



International Commission  
for the Hydrology of the  
Rhine basin (CHR)

[www.chr-khr.org](http://www.chr-khr.org)

# Status of the Socio-Economic Scenarios project

CHR 50 years Jubilee

22 October 2021

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# Socio-economics in hydrology Rhine basin



CHR seminar Bregenz,  
Austria

In 2014

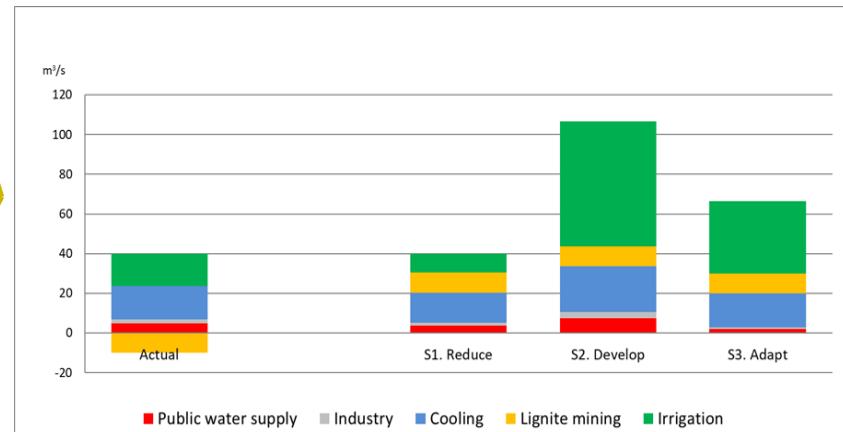
Figure: *schematic representation of the Rhine's socio-economic and hydrological system (by Astrid Björnsen-Gurung)*

# Socio-economics in hydrology Rhine basin

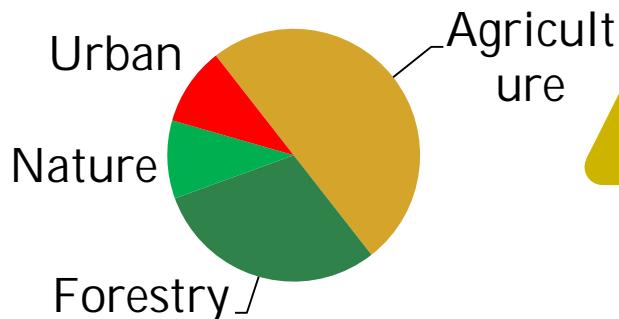
## IV. Impact assessment

- Navigation
- Hydro power
- Drinking water
- Ecology
- Flushing / Level control
- ....

