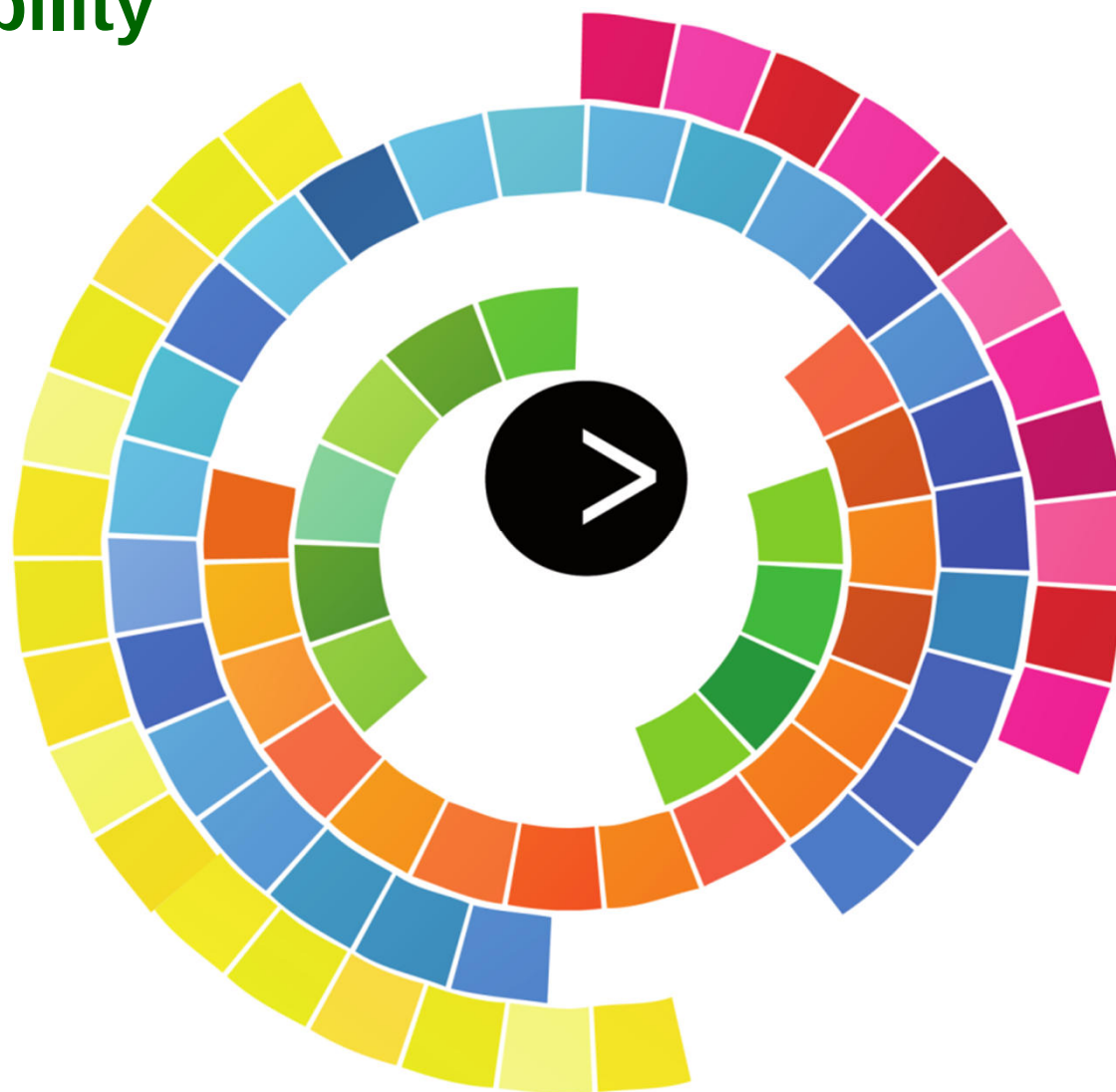


Indicators and indices of water quality and availability

Alice Newton

*CIMA-FCT Gambelas,
University of Algarve,
8005-139 Faro, Portugal*

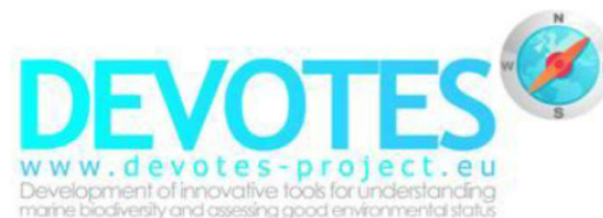
*NILU-IMPEC, Box 100,
2027 Kjeller, Norway*



Fare i conti
con l'ambiente
Rifiuti acqua energia
> Rave
nna
25/26/27
settembre 2013

Acknowledgements

- Organizers of Ravenna 2013, especially Prof. Luigi Bruzzi
- CIMA-UAlg
- NILU-IMPEC
- *Erasmus Mundus* WACOMA and MACOMA programmes



