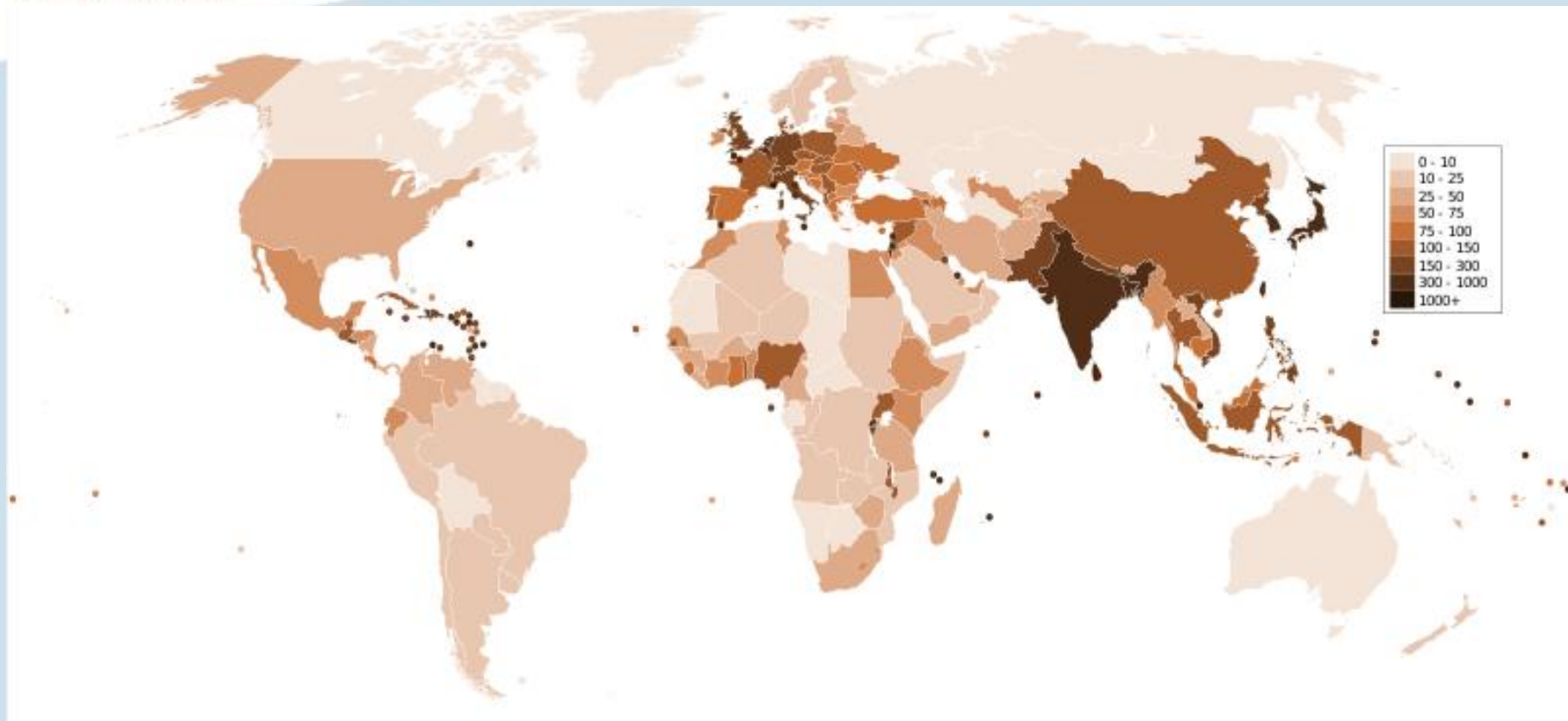




Environmental stats: Methods & developments

Chris Jager



Countries by population density (2006)

