PAWA project - Pilot Arno Water Accounts

THE LANGUAGE OF STOCKS AND FLOWS STATISTICAL CLASSIFICATION

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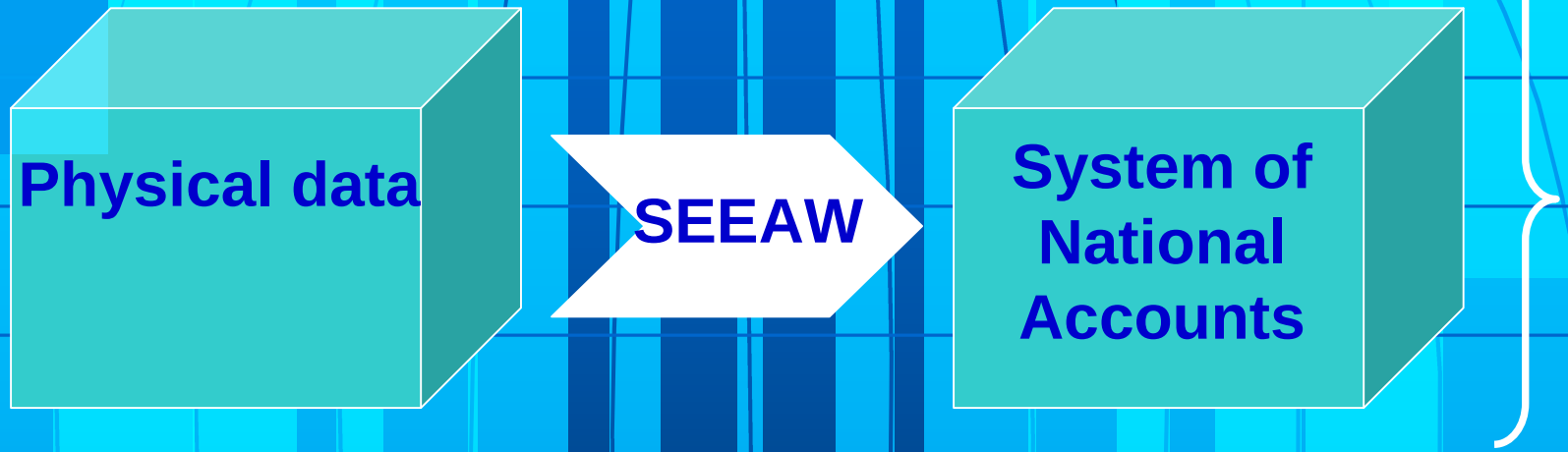
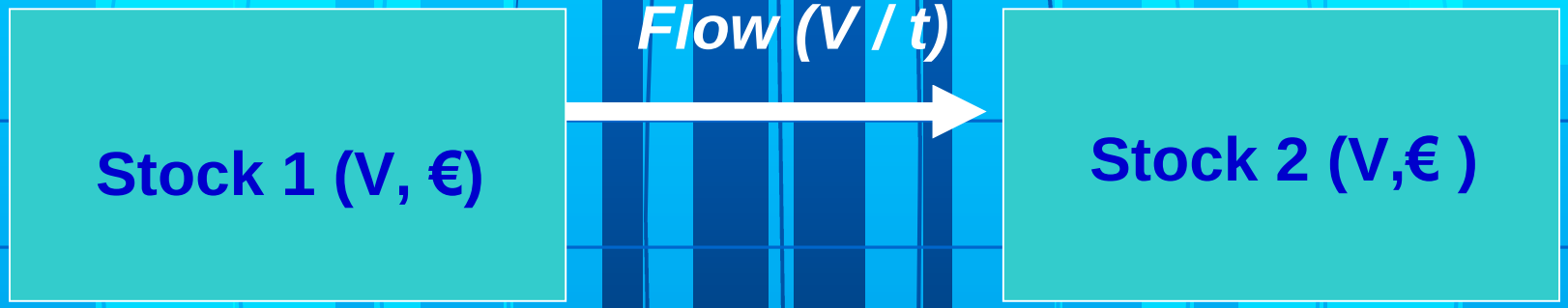
General features