Content

- Availability
- Quality
- Assessment

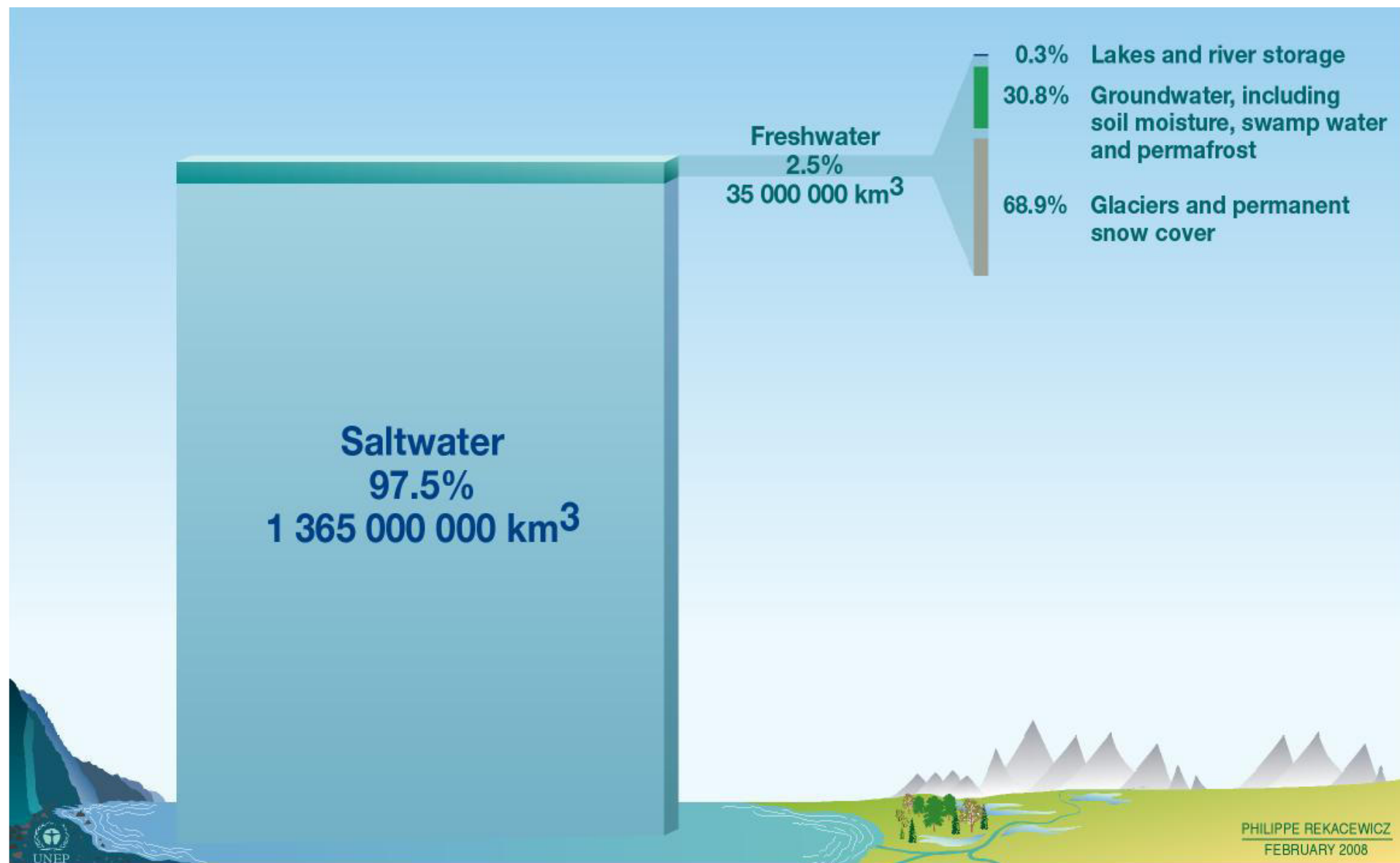
Earth?

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From
space,
it would
seem
more
logical
to call
our
Planet
Water
than
Earth.