## III. Abstraction > Returnflow



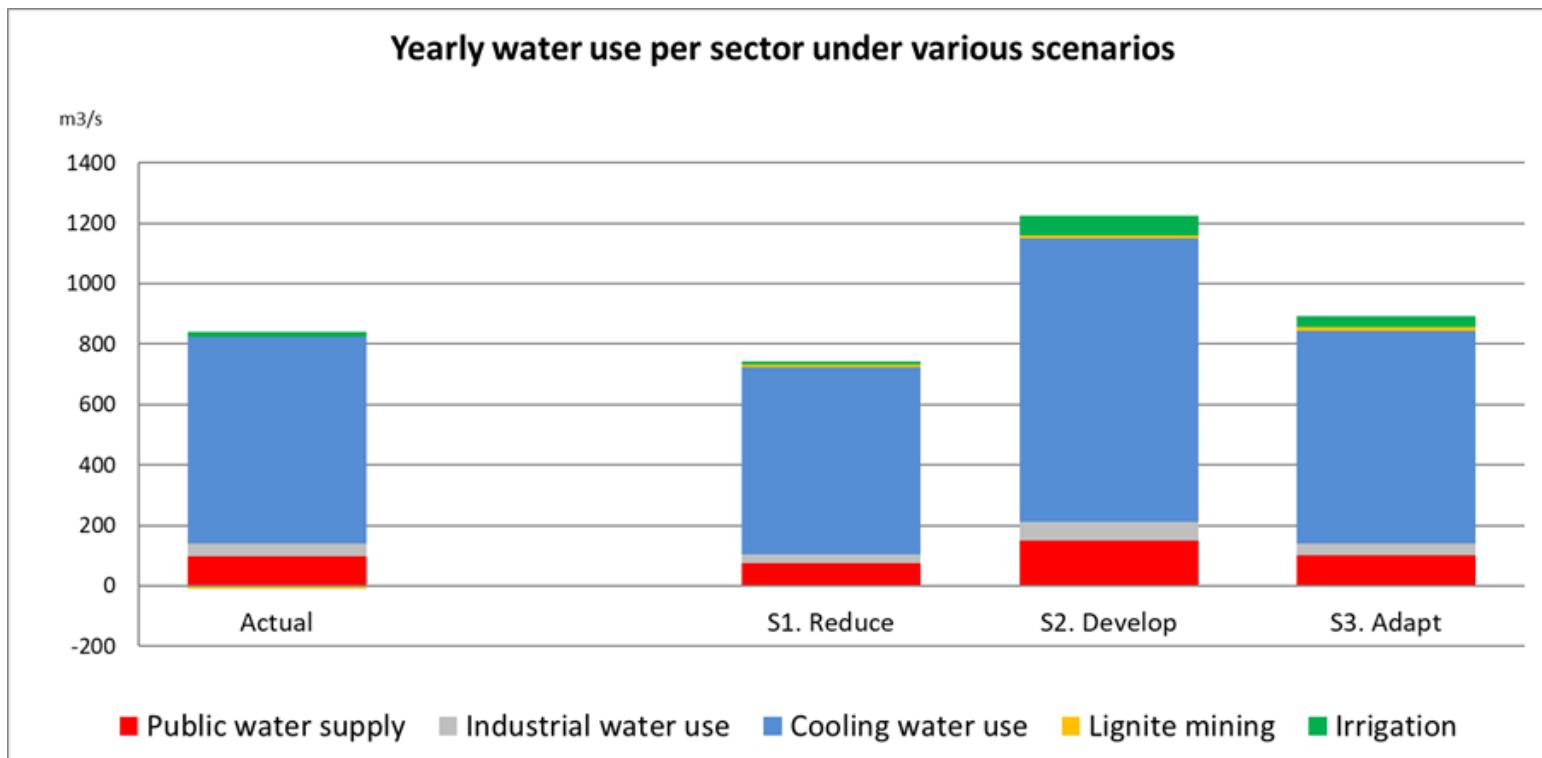
## II. Landuse > Evaporation



## I. Climate

- Rainfall – Runoff
- Snowmelt
- Extremes
- Variability
- Baseflow

# First integrated overview (2019) – expert workshops data



# First integrated overview (2019) – conclusions

Integrated Overview of the effects of socio-economic scenarios on the discharge of the Rhine (Ruijgh et al, 2019):

- Water consumption by public water supply and industry is small.
- Information on water consumption for irrigation and cooling – now and in future – is very scarce / unclear / uncertain.
- Under future scenarios, water consumption in the Rhine river basin could increase from 50-75 m<sup>3</sup>/s to 200-250 m<sup>3</sup>/s in summer.
- Lakes and reservoirs are important factors in the redistribution of discharge in time. Operation of reservoirs might be adjusted due to the energy transition.

