



1. Data sources

- ☐ Producing of statistics for template C-1 (Renewable Freshwater Resources) is a task of the National Hydrometeorological Institute.
- ☐ National Statistical Offices should be in a position to ask them the right questions, to understand and to (roughly) validate the data.



Clarifications with Hydrometeorological Institutes

- ☐ Are annual water balances available, Long Term Annual Average (LTAA) or other?
- ☐ Does the national monitoring network qualify to calculate a national water balance?
- ☐ Which methods are used (e.g. following WMO Guide to Hydrological Practices), how are shared water bodies (e.g. border rivers) considered, etc.?
- ☐ Data is needed in terms of volume (not height)
- ☐ ACTUAL evapo-transpiration is needed



2. Stumbling Blocks

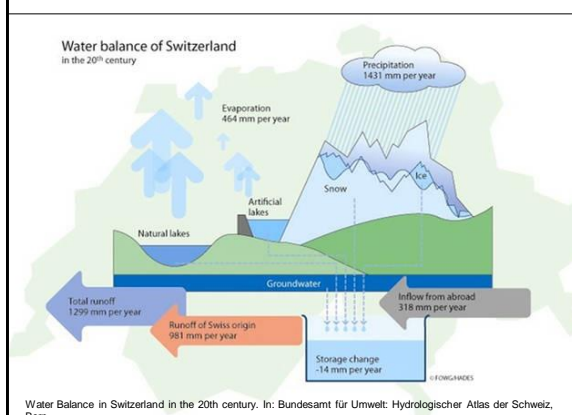
Data collection:

- Unit of measurement
- Transboundary waters
- ACTUAL evapotranspiration

Careful with the interpretation of results:

- Renewable freshwater resources:
 - Adding up (e.g. for a group of countries) will lead to double-counting
 - Ecological flow not considered
- National aggregates do not reflect seasonal or sub-national (river-basement) problems

Stumbling block: Unit of measurement



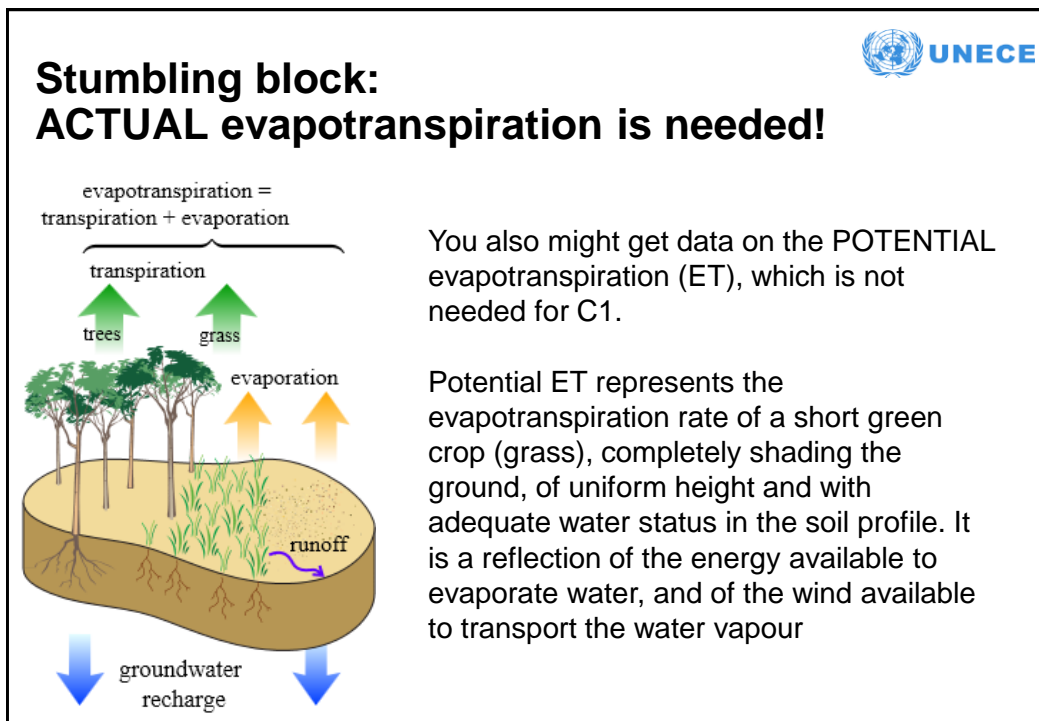
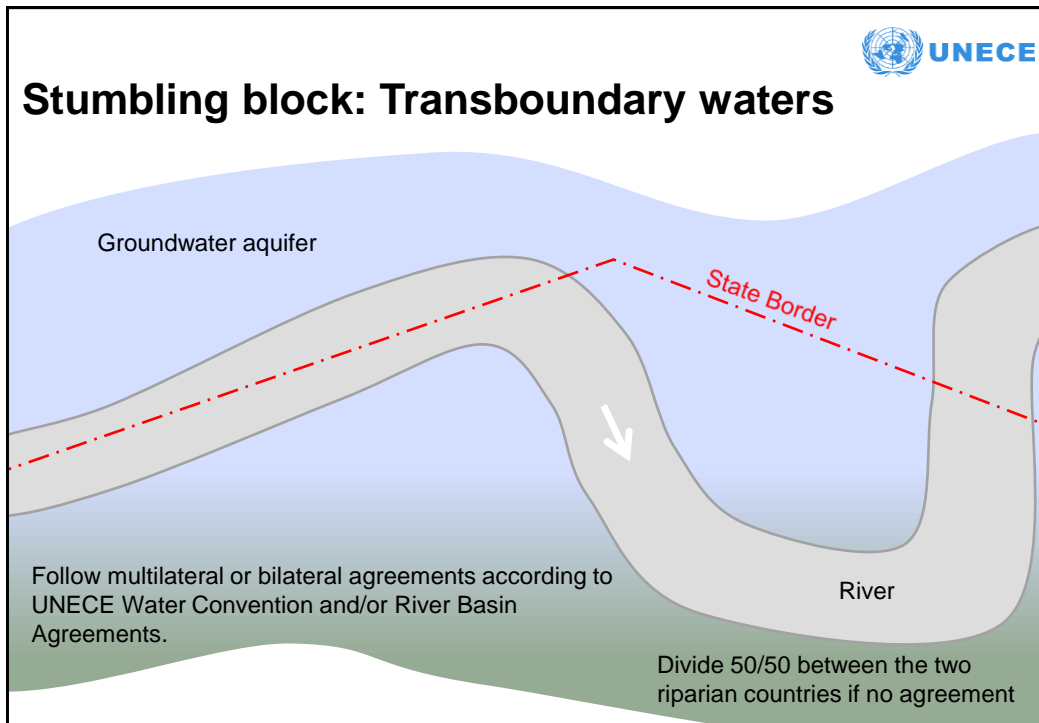
Often you will get the data on water resources in terms of mm/year, km³/year or another unit.

