A long term global vision

Maurice Héral

JPI WATER GB Chair

A constat: Water will be the first mineral ressource which will be lacking on the blue planet

2030 Sustainable Development Goals

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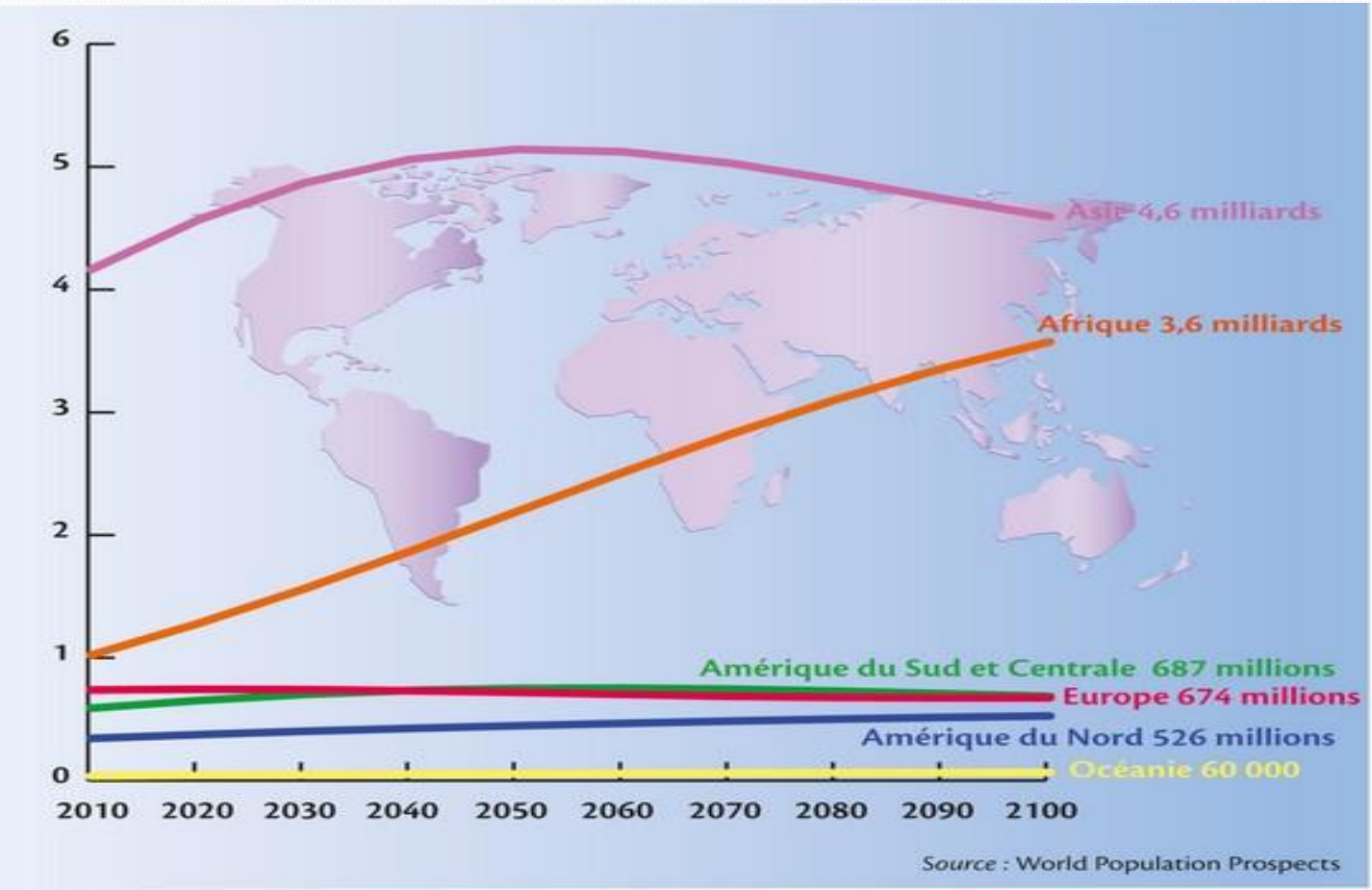
What role for Science ?