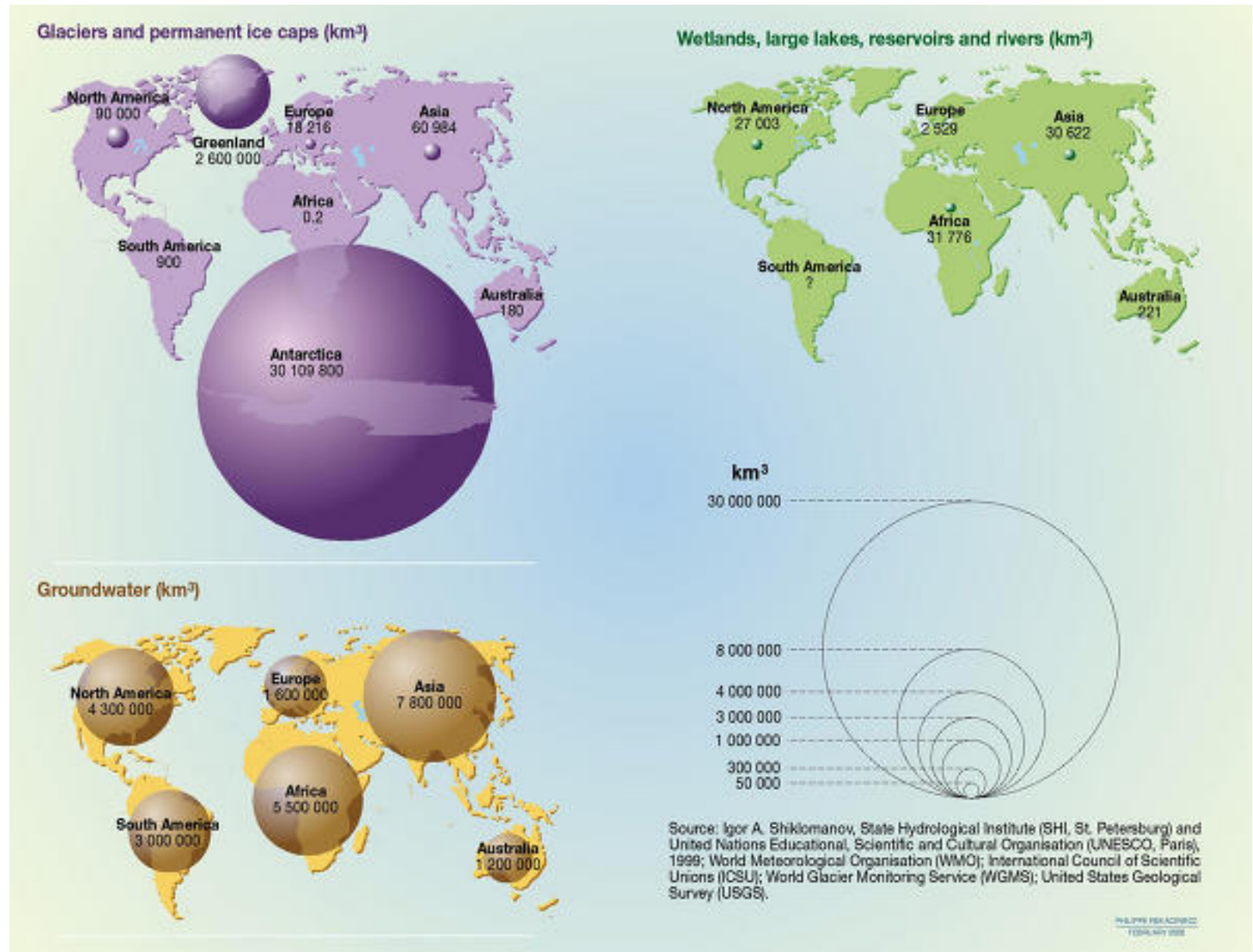


Less than 1% is usable freshwater

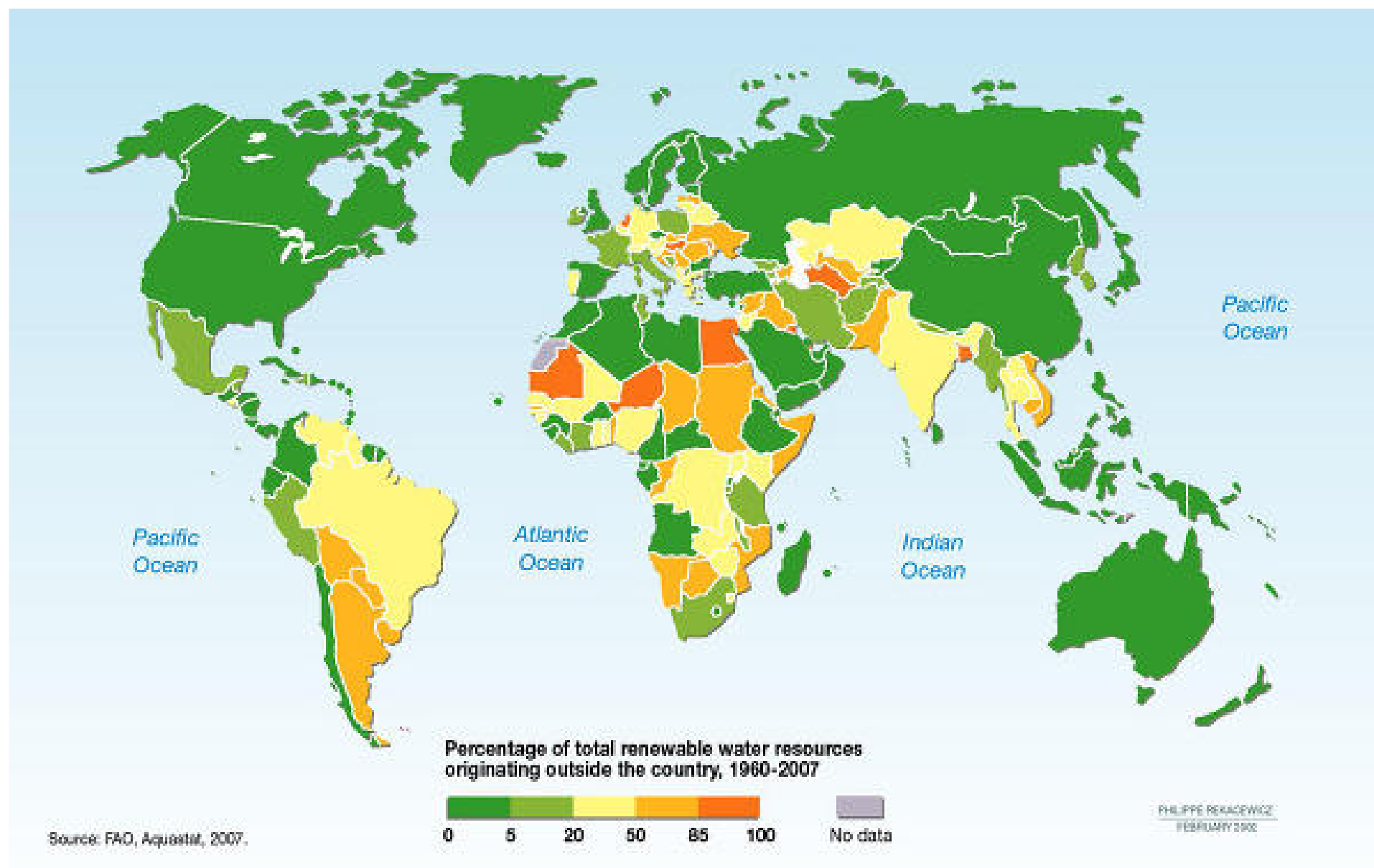


Source: Igor A. Shiklomanov, State Hydrological Institute (SHI, St. Petersburg) and United Nations Educational, Scientific and Cultural Organisation (UNESCO, Paris), 1999.