# Set-up scenario planning tool for the Rhine catchment



# Assessment of current situation - Global datasets and knowledge

BlueEarth Data services x +

blueearthdata.org

**Suggested global datasets**

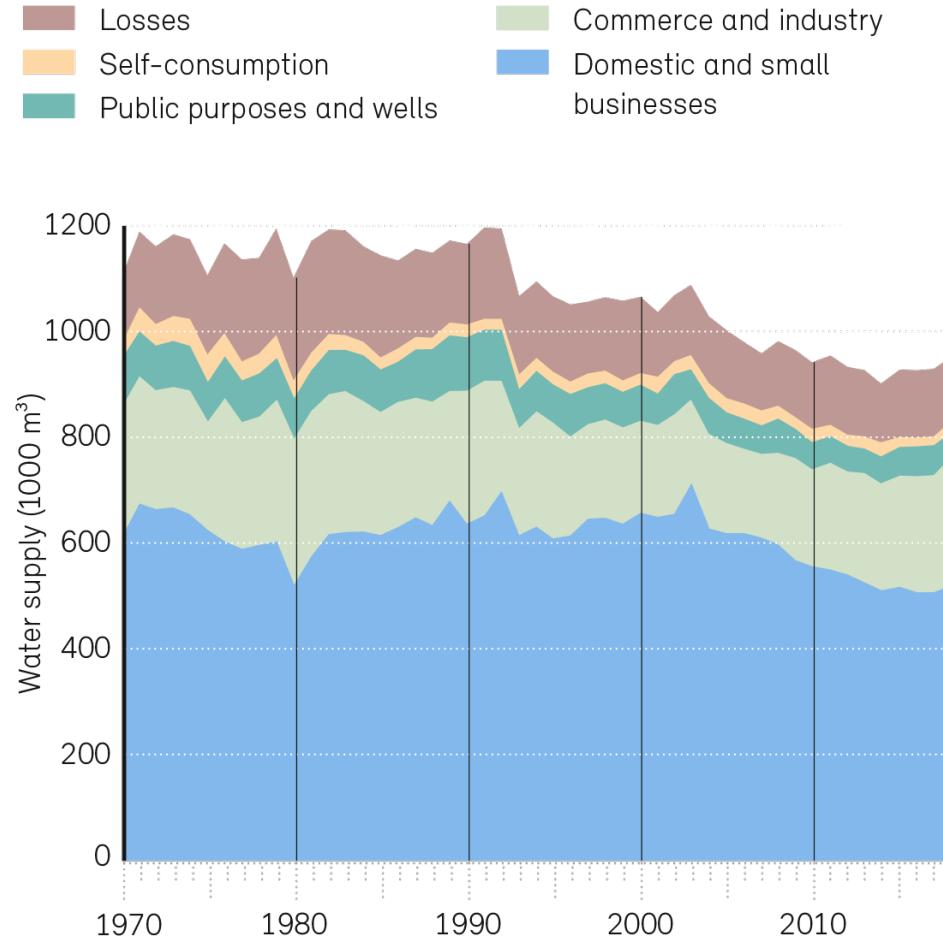
Below is the list of suggested data sources for use with HydroMT. The overview contains links to the source of and available literature behind each dataset. The complete datasets are available within the Deltares network and a slice of data is available for demonstration purposes.

Data Catalog			
name (link)	category	data type	reference
<a href="#">chelsa_v1.2</a>	meteo	RasterDataset	<a href="#">Karger et al. (2017)</a>
<a href="#">chirps_africa_daily_v2.0</a>	meteo	RasterDataset	<a href="#">Funk et al (2015)</a>
<a href="#">chirps_global_daily_v2.0</a>	meteo	RasterDataset	<a href="#">Funk et al (2014)</a>
<a href="#">corine_2018_v2020_u1</a>	landuse & landcover	RasterDataset	
<a href="#">eobs_v22.0e</a>	meteo	RasterDataset	<a href="#">Cornes et al (2018)</a>
<a href="#">eobs_v23.1e</a>	meteo	RasterDataset	<a href="#">Cornes et al (2018)</a>

[https://deltares.github.io/hydromt/latest/user\\_guide/data.html#suggested-global-datasets](https://deltares.github.io/hydromt/latest/user_guide/data.html#suggested-global-datasets)

# Assessment of current situation

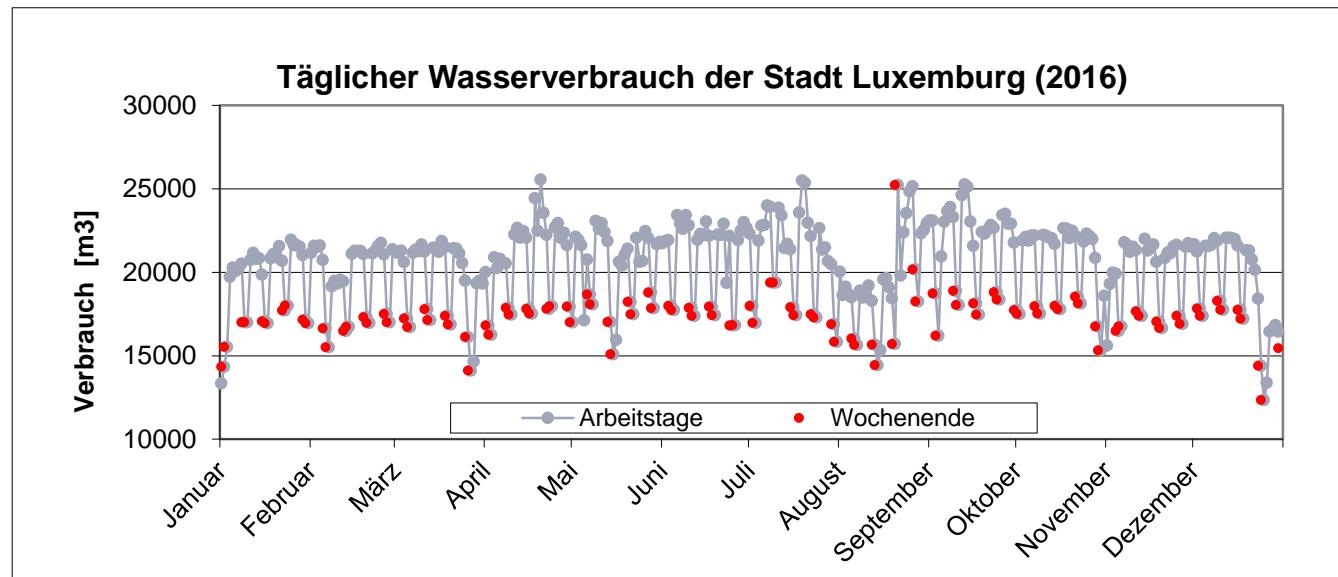
## - Next step: local datasets and knowledge