The demographic context



WATER SCARCITY

WATER USE HAS BEEN GROWING AT MORE THAN TWICE THE RATE OF POPULATION INCREASE IN THE LAST CENTURY

INCREASE IN WATER WITHDRAWALS BY 2025

By 2025, 1800 million people will be living in countries or regions with absolute water scarcity, and two-thirds *of the world population could be under stress conditions*

UN WATER.ORG

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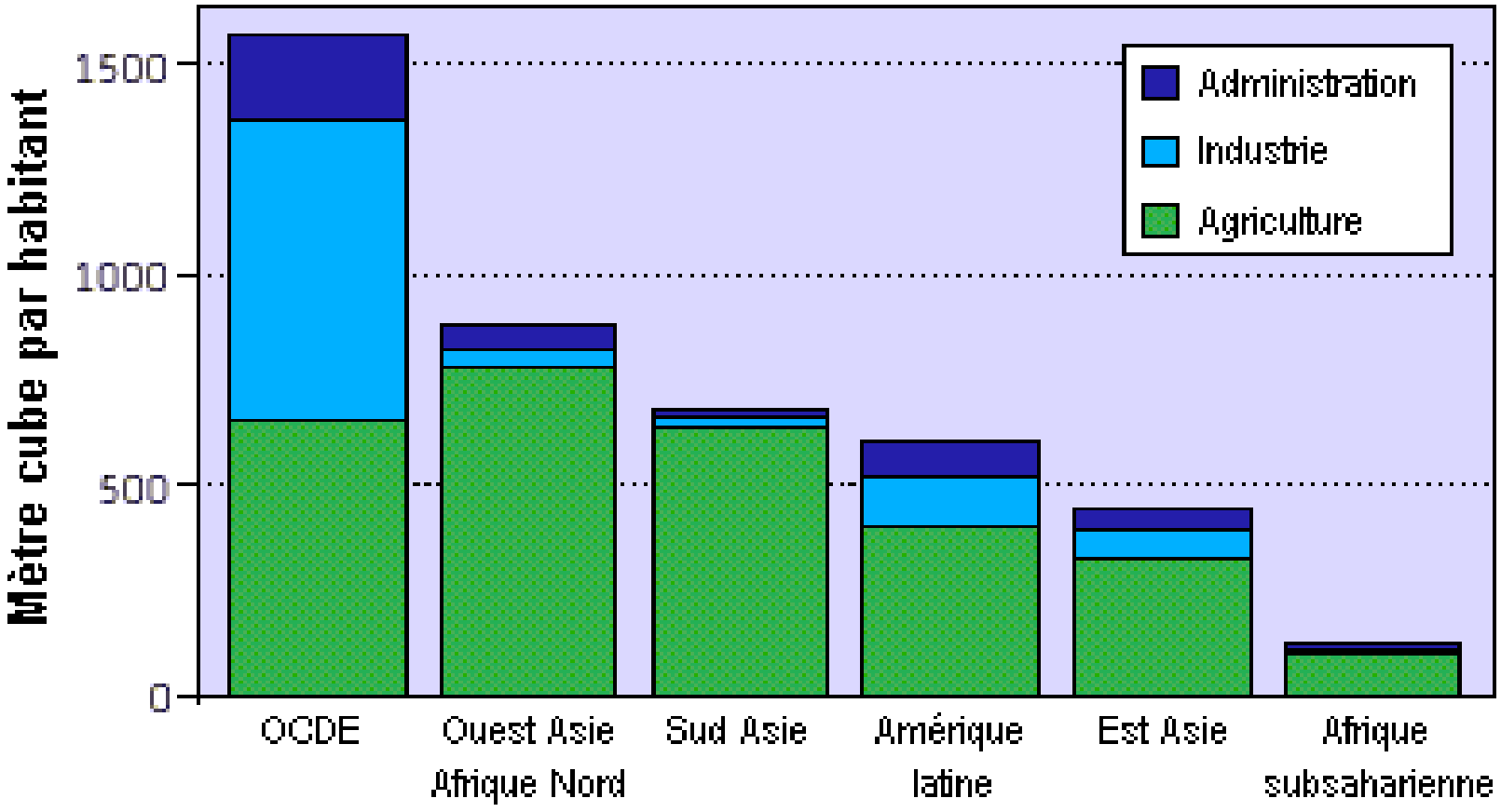
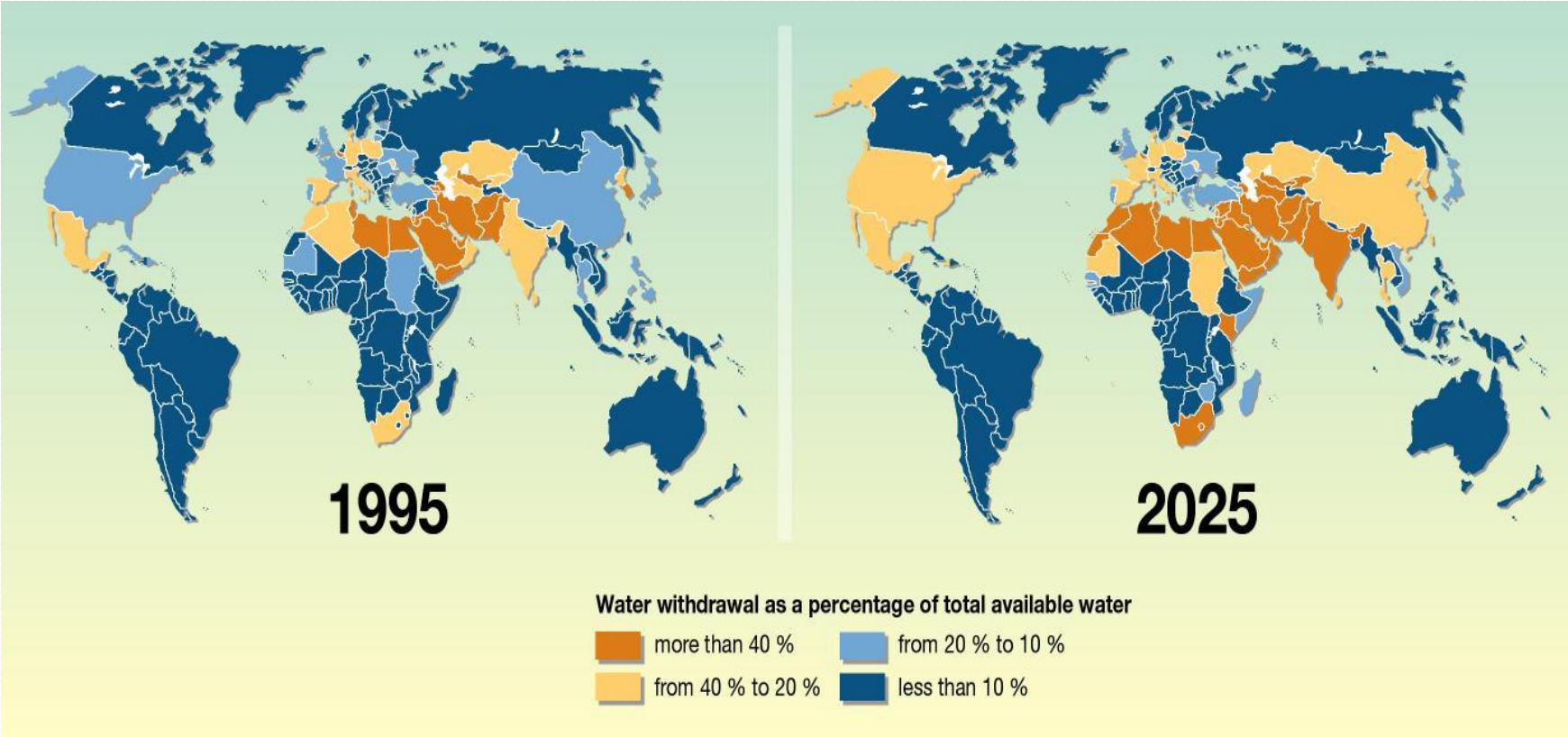
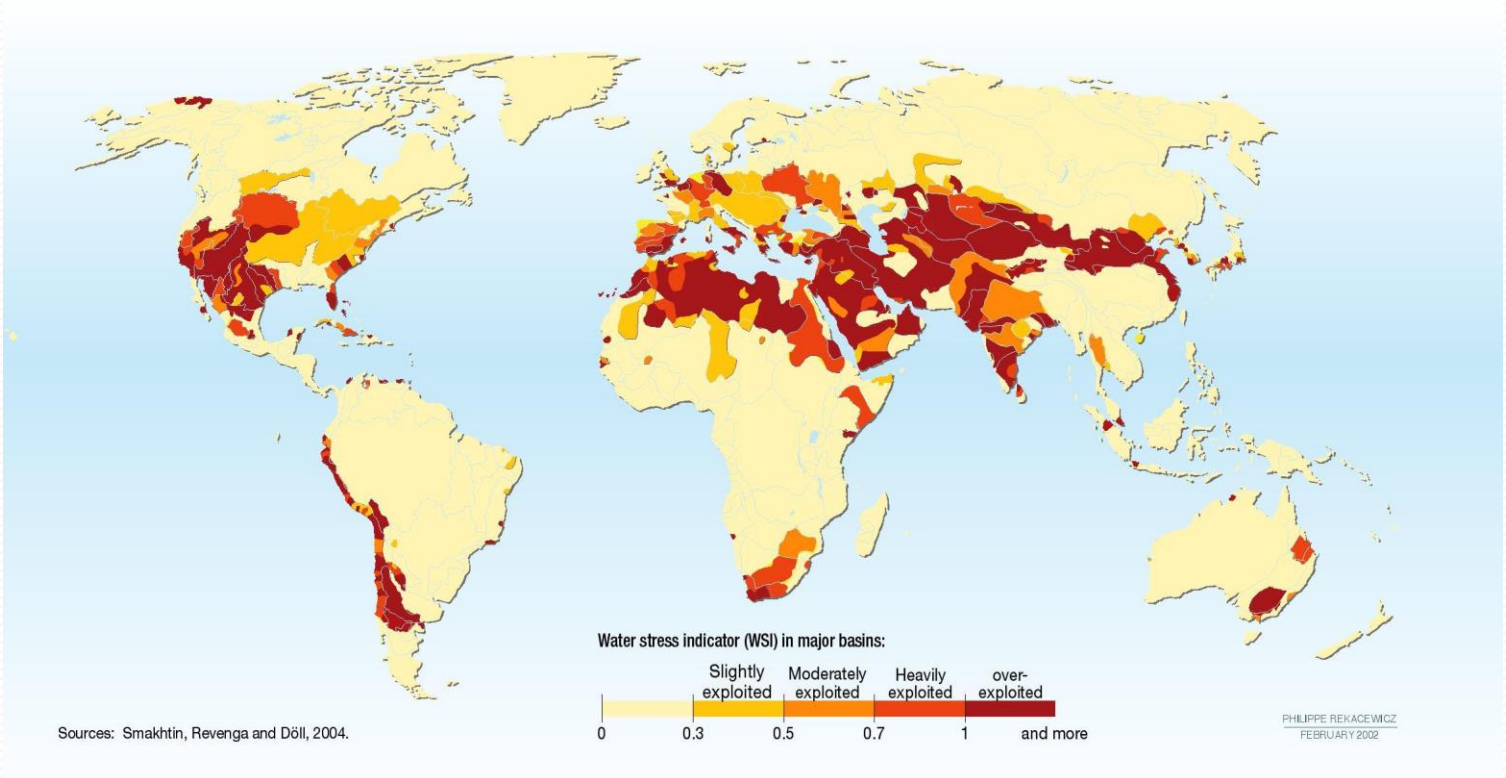
Water for what?