-Resource accounts
-Use per sector accounts
-disposal accounts
-quality accounts
-expenditure accounts

General features



Opening stocks - Closing stocks

= flows (or increased knowledge…)

Stocks definition

Surface water

- Artificial reservoirs
- Lakes
- Rivers
- Snow
- Ice
- glaciers

- *At a time*
- Physical terms in SEEAW
- Monetary terms in SNA

Ground water

Soil water

Stocks : asset accounts

Millions cubic metres

	EA.131 Surface water						
	EA.1311 Artificial Reservoirs	EA.1312 Lakes	EA.1313 Rivers	EA.1314 Snow, Ice and Glaciers	EA.132 Groundwater	EA.133 Soil water	Total
1. Opening Stocks							
Increases in stocks							
2. Returns from the economy							
3. Precipitation							
4. Inflows	0	0	0		0	0	0
4.a. from upstream territories							0
4.b. from other resources in the territory							0
Decreases in stocks							
5. Abstraction							0
6. Evaporation/Actual evapotranspiration							0
7. Outflows	0	0	0	0	0	0	0
7.a to downstream territories							0
7.b to the sea							0
7.c to other resources in the territory							0
8. Other changes in volume							0
9. Closing Stocks							

Flows definition

-Within environment
-From environment to economy (abstraction)
-Within economy (exchanges)
-From economy to environment (discharge)
-Between catchments

Flows: physical use table

Physical use table

Millions m³

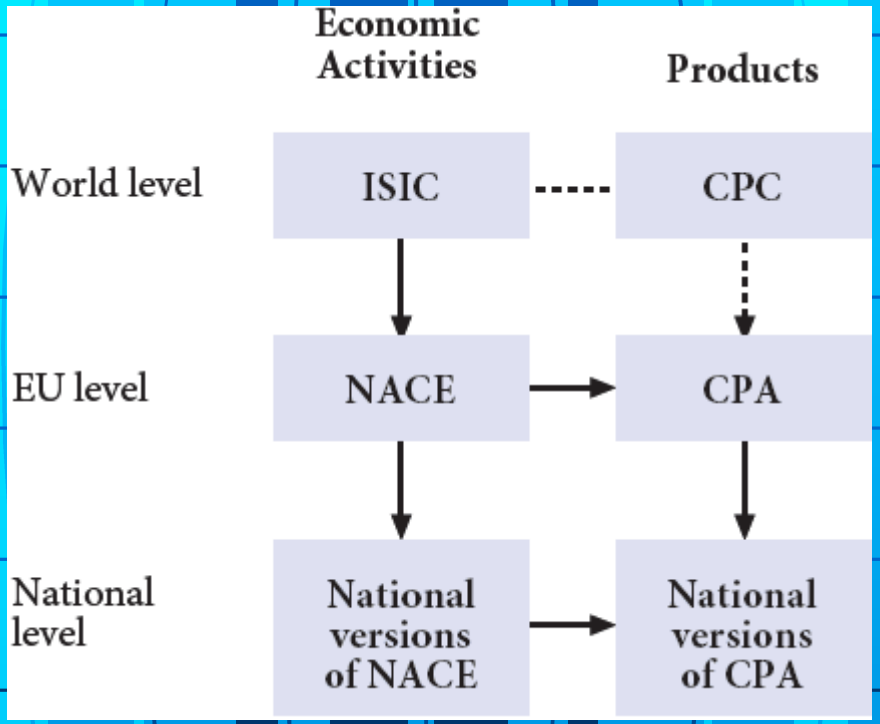
		Industries (by ISIC categories)							Households	Rest of the world	Total
		01-03	05-33, 41-43	35	36	37	38,39, 45-99	Total			
From the environment	**1. Total abstraction** (=1.a+1.b=1.i+1.ii)	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**			**0,0**
	1.a. Abstraction for own use	0,0	0,0	0,0	0,0	0,0	0,0	**0,0**	0,0		0,0
	Hydroelectric power generation							**0,0**			**0,0**
	Irrigation water							**0,0**			**0,0**
	Mine water							**0,0**			**0,0**
	Urban runoff							**0,0**			**0,0**
	Cooling water										
	Other							**0,0**			**0,0**
	1.b. Abstraction for distribution							**0,0**			**0,0**
	1.i. From water resources:	0,0	0,0	0,0	0,0	0,0	0,0	**0,0**	0,0		**0,0**
	1.i.1 Surface water							**0,0**			**0,0**
	1.i.2 Groundwater							**0,0**			**0,0**
	1.i.3 Soil water							**0,0**			**0,0**
	1.ii. From other sources		0,0	0,0	0,0	0,0	0,0	**0,0**	1,0		**1,0**
	1.ii.1 Collection of precipitation							**0,0**	1,0		**1,0**
	1.ii.2 Abstraction from the sea							**0,0**			**0,0**
Within the economy	**2. Use of water received from other economic units**							**0,0**			**0,0**
	of which:										
	2.a. *Reused water*							**0,0**			**0,0**
3. Total use of water (=1+2)		**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**	**0,0**		**0,0**