Uneven distribution of water resources

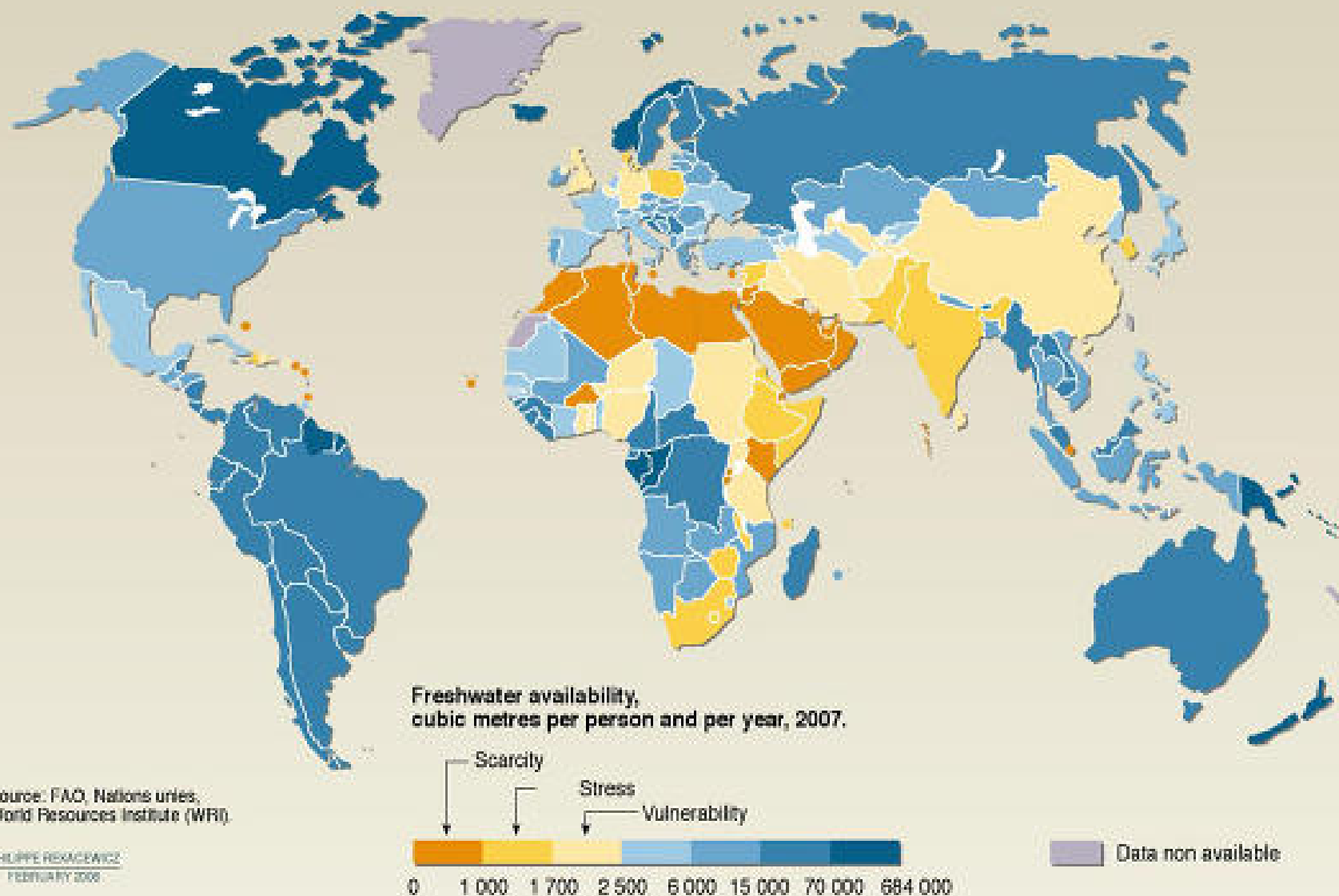


Transboundary issues



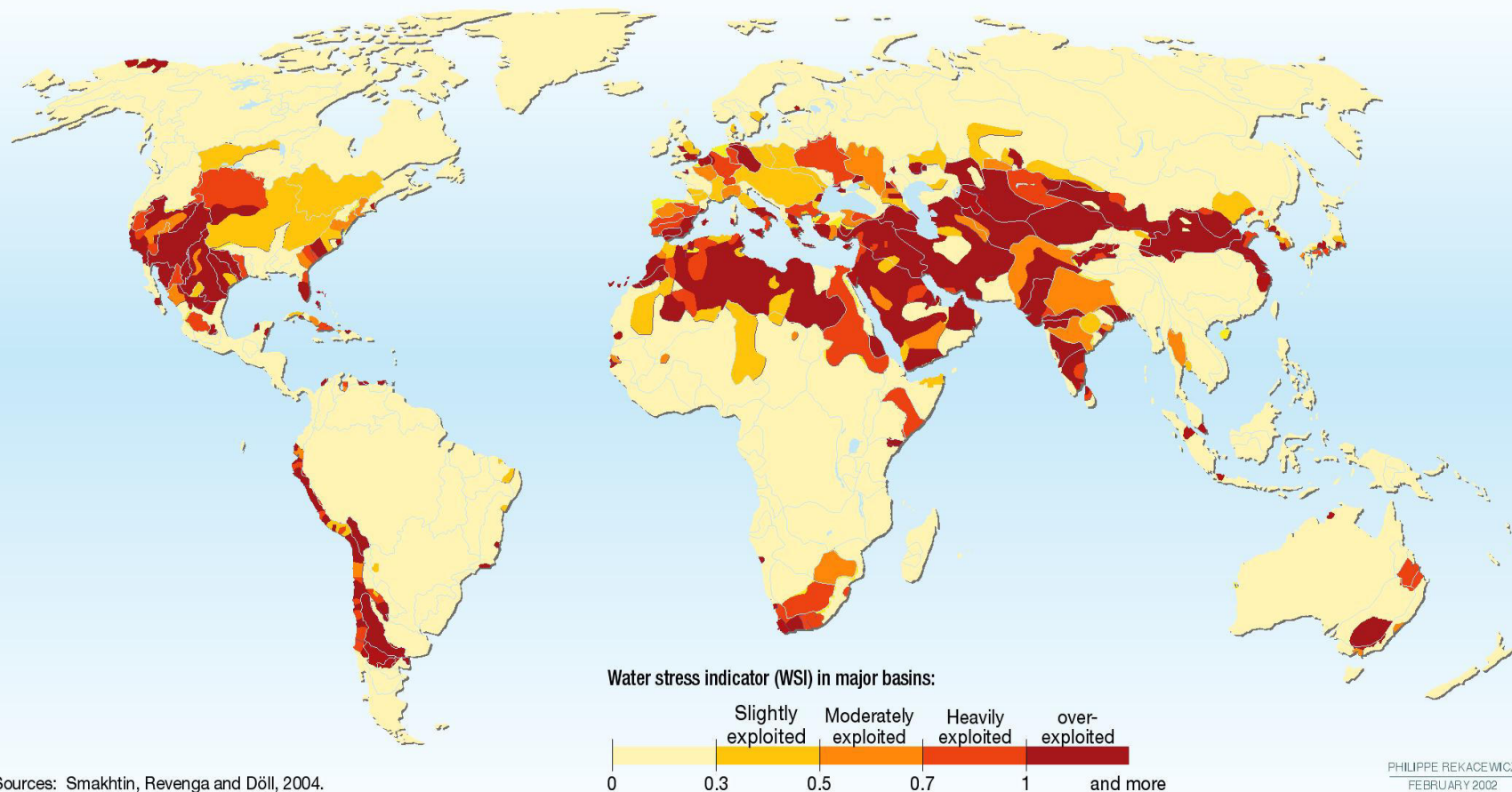
Water availability and scarcity