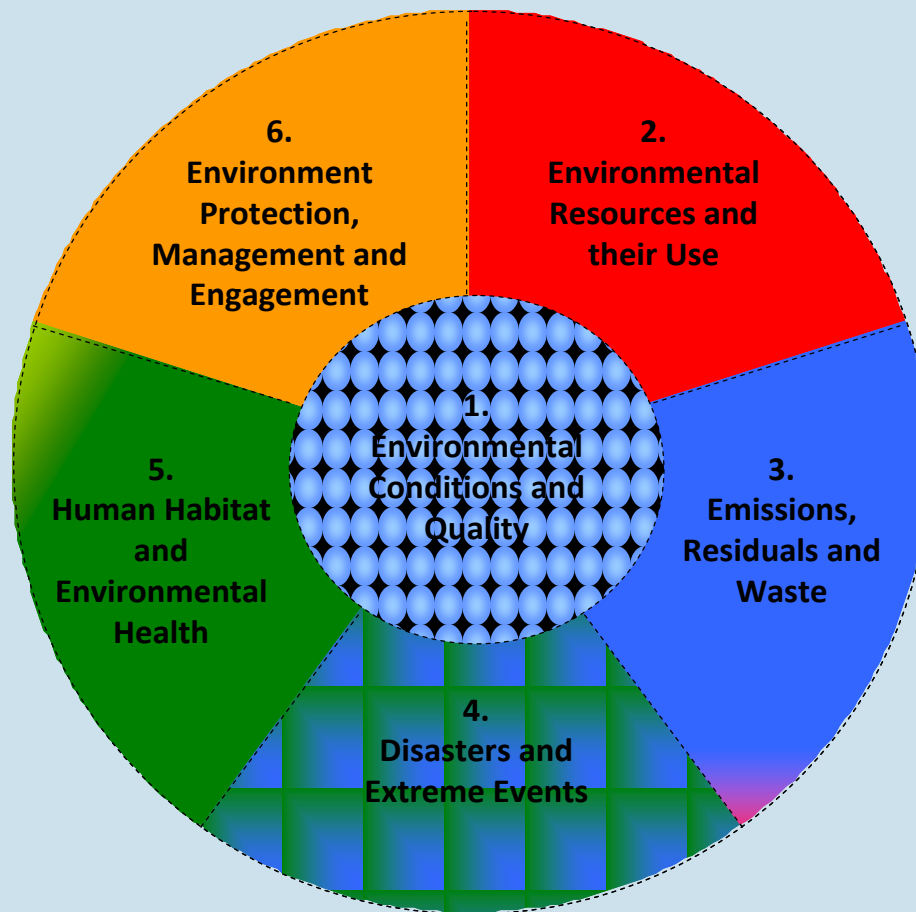
CURAÇÃO

ENVIRONMENTAL STATISTICS

COMPENDIUM 2015



Core set environmental statistics



Environmental accounting:

- **Evaluation mission by ECLAC, 2016**
- **Workshop Env. Accounting, Bogota, 2016**
- **Training on SEEA by expert, Jan. 2017**
- **Workshop Env. Accounting Antigua, May 2017**

What are environmental accounts?