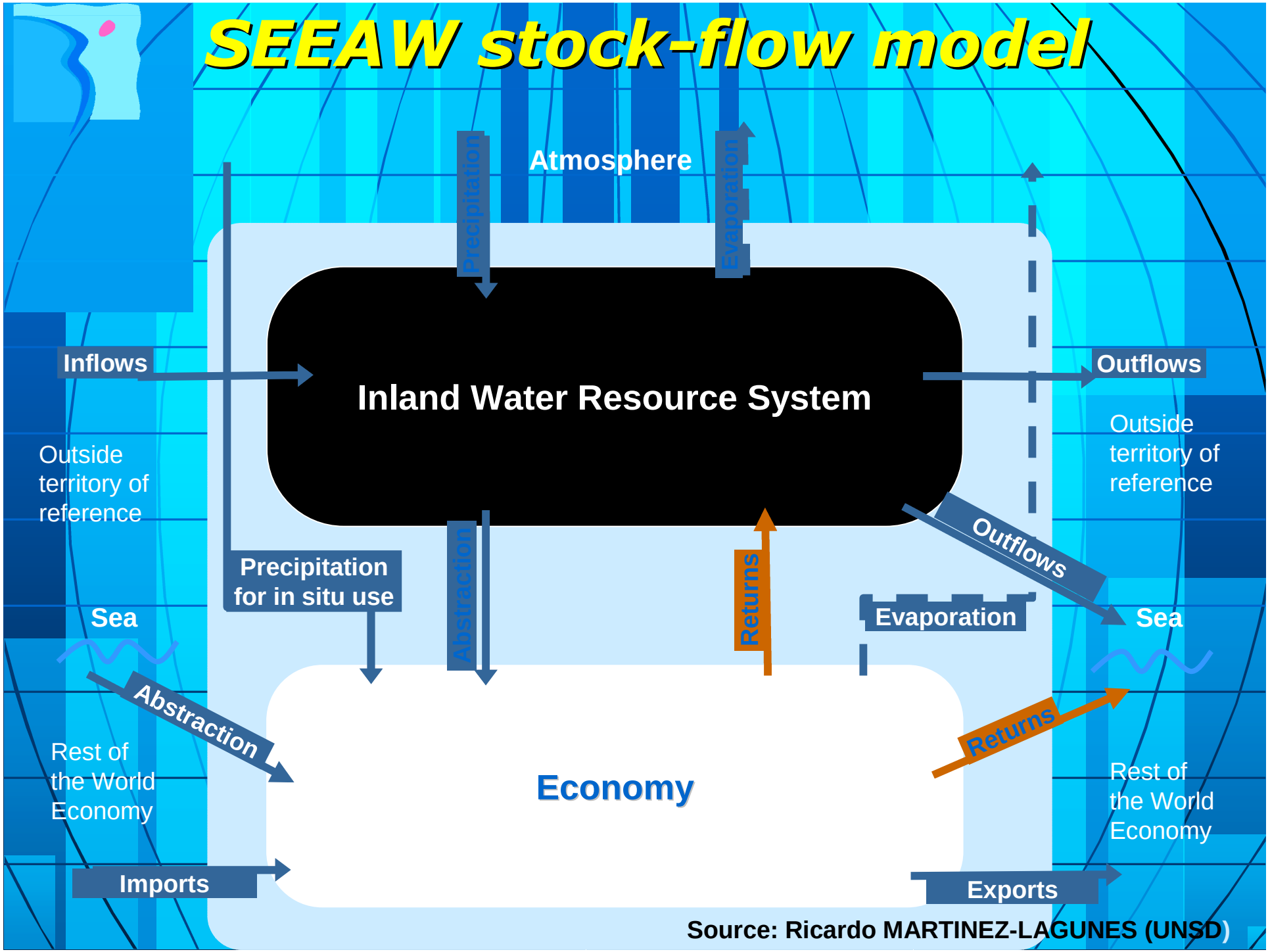
Flows: physical supply table

Millions m³

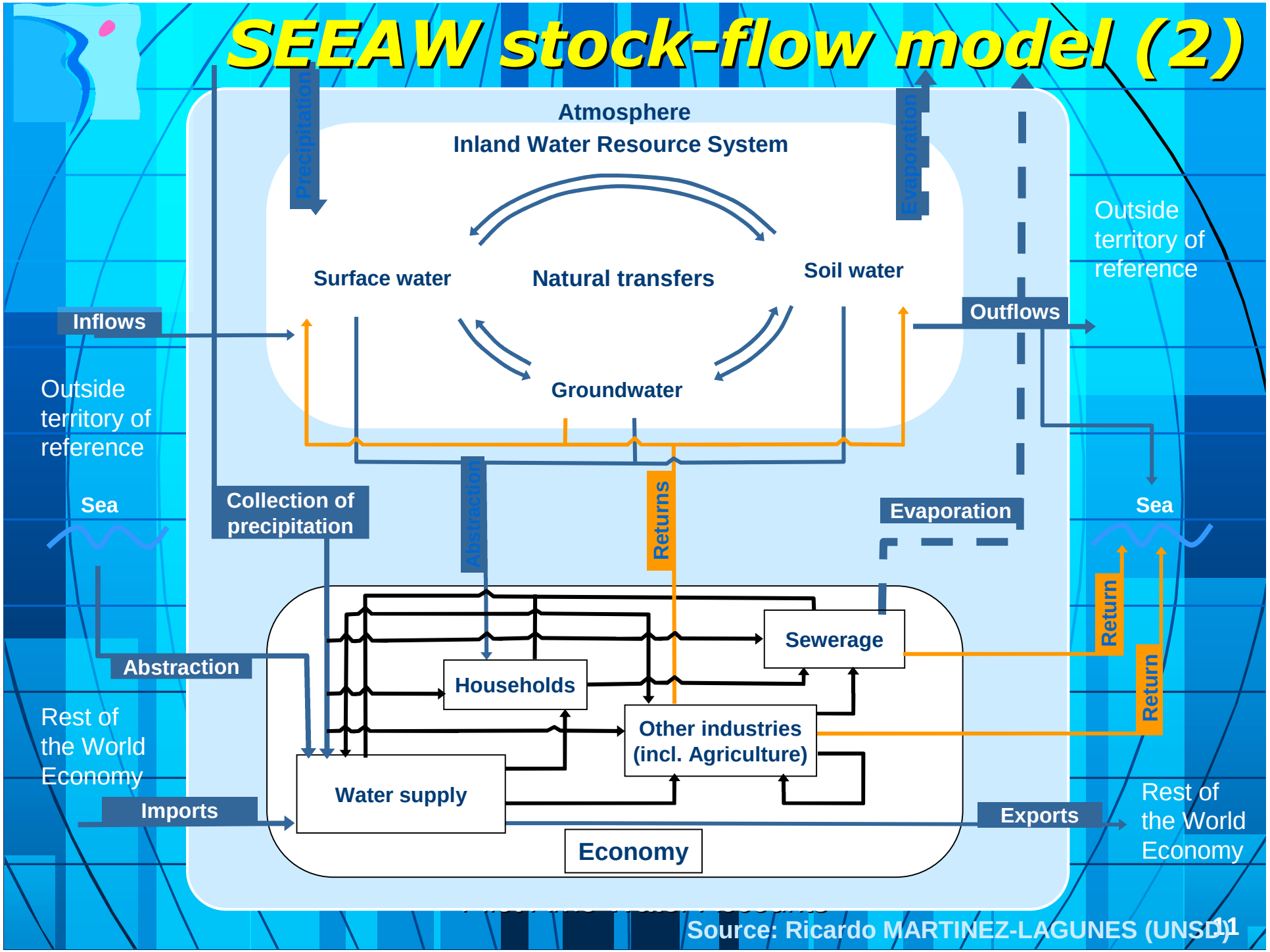
		Industries (by ISIC categories)							Households	Rest of the world	Total
		01-03	05-33, 41-43	35	36	37	38,39, 45-99	Total			
Within the economy	**4. Supply of water to other economic units**							**0.0**			**0.0**
	of which:										
	4.a. Reused water							**0.0**			**0.0**
	4.c. *Desalinated water*							**0.0**			**0.0**
	4.b. Wastewater to sewerage							**0.0**			**0.0**
To the environment	**5. Total returns** (=5.a+5.b)	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**			**0.0**
	Hydroelectric power generation							**0.0**			**0.0**
	Irrigation water							**0.0**			**0.0**
	Mine water							**0.0**			**0.0**
	Urban runoff							**0.0**			**0.0**
	Cooling water										
	Losses in distribution because of leakages							**0.0**			**0.0**
	Treated wastewater							**0.0**			**0.0**
	Other							**0.0**			**0.0**
	5.a. To water resources	0,0	0,0	0,0	0,0	0,0	0,0	**0.0**	0,0		**0.0**
	5.a.1. Surface water							**0.0**			**0.0**
	5.a.2. Groundwater							**0.0**			**0.0**
	5.a.3. Soil water							**0.0**			**0.0**
	5.b. To other sources (e.g. sea water)							**0.0**			**0.0**
6.Total supply of water (=4+5)		**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**		**0.0**
7. Consumption (=3-6)		**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**		**0.0**
of which:											
7.a. Losses in distribution not because of leakages					0,5						
consumption % of total use		#DIV/0!	#####	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!		