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Overexploitation of water resources

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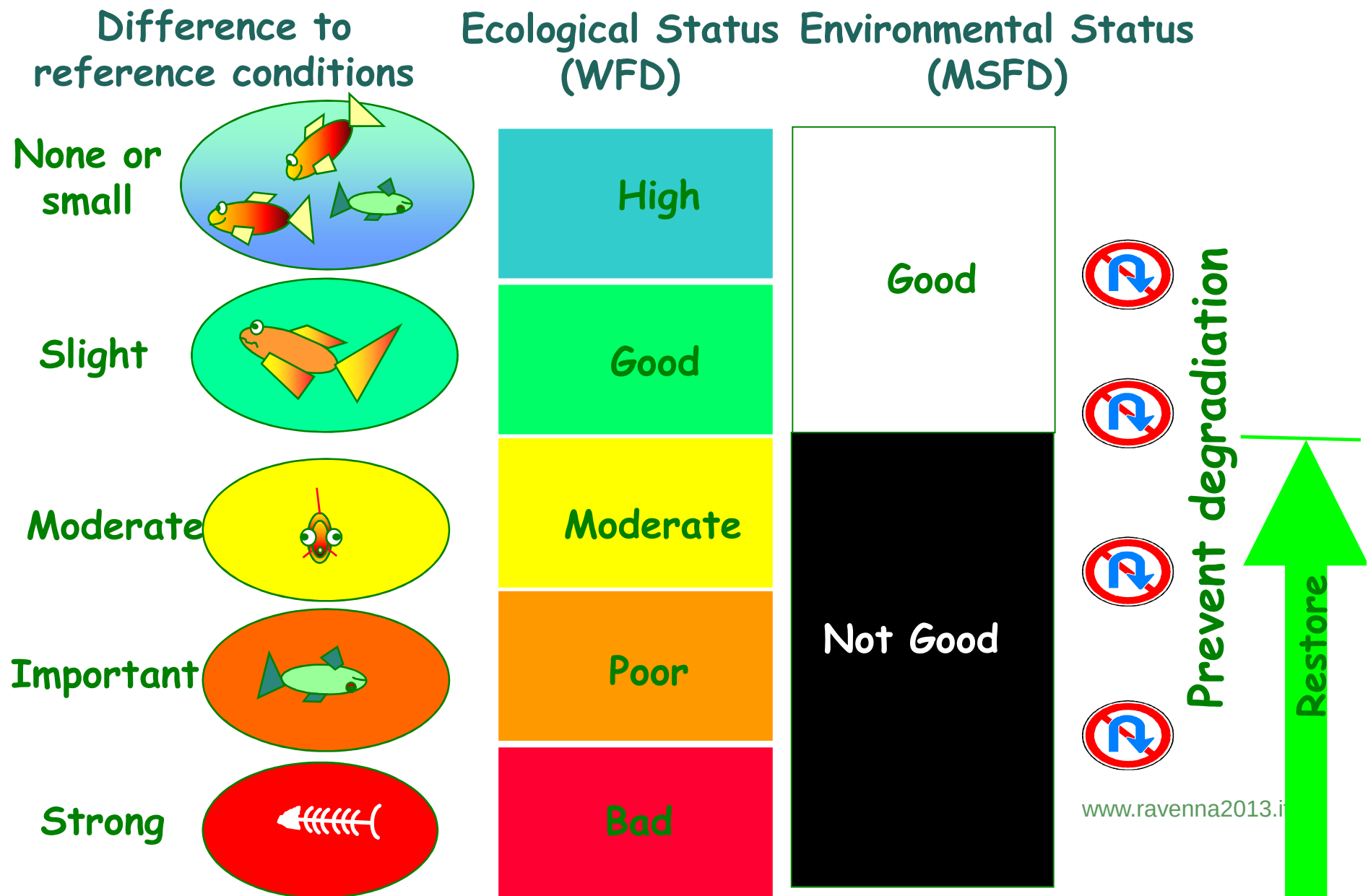