1. Environmental accounts are records of:

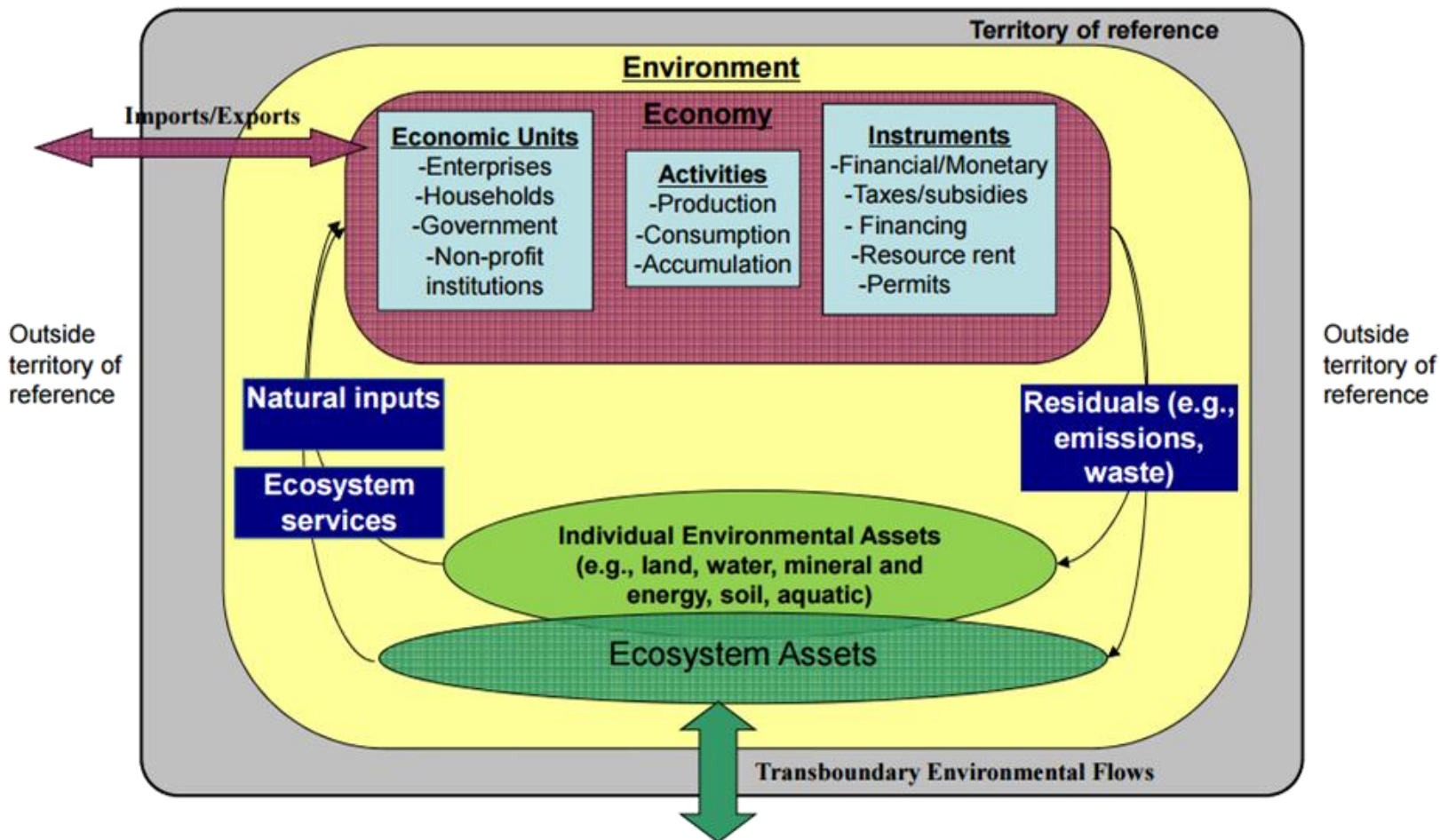
1. the stock and value of environmental assets
2. the flows of material and energy resources between the economy and the environment, and within the economy
3. the expenditures on environmental protection, and the cost of environmental damage.

2. Environmental accounts meet specific criteria:

1. consistent over time
 - always use the same methods and data sources
2. comprehensive in their coverage
3. compatible with economic accounts
4. national in scope (with sub-national detail as appropriate)

1 – What is environmental accounting / SEEA?