The international system of economic classifications




SEEAW stock-flow model
Atmosphere
Precipitation
Evaporation
Inflows
Inland Water Resource System
Outflows
Outside territory of reference
Outside territory of reference
Precipitation for in situ use
Abstraction
Returns
Outflows
Evaporation
Sea
Sea
Abstraction
Returns
Rest of the World Economy
Economy
Rest of the World Economy
Imports
Exports
Source: Ricardo MARTINEZ-LAGUNES (UNSD)

SEEAW stock-flow model (2)



Source: Ricardo MARTINEZ-LAGUNES (UNSD)

Water use and water consomption

Different definitions between information systems!

Geographical scale

4 types :

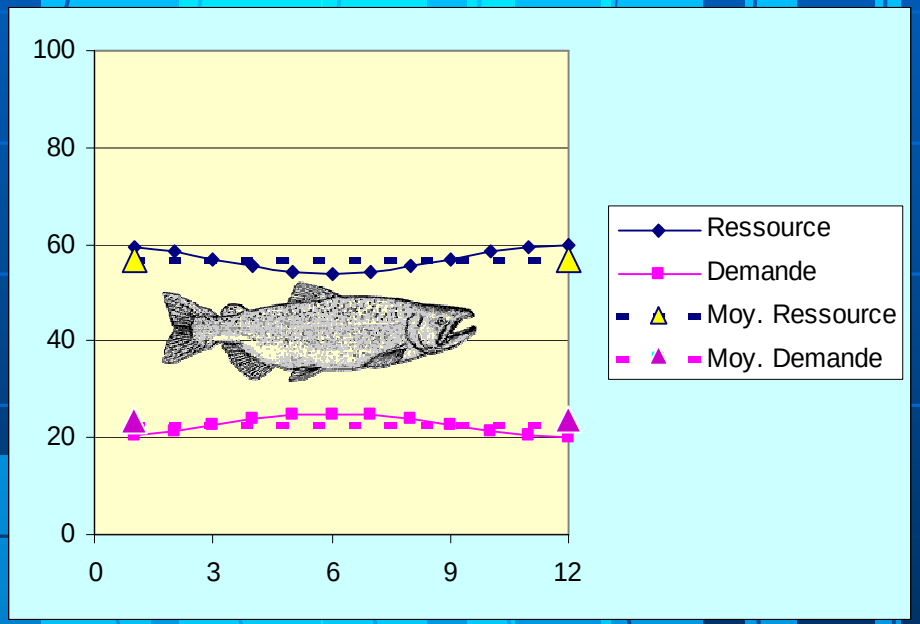
1- physical (RB)

