Session 3: Freshwater Statistics and Indicators

United Nations Statistics Division (UNSD)

Workshop on Environment Statistics
(Yaoundé, Cameroon,
5-9 December 2011)

UNSD data collection

- UNSD/UNEP Questionnaire 2010 on Environment Statistics – sent out in April and focuses on water and waste statistics (http://unstats.un.org/unsd/environment/questionnaire2010.htm)
- Water statistics – The tables cover renewable freshwater resources, freshwater abstraction, distribution and use, and wastewater treatment.
- Waste statistics – The tables cover the generation of waste, the generation and treatment of hazardous waste, and the generation, collection, treatment, and composition of municipal waste.

UNSD data collection water statistics

1. Renewable Freshwater Resources (W1)
2. Freshwater Abstraction (W2)
3. Freshwater Available for Use (W3)
4. Total Water Use (W4)
5. Water Supply Industry (ISIC 36) (W5)
6. Wastewater Treatment Facilities (W6)
7. Population Connected to Wastewater Treatment (W7)

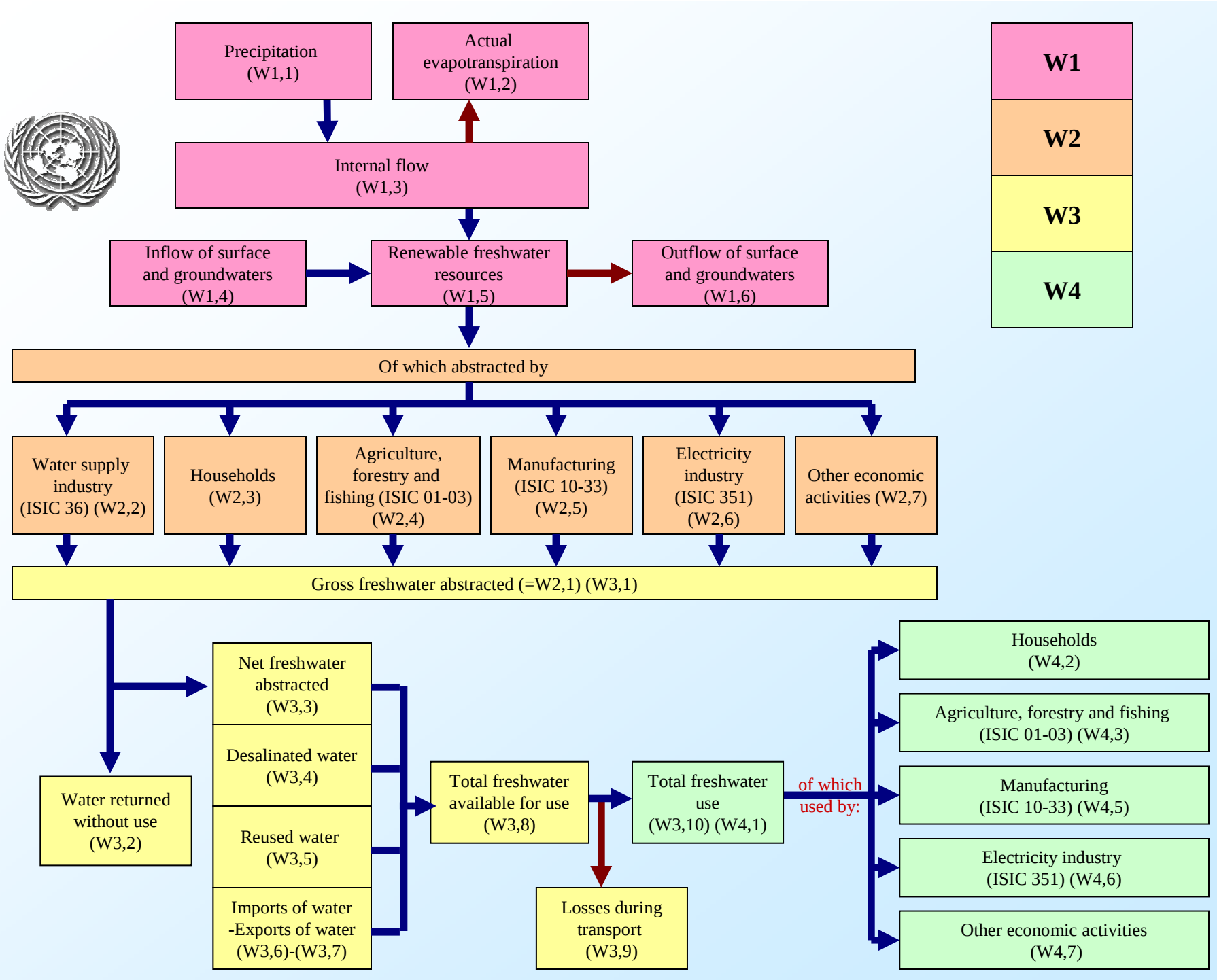
Precipitation (W1,1)
Actual evapotranspiration (W1,2)
Internal flow (W1,3)
Inflow of surface and groundwaters (W1,4)
Renewable freshwater resources (W1,5)
Outflow of surface and groundwaters (W1,6)
W1
W2
W3
W4
Of which abstracted by
Water supply industry (ISIC 36) (W2,2)
Households (W2,3)
Agriculture, forestry and fishing (ISIC 01-03) (W2,4)
Manufacturing (ISIC 10-33) (W2,5)
Electricity industry (ISIC 351) (W2,6)
Other economic activities (W2,7)
Gross freshwater abstracted (=W2,1) (W3,1)
Water returned without use (W3,2)
Net freshwater abstracted (W3,3)
Desalinated water (W3,4)
Reused water (W3,5)
Imports of water -Exports of water (W3,6)-(W3,7)
Total freshwater available for use (W3,8)
Losses during transport (W3,9)
Total freshwater use (W3,10) (W4,1)
of which used by:
Households (W4,2)
Agriculture, forestry and fishing (ISIC 01-03) (W4,3)
Manufacturing (ISIC 10-33) (W4,5)
Electricity industry (ISIC 351) (W4,6)
Other economic activities (W4,7)