Environmental accounting = Expansion of national accounting

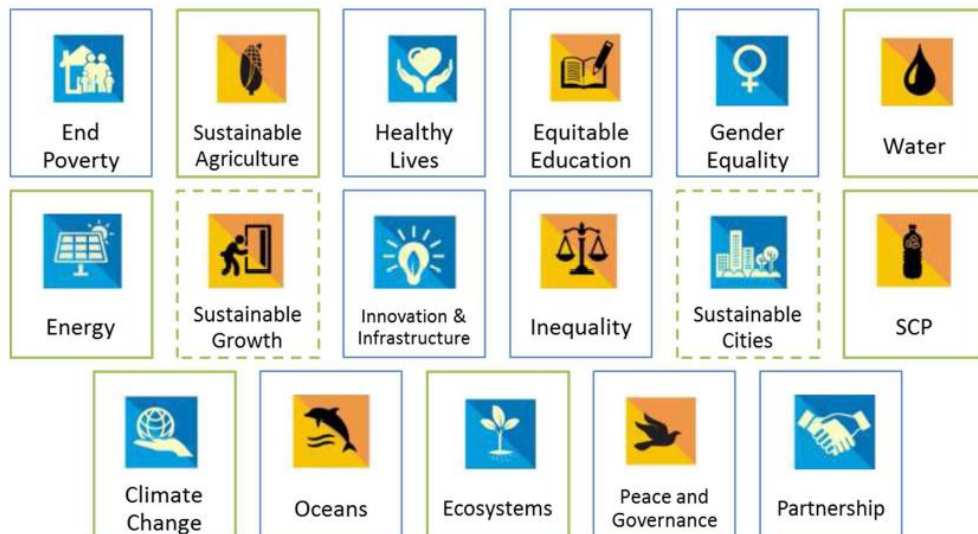


Why an account for water?

- water is made by desalination > expensive,
- we hope to be able to produce it **relatively quickly**,