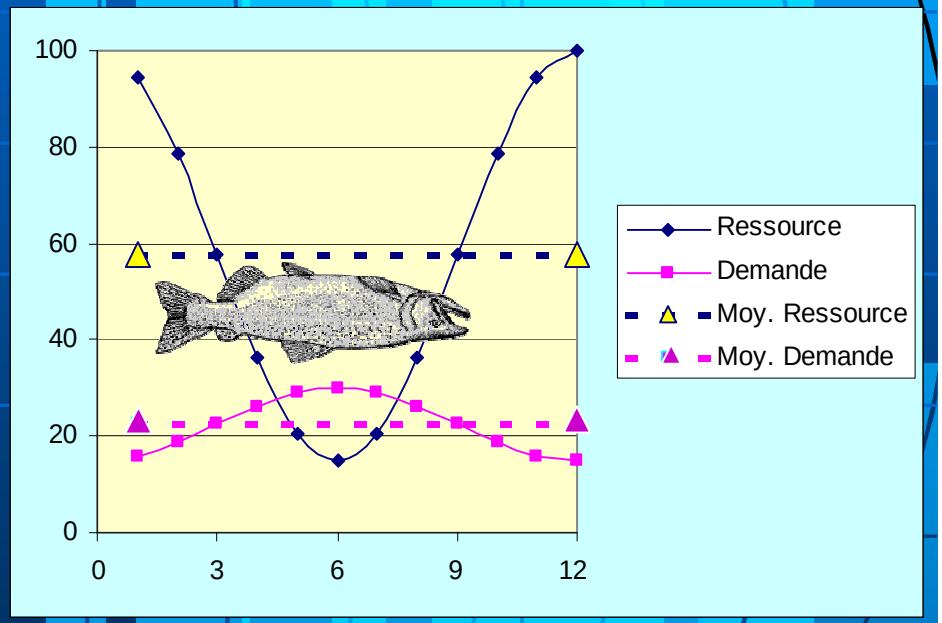
2- administrative region

3- service area

4- accounting catchments

Temporal references : e.g. water resource/demand





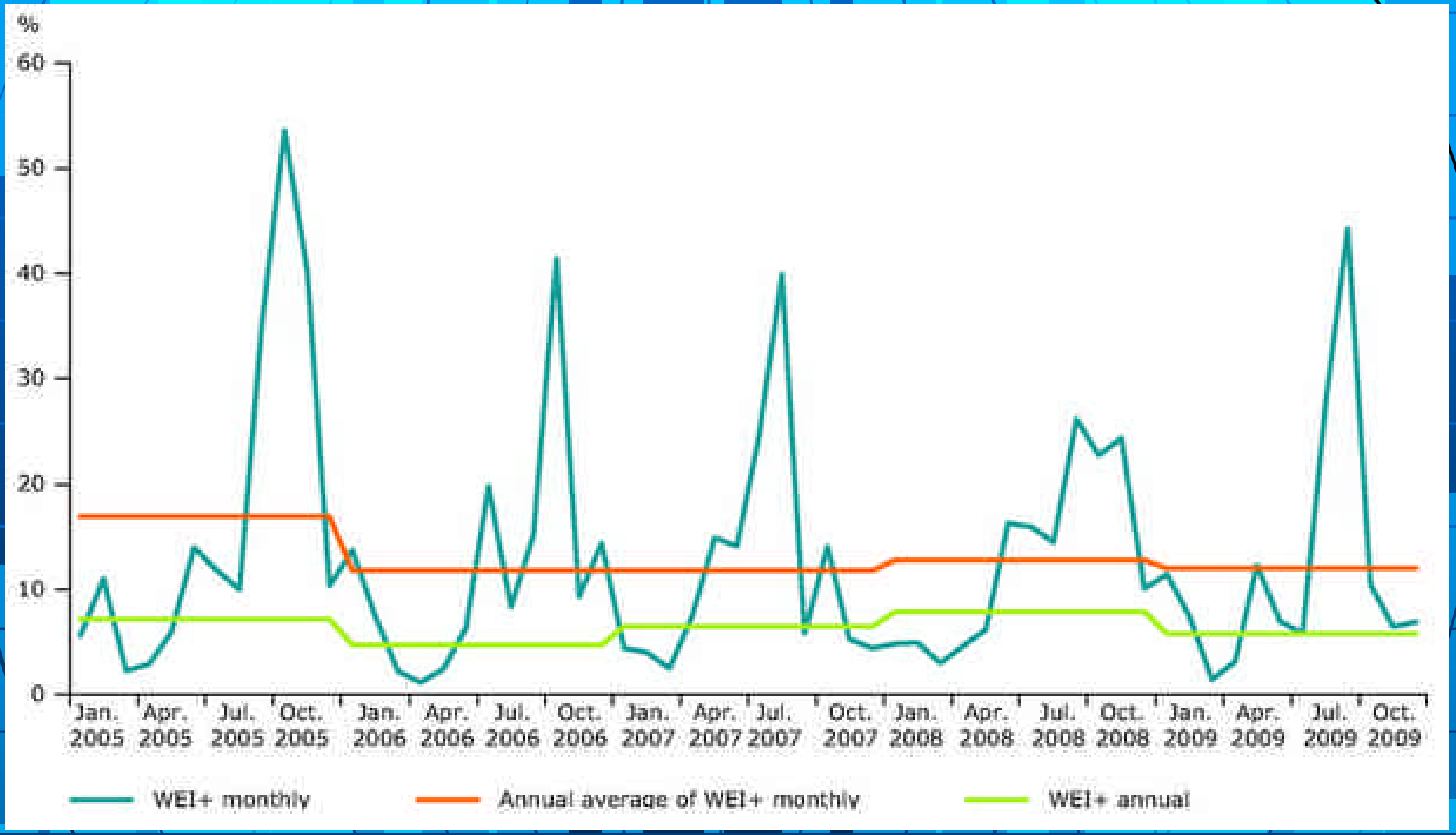
Jean-Louis Weber – Philippe Crouzet

Example to water scarcity indicator

WEI = (Abstraction-Returns) / Renewable Water Resources

Calculation need to be specific for hydrological relevant units i.e. *RBD or subunit*

Calculation need to be able to account for seasonal differences i.e. specific on *monthly level*


%
60
50
40
30
20
10
0
Jan. 2005
Apr. 2005
Jul. 2005
Oct. 2005
Jan. 2006
Apr. 2006
Jul. 2006
Oct. 2006
Jan. 2007
Apr. 2007
Jul. 2007
Oct. 2007
Jan. 2008
Apr. 2008
Jul. 2008
Oct. 2008
Jan. 2009
Apr. 2009
Jul. 2009
Oct. 2009
WEI+ monthly
Annual average of WEI+ monthly
WEI+ annual

THANK YOU FOR LISTENING

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