Pollution and Contamination

- Human activities:
- Waste... litter
- Pollute...priority substances
- Contaminate... long-term,
biomagnification

Environmental policies

- Water Framework Directive (WFD)
- Marine Strategy Framework Directive (MSFD)



Assessment

- Good Ecological Status (ECOSTAT)
- Good Environmental Status (GES)

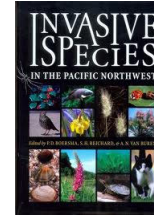
WFD



MSFD



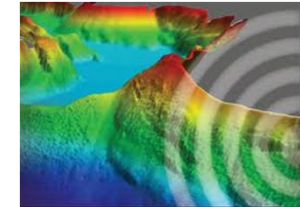
Biodiversity



Alien



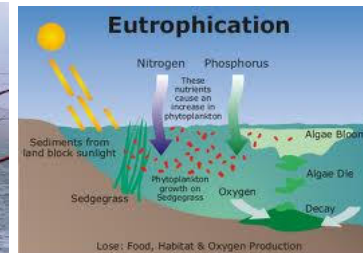
Foodwebs



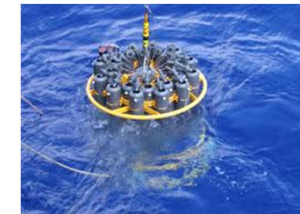
Seafloor integrity



Fishing



Eutrophication



Hydrography



Pollution



Litter



Noise

One out,
all out

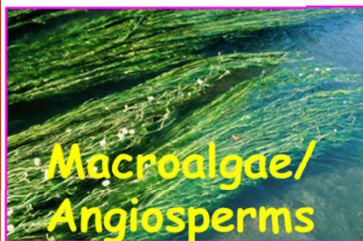
Ecosystem-
based approach

www.ravenna2013.it

Monitoring

- environmental variables
- biological variables

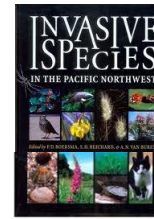
Biological/Physico-chemical elements (WFD)



Qualitative Descriptors (MSFD)