- demonstrate decision makers the benefits,
- receive **further cooperation** for more accounts

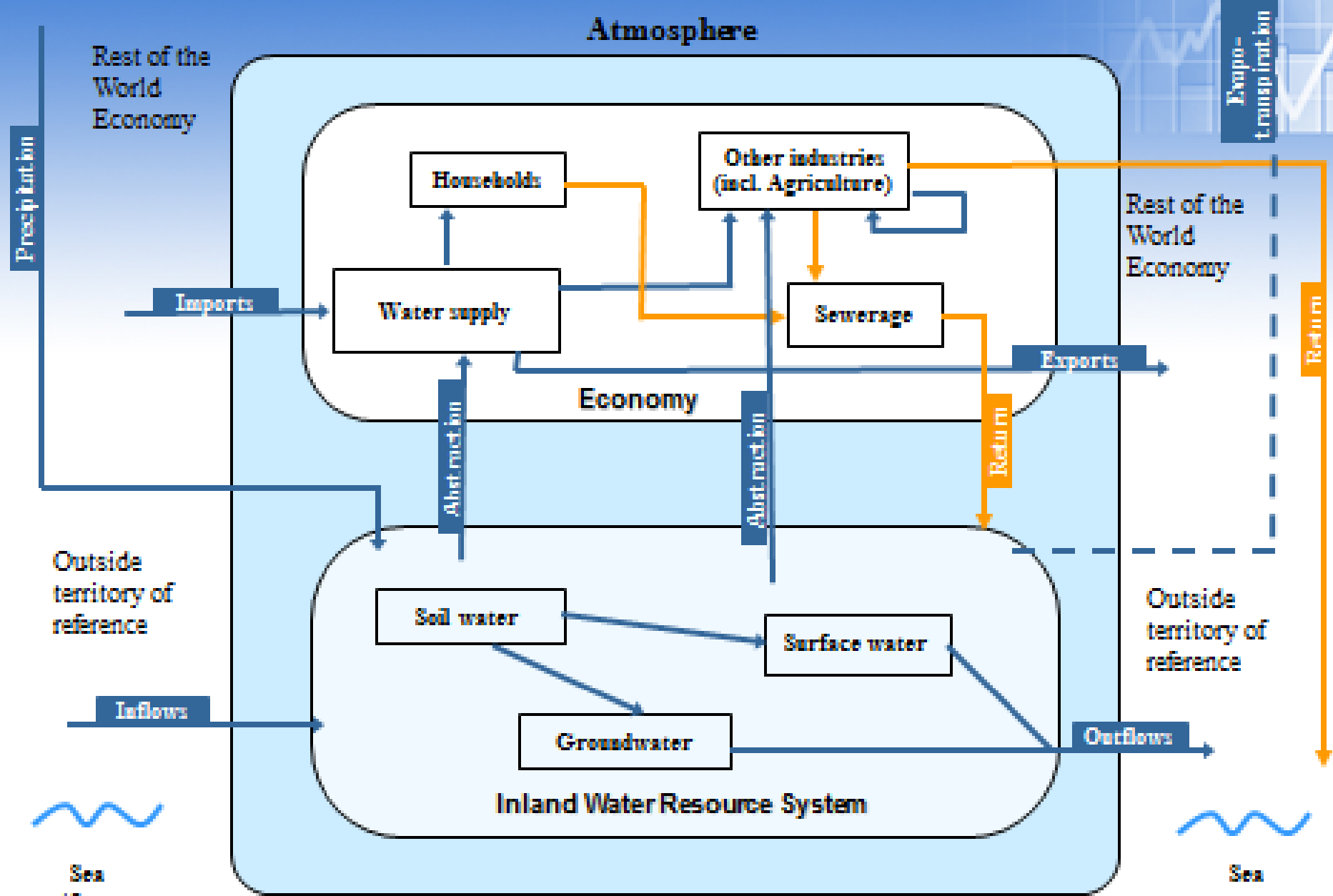
III – Responding to international initiatives

