>	<b>0</b>	<b>437</b>	<b>0</b>	<b>4 317</b>

Source: SEEA-Water-land database.





# Asset accounts table

	Type of water resource					Total	
	Surface water				Groundwater		Soil water
	Artificial reservoirs	Lakes	Rivers and streams	Glaciers, snow and ice			
Opening stock of water resources	1 500	2 700	5 000		100 000	500	109 700
Additions to stock							
Returns	300		53		315		669
Precipitation	124	246	50			23 015	23 435
Inflows from other territories			17 650				17 650
Inflows from other inland water resources	1 054	339	2 487		437	0	4 317
Discoveries of water in aquifers							
<i>Total additions to stock</i>	1 478	585	20 240		752	23 015	46 071
Reductions in stock							
Abstraction	280	20	141		476	50	967
for hydropower generation							
for cooling water							
Evaporation and actual evapotranspiration	80	215	54			21 125	21 474
Outflows to other territories			9 430				9 430
Outflows to the sea			10 000				10 000
Outflows to other inland water resources	1 000	100	1 343		87	1 787	4 317
<i>Total reductions in stock</i>	1 360	335	20 968		563	22 962	46 188
Closing stock of water resources	1 618	2 950	4 272		100 189	553	109 583

**Opening  
Stocks**

+

**Increases in  
stocks**

SW / GW / SLW

-

**Decreases in  
stocks**

SW / GW / SLW

=

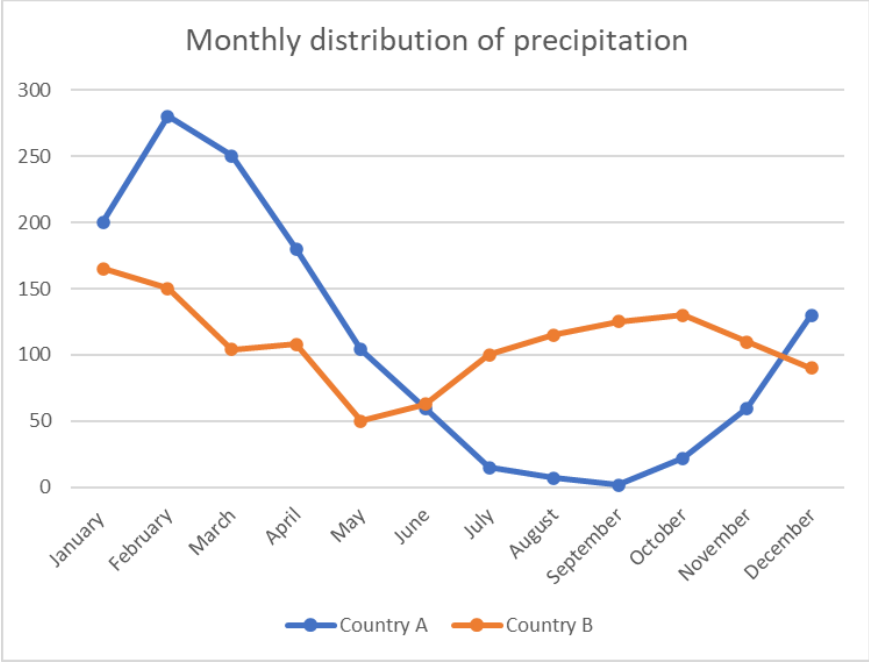
**Closing  
stocks**



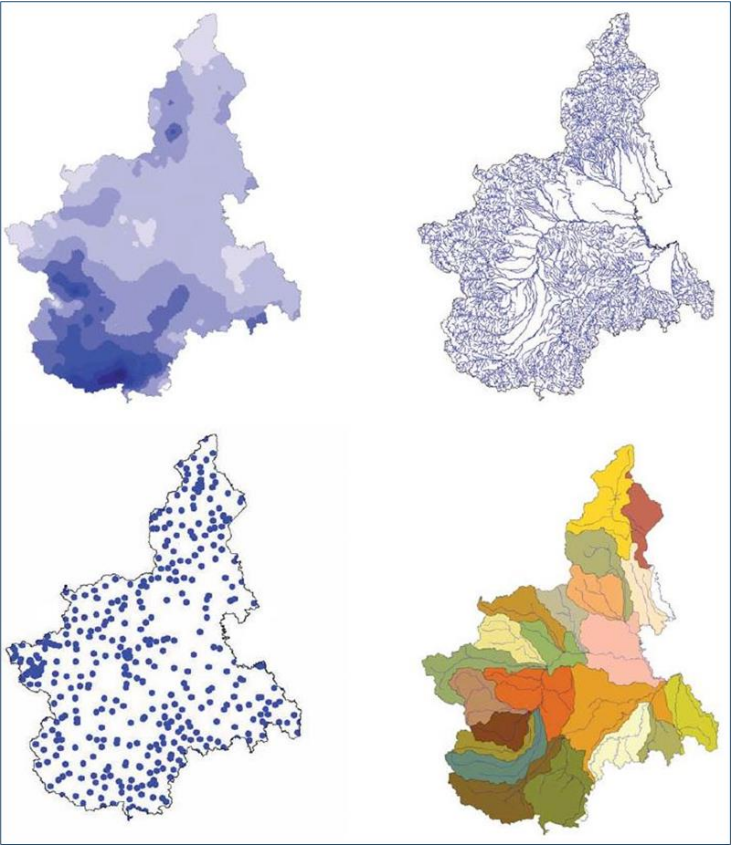
# Accounting units and assets



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Precipitation	Country A	Country B
January	200	165
February	280	150
March	250	104
April	180	108
May	104	50
June	60	63
July	15	100
August	7	115
September	2	125
October	22	130
November	60	110
December	130	90
<b>Total</b>	<b>1310</b>	<b>1310</b>