Unit of measurement of template C1: **million m³/year!**

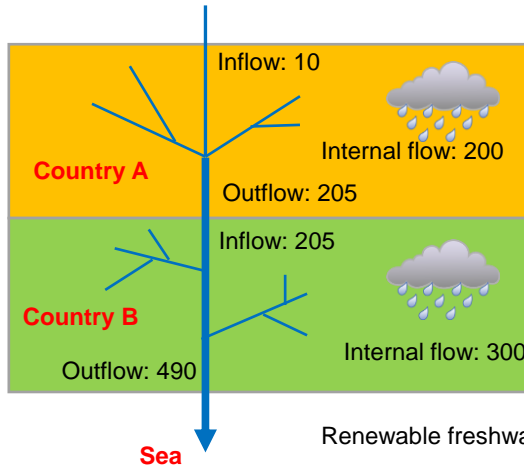
Long-term annual renewable water resources (RWR) by country (in km³/year, average)

Georgia

Precipitation (mm/year)	[1] 1 026
Area of the country (1000 ha)	[2] 6 970
Precipitation (km ³ /year)	[3] 71.51 $= [1] \times [2] \times 10^{-3}$
Surface water: produced internally	[4] 56.9 $[a]$
Groundwater: produced internally	[5] 17.23
Overlap between surface water and groundwater	[6] 16 $[b]$
Total internal renewable water resources	[7] 58.13 $= [4] + [5] - [6]$



Stumbling block: Interpretation of renewable freshwater resources (I)



Country A:
Renewable freshwater resources = $210 = 200 + 10$

Country B:
Renewable freshwater resources = $505 = 300 + 205$

Renewable freshwater resources of countries A and B together?
a) ~~715?~~ b) ~~705?~~ c) 510?

Stumbling block: Interpretation of renewable freshwater resources (II)



Calculation of annual or LTAA renewable freshwater resources on country level provides important information for a range of indicators (e.g. water exploitation index, dependency ratio etc.), **but does not consider:**

- ☐ Ecological requirements (ecological flow)
- ☐ Multi- or bilateral agreements
- ☐ Seasonal and/or sub-national water stress situations

3. Simple Data Validation

Can the values be true?

What is questionable here? Why? (Size of country: 85 000 km²)

		Unit	1990	1995	2000	2001
1	Precipitation	million m ³	93000		85000	90000
2	Actual evapotranspiration	million m ³	38000			30000
3	Internal flow (Row 1 - row 2)	million m ³	55000	n/a	85000	60000
4	Inflow of surface and groundwaters from neighbouring countries	million m ³	23000		20000	25000
5	Renewable freshwater resources (Row 3 + Row 4)	million m ³	78000	n/a	105000	85000
6	Outflow of surface and groundwaters to neighbouring countries	million m ³	78000		70000	72000
7	Outflow of surface and groundwaters to the sea	million m ³	0		0	0

Avoid empty cells. Is it "0" or "n/a"?

Careful: Templates contain formulas for internal flow and renewable freshwater resources.

Double-check with other data sources, e.g:

- [FAO Aquastat](#)
- [World Bank](#) (average precipitation: divide volume / land area)
- [CIA World Factbook](#)
- Etc.

Suggestion: Long Term Annual Average (LTAA) figures could be useful

Thank you for your attention!
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