- Provision of the indicators for the **Sustainable Development Goals**
- Provision for the information concerning the **Green Economy and Sustainable Development**

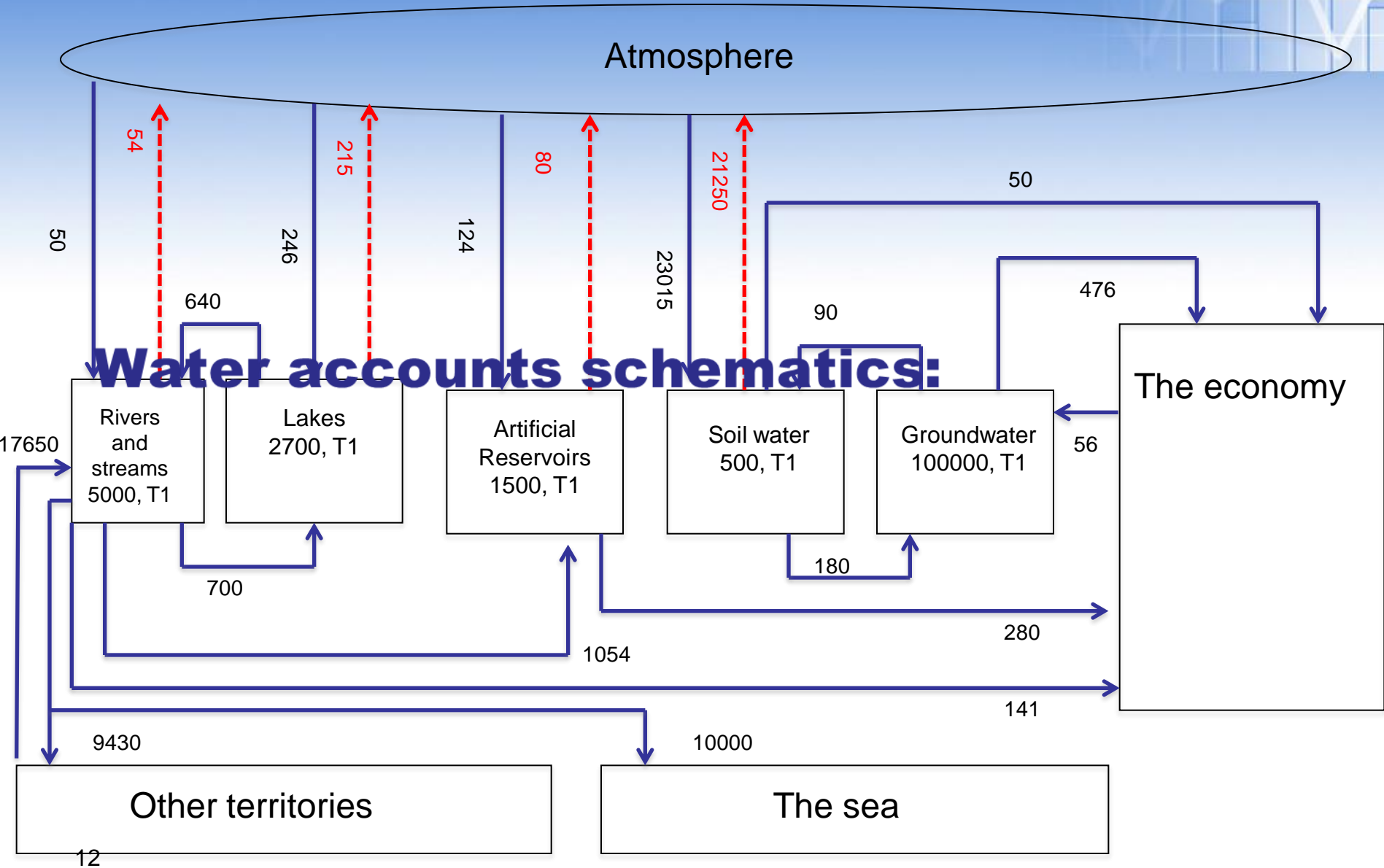


Curaçao could be at the forefront of Small Island Developing States!

Water accounts schematics:



Water cycle schematic

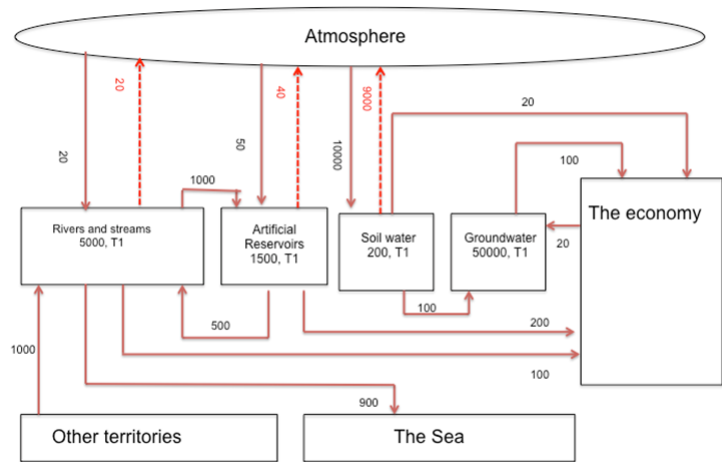


Water accounts schematics:

Group exercise 2: Transcribe stock and flow data



Stock and flow diagram



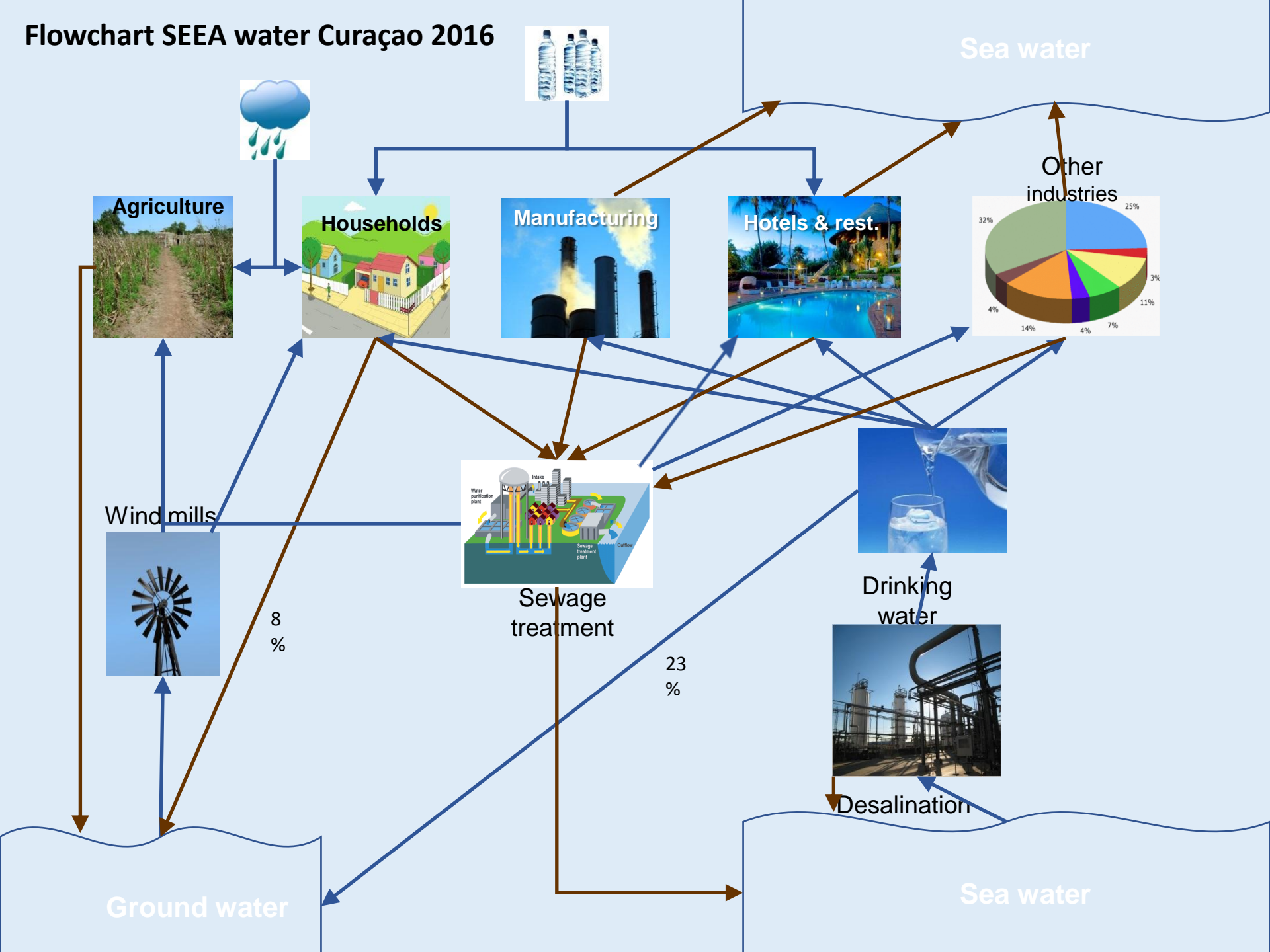
Water asset account

	Type of water resource					Total
	Artificial reservoirs	Lakes	Rivers and streams	Glaciers, snow and ice	Groundwater	
Opening						
Additions to						
Returns						
Precipitation						
Inflows from other territories						
Inflows from other inland water resources						
Discoveries of water in aquifers						
<i>Total additions to stock</i>						
Reductions						
Abstraction						
for hydro power generation						
for cooling water						
Evaporation & actual evapotranspiration						
Outflows to other territories						
Outflows to the sea						
Outflows to other inland water resources						
<i>Total reductions in stock</i>						
Closing						

Group exercise 2: Transcribe stock and flow data

		Type of water resource						Total
		Surface water				Groundwater	Soil water	
		Artificial reservoirs	Lakes	Rivers and streams	Glaciers, snow and ice			
Opening								
Additions to								
	Returns							
	Precipitation							
	Inflows from other territories							
	Inflows from other inland water resources							
	Discoveries of water in aquifers							
	<i>Total additions to stock</i>							
Reductions								
	Abstraction							
	for hydro power generation							
	for cooling water							
	Evaporation & actual evapotranspiration							
	Outflows to other territories							
	Outflows to the sea							
	Outflows to other inland water resources							
	<i>Total reductions in stock</i>							
Closing								