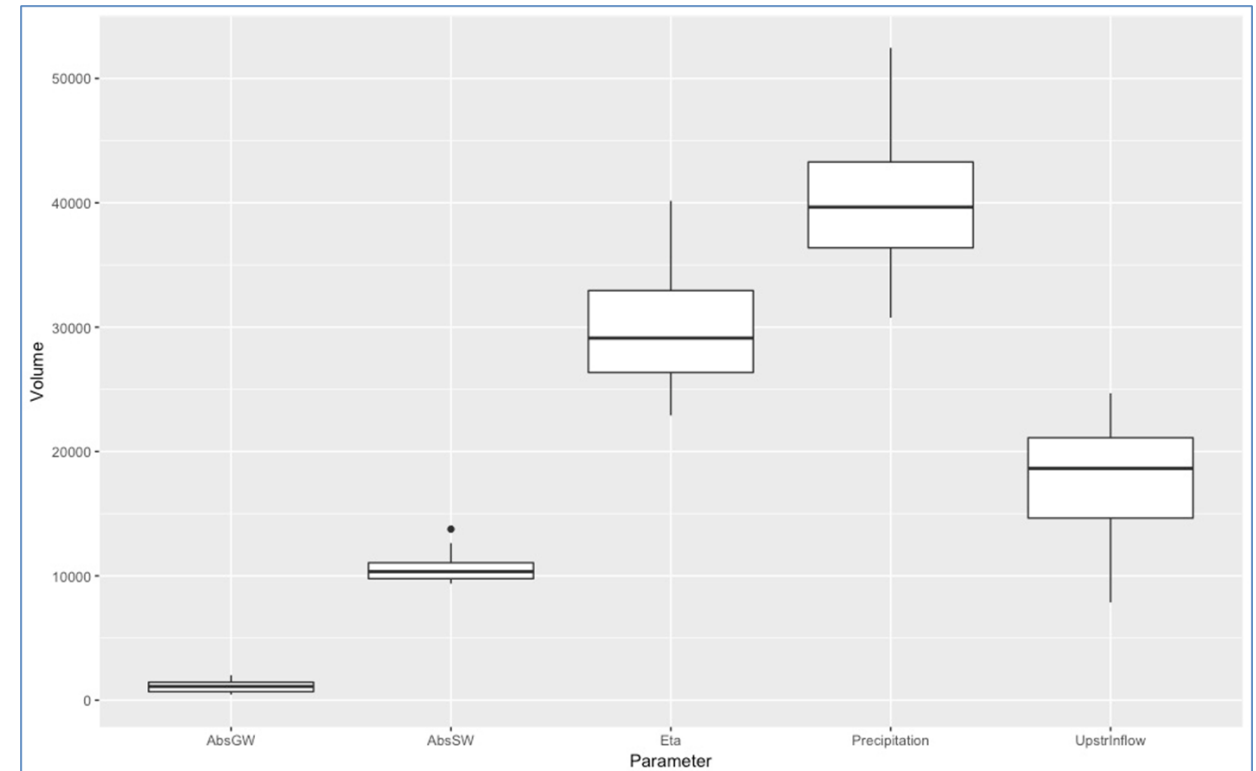


# Water assets



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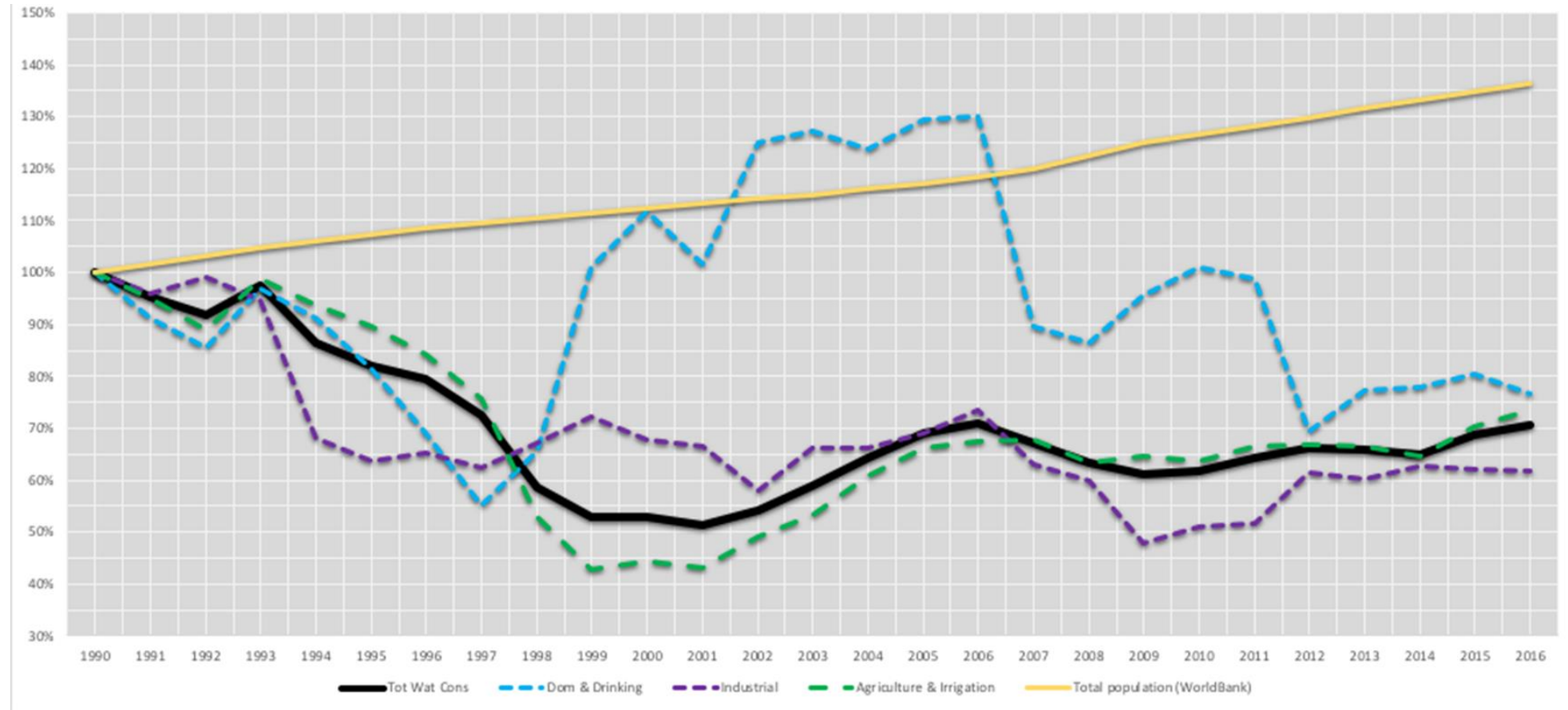
- Sufficient data flow strategy provide significant advantages on the assessment of water assets
  - Can reveal the real magnitude of water assets
  - Their importance
  - Can support decision making, crisis management and IWRM