Table W1: Renewable Freshwater Resources

Line	Category	Unit	Long-term annual average		1990
1	Precipitation	mio m^3/y			
2	Actual evapotranspiration	mio m^3/y			
3	Internal flow (=1-2)	mio m^3/y			
4	Inflow of surface and groundwaters	mio m^3/y			
5	**Renewable freshwater resources (=3+4)**	mio m^3/y			
6	Outflow of surface and groundwaters	mio m^3/y			

Chart W1: Renewable Freshwater Resources

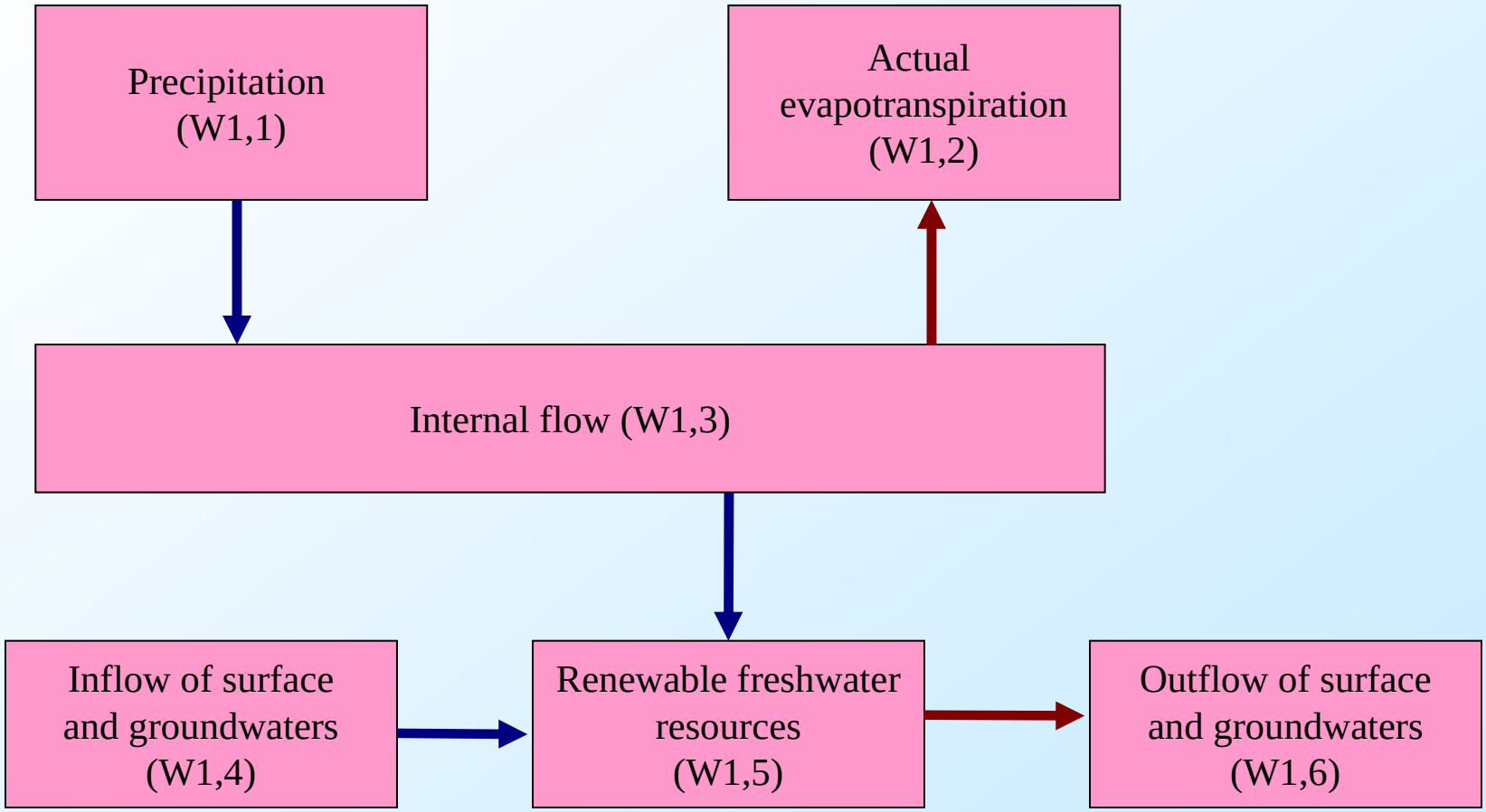

Table W2: Freshwater Abstraction

Line	Category	Unit	1990	1995
	Water abstracted			
1	**Gross freshwater abstracted (=11+21) (=2+3+4+5+6+7) (=W3.1)**	mio m³/y		
	Of which abstracted by:			
2	Water supply industry (ISIC 36) (=12+22)	mio m³/y		
3	Households (=13+23)	mio m³/y		
4	Agriculture, forestry and fishing (ISIC 01-03) (=14+24)	mio m³/y		
5	Manufacturing (ISIC 10-33) (=15+25)	mio m³/y		
6	Electricity industry (ISIC 351) (=16+26)	mio m³/y		
7	Other economic activities (=17+27)	mio m³/y		
	Surface water abstracted			
11	**Gross fresh surface water abstracted (=12+13+14+15+16+17)**	mio m³/y		
	Of which abstracted by:			
12	Water supply industry (ISIC 36)	mio m³/y		
13	Households	mio m³/y		
14	Agriculture, forestry and fishing (ISIC 01-03)	mio m³/y		
15	Manufacturing (ISIC 10-33)	mio m³/y		
16	Electricity industry (ISIC 351)	mio m³/y		
17	Other economic activities	mio m³/y		
	Groundwater abstracted			
21	**Gross fresh groundwater abstracted (=22+23+24+25+26+27)**	mio m³/y		
	Of which abstracted by:			
22	Water supply industry (ISIC 36)	mio m³/y		
23	Households	mio m³/y		
24	Agriculture, forestry and fishing (ISIC 01-03)	mio m³/y		
25	Manufacturing (ISIC 10-33)	mio m³/y		
26	Electricity industry (ISIC 351)	mio m³/y		
27	Other economic activities	mio m³/y		