Flowchart SEEA water Curaçao 2016



Physical supply table



Physical units

		Industries (by ISIC categories)						Households	Rest of the world	Total
		1	2-33,41-43	35	36	37	38,39,45-99			
Within the economy	S1 - Supply of water to other economic units <i>of which:</i> Reused water Wastewater to sewerage									
To the environment	S2 - Total returns (= d.1+d.2) d.1- To water resources Surface water Groundwater Soil water d.2- To other sources (e.g. Sea water)									
S - Total supply of water (= S1+S2)										
Consumption (U - S)										

Physical use table



Physical units

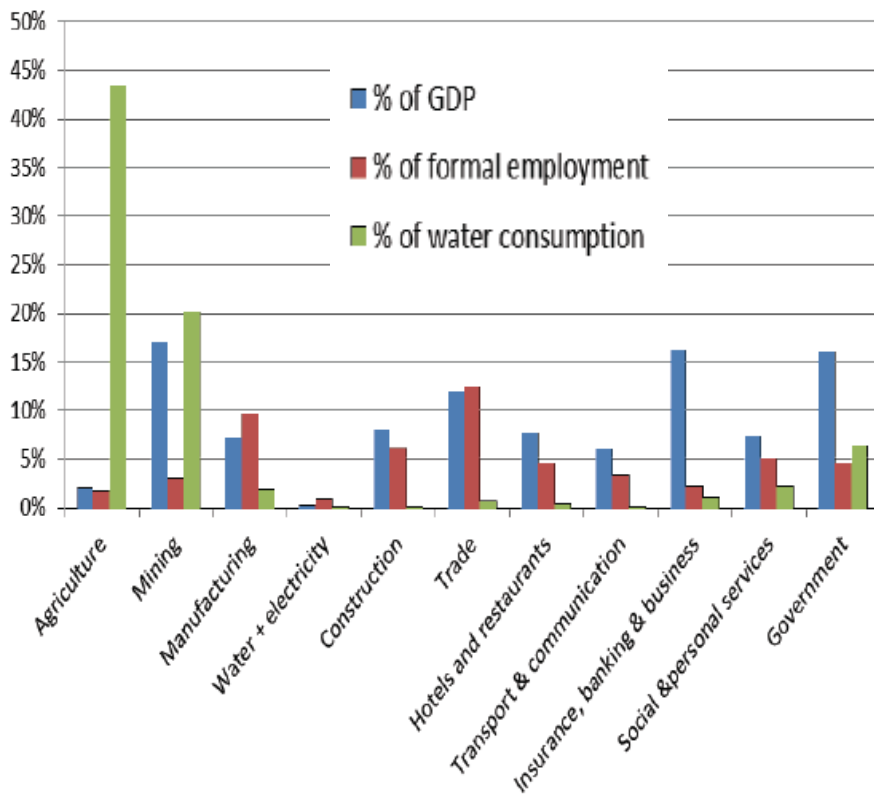
		Industries (by ISIC categories)						Households	Rest of the world	Total
		1-3	5-33, 41-43	35	36	37	38, 39, 45-99			
From the environment	U1 - Total abstraction (=a.1+a.2=b.1+b.2):									
	a.1- Abstraction for own use									
	a.2- Abstraction for distribution									
	b.1- From water resources:									
	Surface water									
	Groundwater									
	Soil water									
	b.2- From other sources									
Collection of precipitation										
Abstraction from the sea										
Within the economy	U2 - Use of water received from other economic units									
U=U1+U2 - Total use of water										

3 – Country example: Botswana

- Population around 2.2 million
- GDP per capita ~19.000 USD
- Relying heavily on diamonds and tourism

Key results: Water

Sector shares in water use, GDP and formal employment



Policy messages from water accounts

- Do we have enough water for mining expansion?
- Better monitoring of water use
- More use of non-fresh water
- Where possible, livestock should use seasonal surface water sources which should be well maintained
- Large scale irrigation projects must be subjected to economic cost benefit analysis
- The opportunity cost of water consumption by such projects and the ability to pay for water should be considered
- Choice of crops should be linked to economic benefits and food security
- What should be the irrigation tariffs?

(Source: Botswana Presentation at WAVES Annual Partnership Meeting 2015)



**Thank you for your attention /
Muchos gracias !**