Reference:  
Wasserabgabe:  
FOEN 2021, data  
from Swiss Gas  
and Water  
Association SVGW

# Assessment of current situation

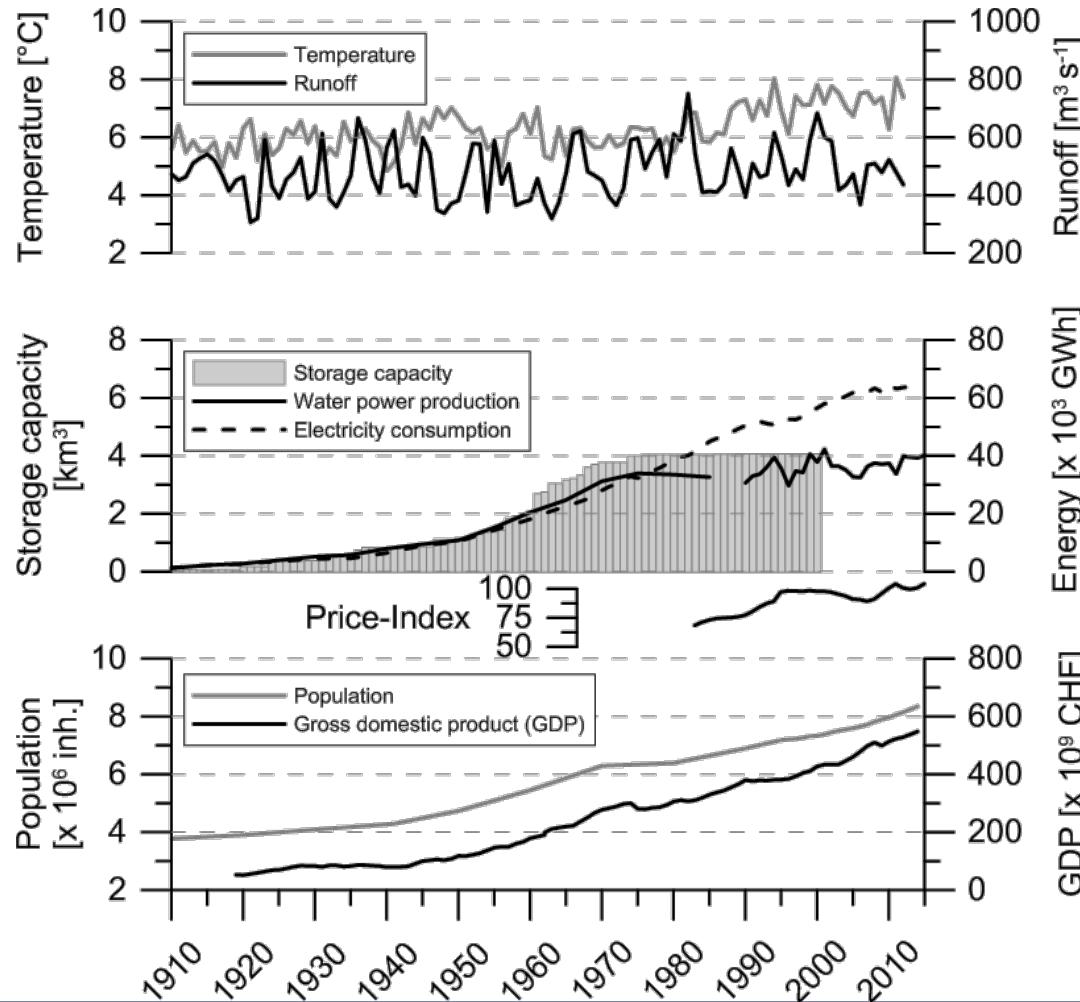
- Next step: local datasets and knowledge