Table W3: Freshwater Available for Use

Line	Category	Unit	1990
1	Gross freshwater abstracted (=W2,1)	mio m^3/y	
2	Water returned without use	mio m^3/y	
3	**Net freshwater abstracted (=1-2)**	mio m^3/y	
4	Desalinated water	mio m^3/y	
5	Reused water	mio m^3/y	
6	Imports of water	mio m^3/y	
7	Exports of water	mio m^3/y	
8	**Total freshwater available for use (=3+4+5+6-7)**	mio m^3/y	
9	Losses during transport	mio m^3/y	
10	**Total freshwater use (=8-9) (=W4,1)**	mio m^3/y	

Chart W3: Freshwater Available for Use

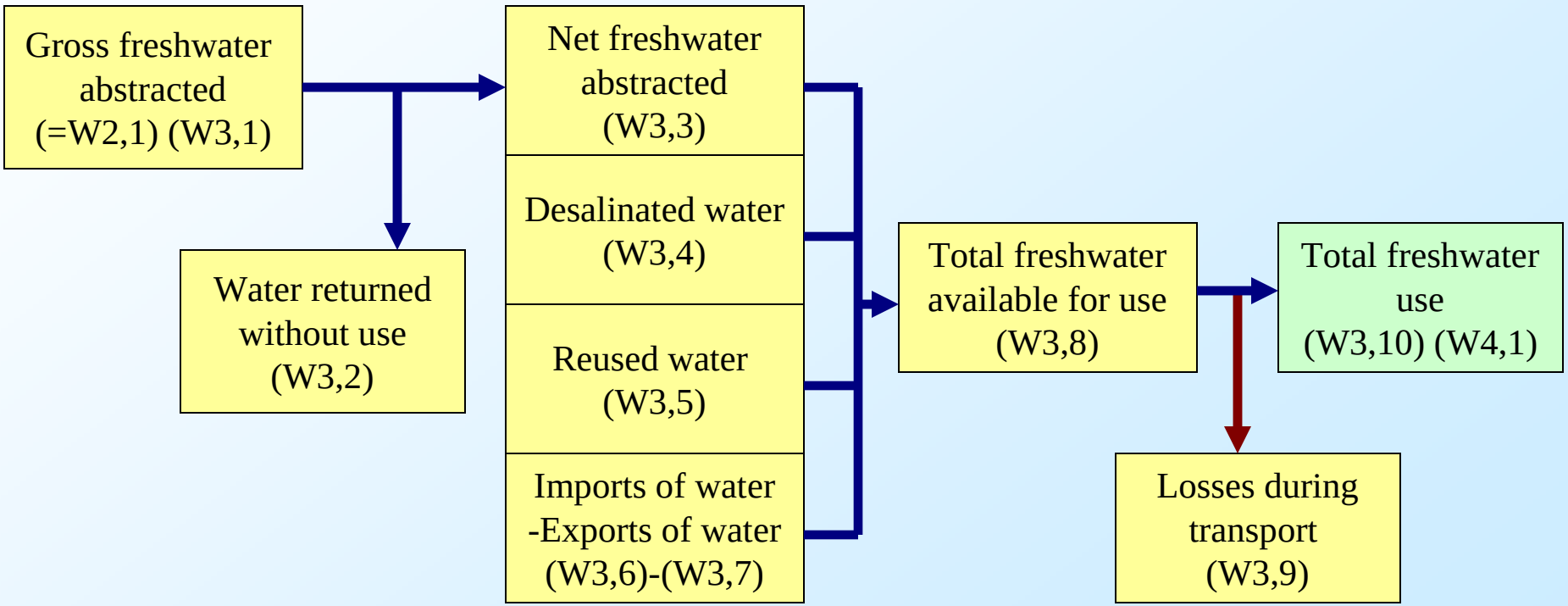

Table W4: Total Water Use

Line	Category	Unit	1990
1	**Total freshwater use** (=2+3+5+6+7) (=W3,10)	mio m^3/y	
	of which used by:		
2	Households	mio m^3/y	
3	Agriculture, forestry and fishing (ISIC 01-03)	mio m^3/y	
4	*of which* for irrigation in agriculture	mio m^3/y	
5	Manufacturing (ISIC 10-33)	mio m^3/y	
6	Electricity industry (ISIC 351)	mio m^3/y	
7	Other economic activities	mio m^3/y	