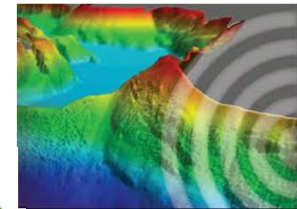
Biodiversity



Alien



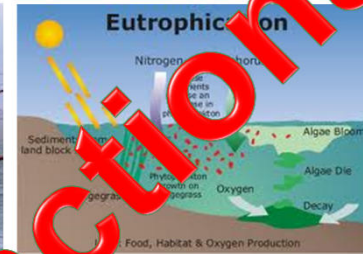
Foodwebs



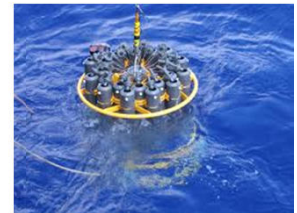
Seafloor integrity



Fishing



Eutrophication



Hydrography



Pollution



Litter



Noise

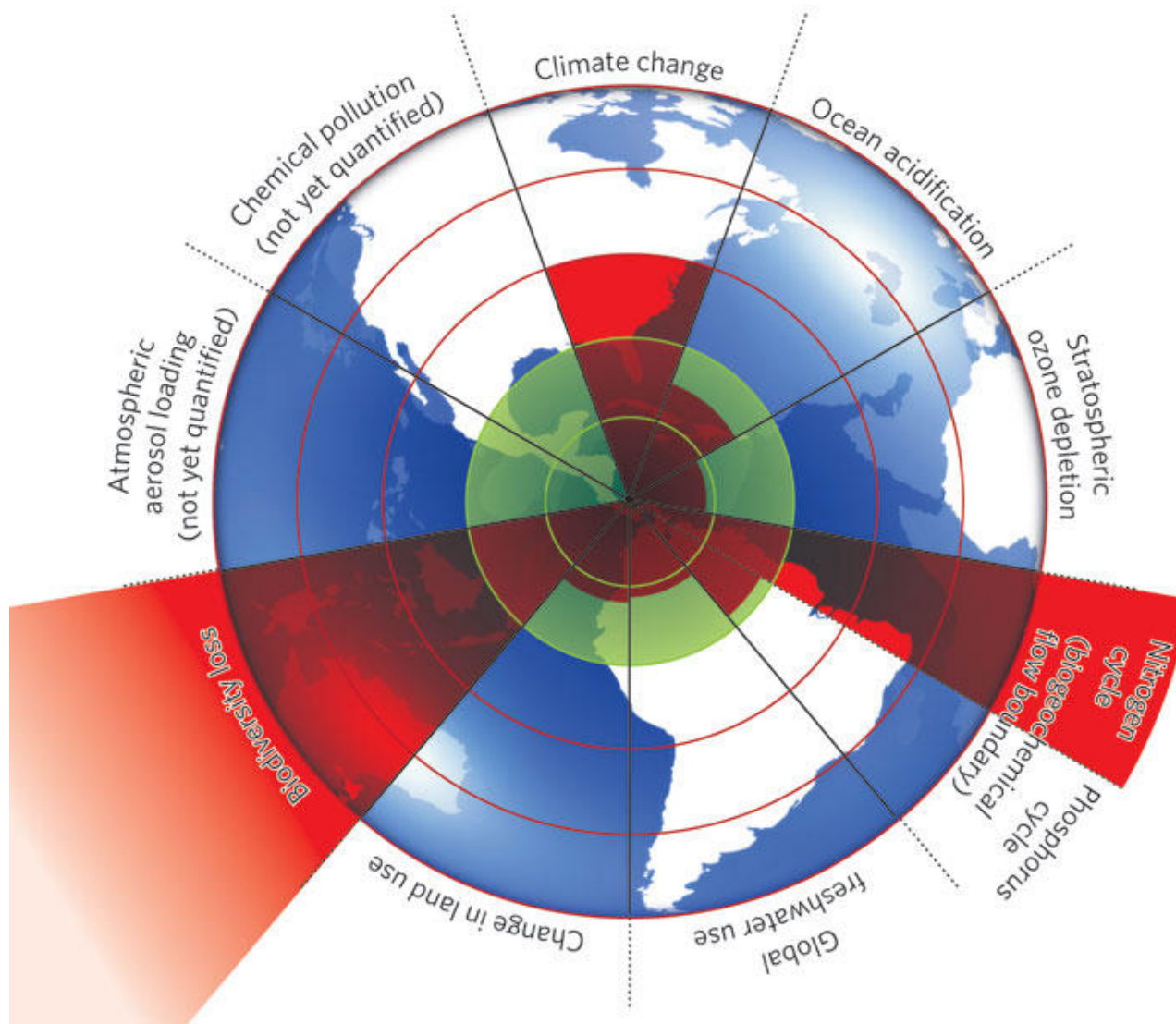


Indicators

- Status of the environment
- Status of the ecosystem

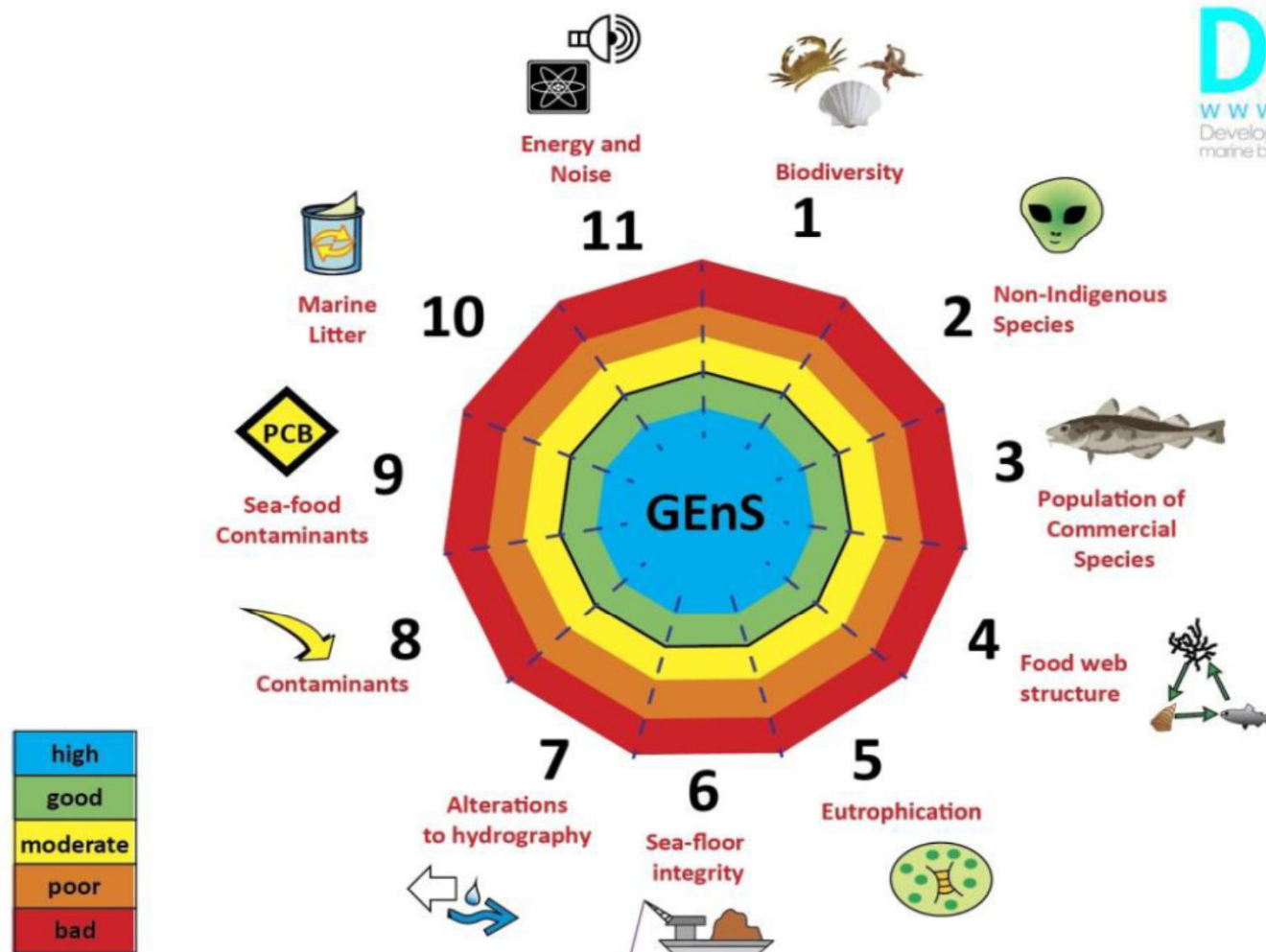
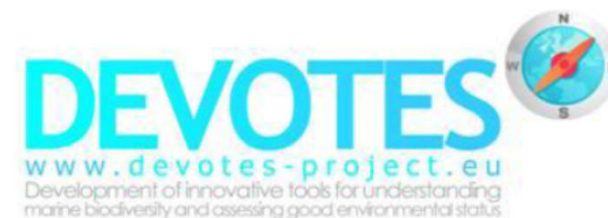
Rockstrom's Rosette