Source:  
Hansen H., 2021

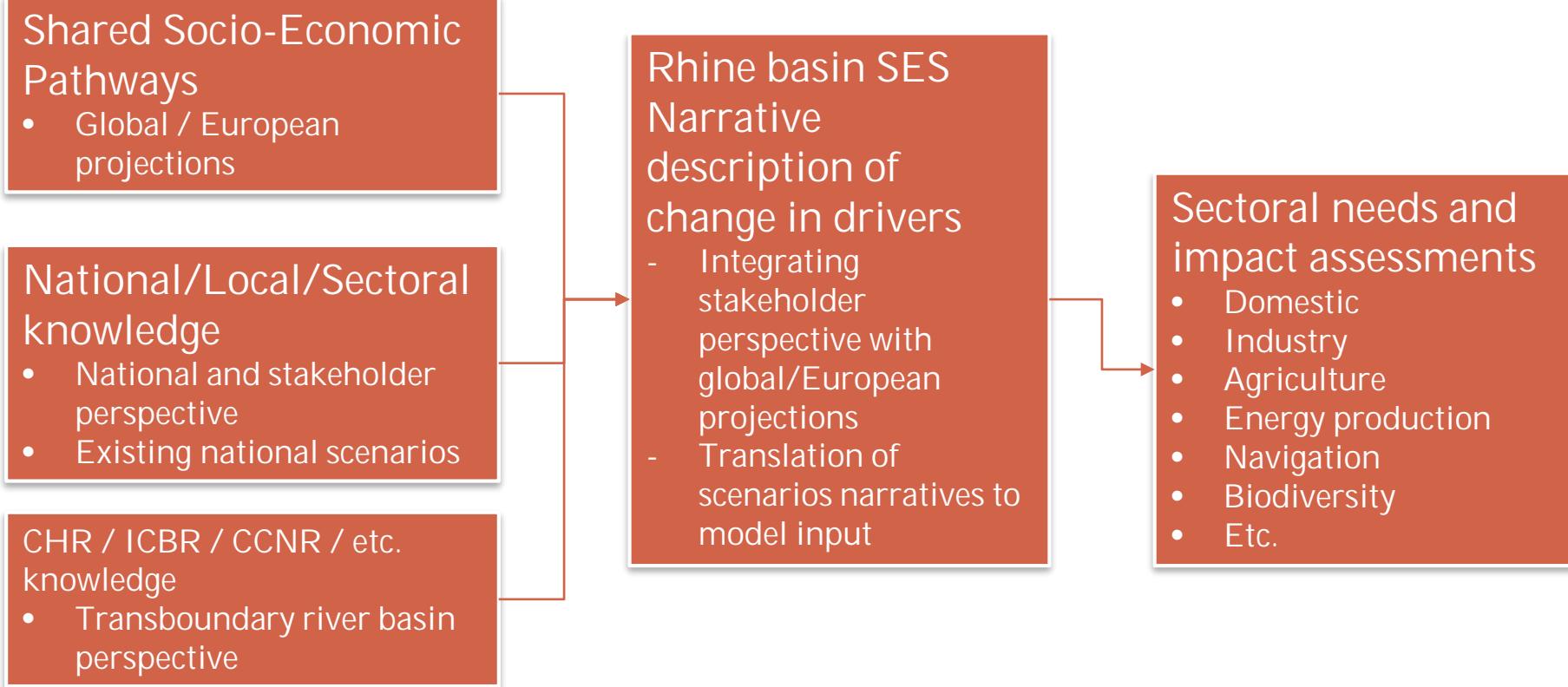
# Assessment of current situation

- Next step: local datasets and knowledge



Reference:  
Krahe, P., Nilsson E.,  
Knoche, M., Ebner von  
Eschenbach, A.-D. (2016):  
Modeling human-water-  
systems. Proc. IAHS, 373.  
doi:10.5194/piahs-373-  
119-2016

# Rhine basin SES narratives



# Work in progress

1. Mobilizing and harmonizing national data and knowledge for describing water availability and use
2. Developing scenario narratives for the Rhine basin
3. Impact assessment of future scenario's on water availability and use

→ In co-creation with stakeholders – fit-for-purpose:  
CCNR, ICPR, national experts and others

Start stakeholder consultations





Questions? More information?  
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