Chart W4: Total Water Use

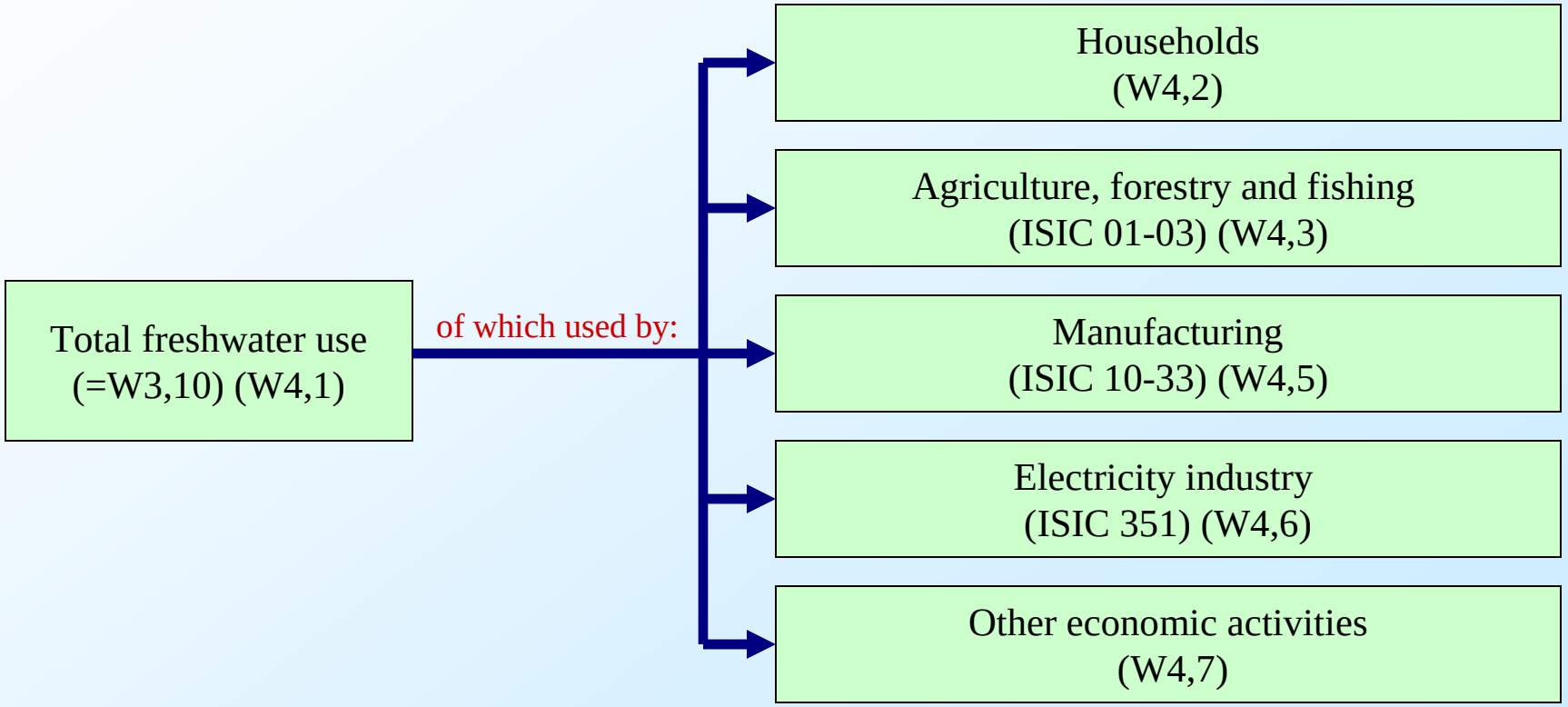

Table W5: Water Supply Industry (ISIC 36)