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Environmental Status 2020

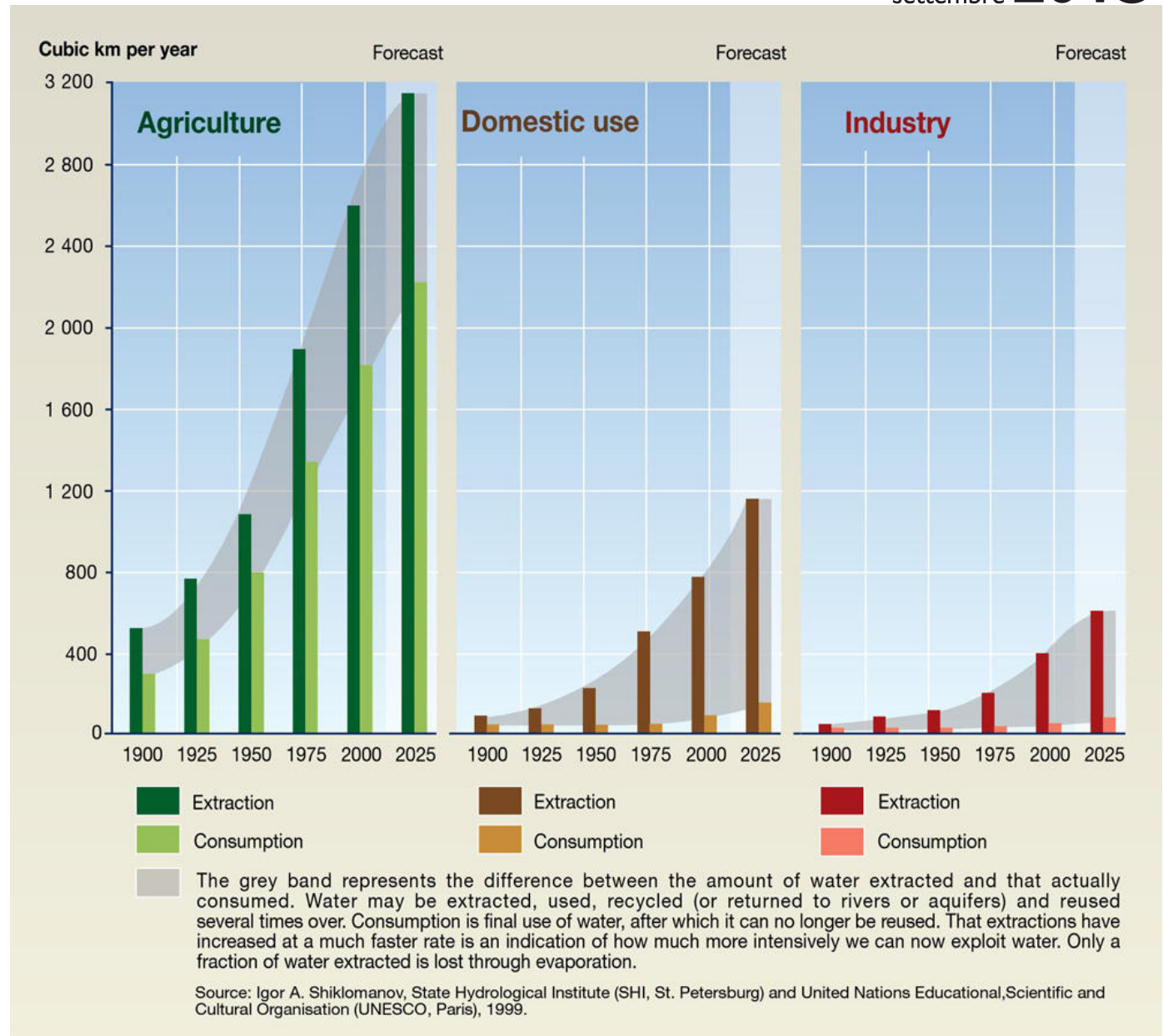


Effective indicators?

- Water quality and quantity?
- Fit for purpose, e.g.:
 - Drinking,
 - Bathing,
 - Shellfish
- Cost effective
- Sensitive
- Innovative

Trends

- Detect the trends



Thank you

- Questions?