# Water consumption by economy



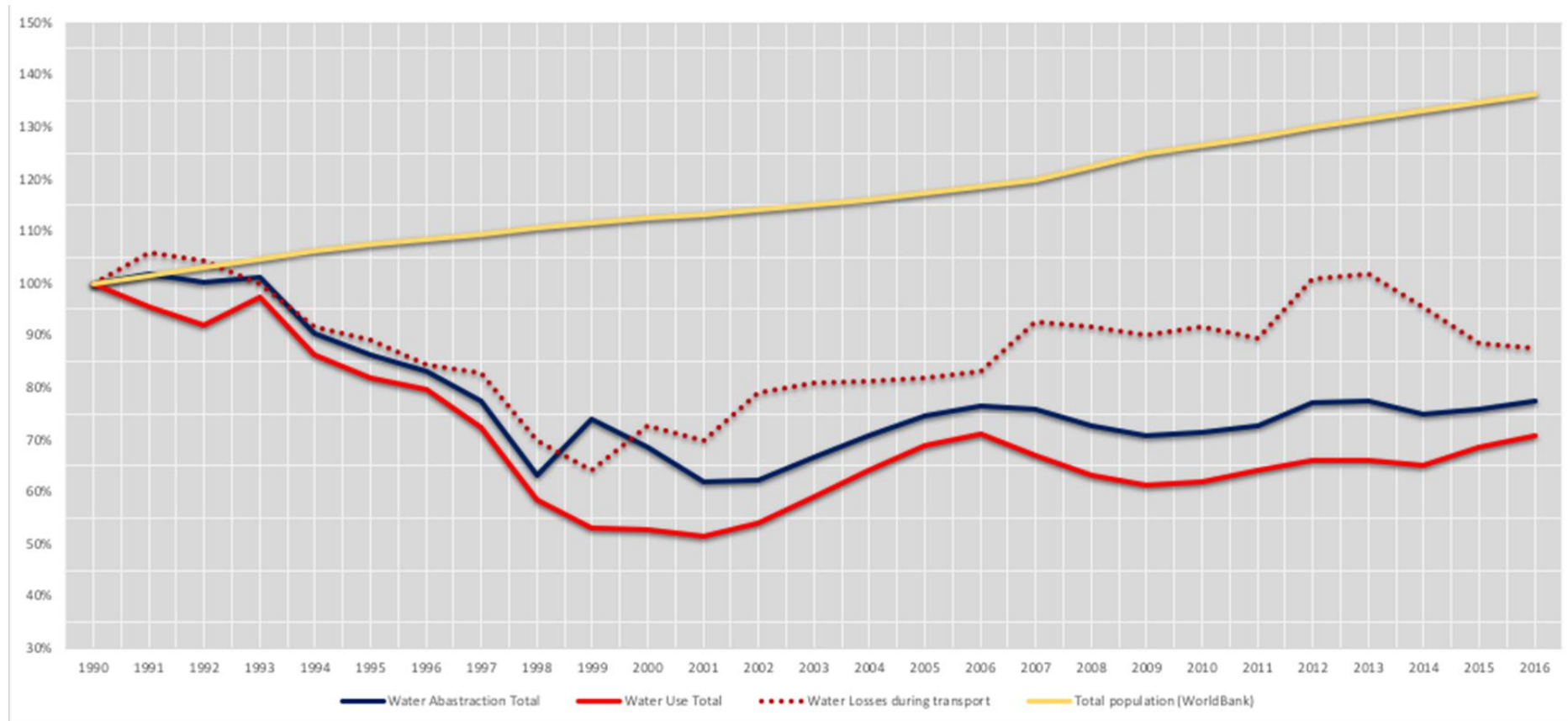
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# Water abstraction, losses and water use



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# Thank you for your attention!

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