Line	Category	Unit
1	Gross freshwater supplied by water supply industry (ISIC 36)	mio m^3/y
2	Losses during transport by ISIC 36	mio m^3/y
3	*of which:* Losses by evaporation	mio m^3/y
4	Losses by leakage	mio m^3/y
5	**Net freshwater supplied by water supply industry (ISIC 36) (=1-2) (=6+7+8+9+10)**	mio m^3/y
	of which supplied to:	
6	Households	mio m^3/y
7	Agriculture, forestry and fishing (ISIC 01-03)	mio m^3/y
8	Manufacturing (ISIC 10-33)	mio m^3/y
9	Electricity industry (ISIC 351)	mio m^3/y
10	Other economic activities	mio m^3/y
	Population supplied by water supply industry (ISIC 36)	
11	Total population supplied by water supply industry (ISIC 36)	%
12	Urban population supplied by water supply industry (ISIC 36)	%
13	Rural population supplied by water supply industry (ISIC 36)	%

Chart W5: Water Supply Industry (ISIC 36)

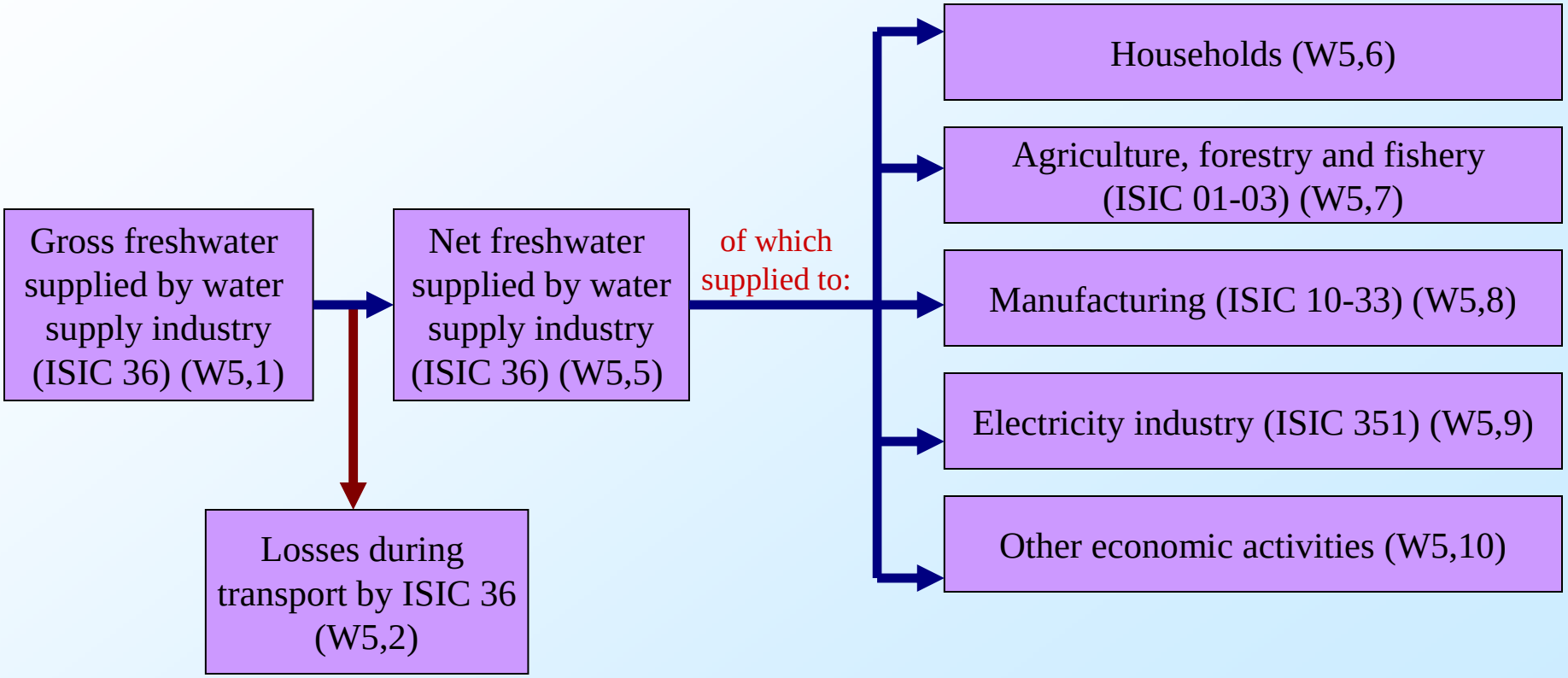

Table W6: Wastewater Treatment Facilities

- Urban wastewater treatment: primary, secondary, tertiary
- Independent wastewater treatment
- Other wastewater treatment: primary, secondary, tertiary
- Each type of treatment:
    - Number of plants
    - Design capacity (Volume)
    - Design capacity (BOD)
    - Actual occupation (Volume)
    - Actual occupation (BOD)
- Sewage sludge production (dry matter)

Table W7: Population Connected to Wastewater Treatment

Line	Category	Unit
1	Population connected to wastewater collecting system	%
2	Population connected to wastewater treatment	%
3	*of which* at least secondary treatment	%
4	Population with independent wastewater treatment (e.g., septic tanks)	%
5	*of which* at least secondary treatment	%
6	Population not connected to wastewater treatment (100% - (2) - (4))	%

Agreed Set of Core ECOWAS Water indicators

- Proportion of population using an improved drinking water source (CSD and MDG)
- Proportion of population served by the water supply industry, total, urban, rural (Table W5 – Water Supply Industry – ISIC 36)
- Total annual renewable freshwater resources per capita (Table W1 – Renewable Freshwater Resources)
- Wastewater treatment (CSD) (Table W6 – Wastewater treatment facilities)
- Proportion of population connected to wastewater collecting system and wastewater treatment (Table W7 – Population connected to wastewater treatment)

Proportion of population using an improved drinking water source

Monitoring access to safe water is of fundamental significance in lowering the risk and frequency of associated diseases.

Definitions/concepts:

- **Improved water supply:**
- - Piped into dwelling, plot or yard (household connection)
- - Public tap/standpipe
- - Tube well/borehole
- - Protected dug well
- - Protected spring
- - Rainwater collection
- **Unimproved water supply:**
- - Unprotected dug well
- - Unprotected spring
- - Cart with small tank/drum (vendor provided water)
- - Tanker truck
- - Surface water (river, dam, lake, pond, stream, canal, irrigation channels)
- - Bottled water (considered “improved” only when the household uses water from another improved source for cooking and personal hygiene)

Population using an improved source; total population estimates

Proportion of population served by the water supply industry, total, urban, rural

The indicator shows the level of development of the water supply infrastructure and risks related to water and hygiene.

Definitions/concepts

- The water supply industry is defined in the International Standard Industrial Classification of All Economic Activities (ISIC Rev.4) Class 36. It includes the public or private bodies whose main function is to provide water to the general public for final use.
- Population estimates from census

Total annual renewable freshwater resources per capita

The indicator provides a measure of the availability of renewable freshwater resources in a country.

Definitions, concepts

- Internal renewable water resources (IRWR) are comprised of the average annual flow of rivers and recharge of groundwater (aquifers) generated from endogenous (internal) precipitation.
- External renewable water resources (ERWR) are the portion of the country's renewable water resources which is generated outside the country.

Wastewater treatment

The indicator assesses the proportion of wastewater that undergoes different (primary, secondary and tertiary) levels of treatment before being discharged to the environment.

Main definitions/concepts:

- Treatment facilities - include public and industrial wastewater treatment plants as well as independent facilities for the treatment of domestic wastewater from dwellings, such as septic tanks.
- **Wastewater** - defined as water which is of no further immediate value to the purpose for which it was used or in the pursuit of which it was produced because of its quality, quantity or time of occurrence.

Proportion of population connected to wastewater collecting system and wastewater treatment

This indicator assesses the population coverage of wastewater collecting and treatment.

Main definitions/concepts

- Wastewater collecting systems are systems of conduits which collect and conduct wastewater.
- Wastewater treatment is all treatment of wastewater in wastewater treatment plants usually operated by public authorities or by private companies and it includes the treatment of wastewater delivered to treatment plants by trucks.

UNSD Questionnaires: 1999-2010: Responses as of 15 February 2011

Country	1999	2001	2004	2006	2008	2010
Cameroon		Cameroon			Cameroon (W, R)	Cameroon (W, R)
Central African Republic						Central African Republic (W, R)
Chad						Chad (W, R)
Congo					Congo (W, R)	
Equatorial Guinea						
Gabon	Gabon					
Sao Tome and Principe						

Thank you.