UNEP

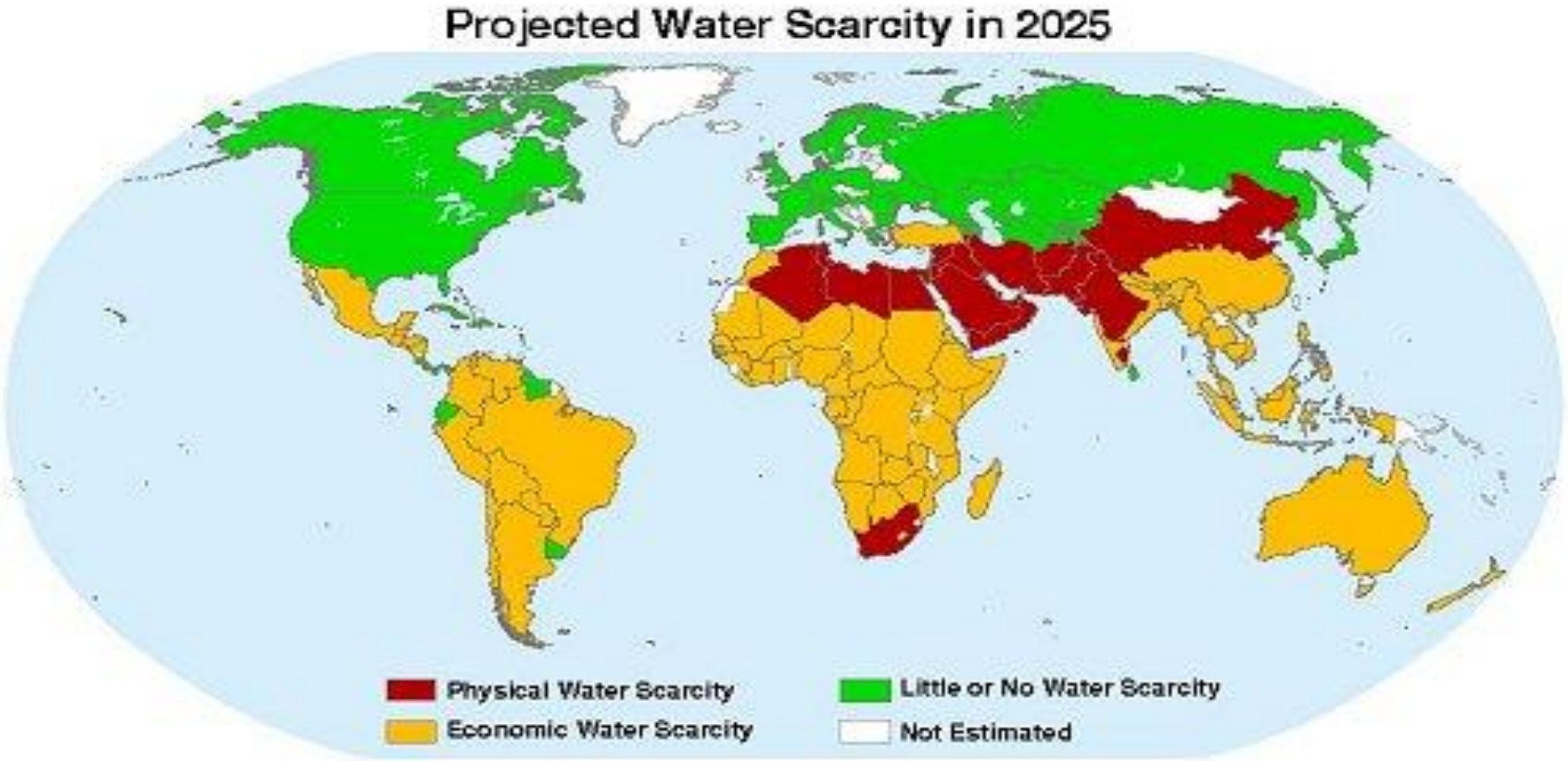

1995
2025
Water withdrawal as a percentage of total available water
more than 40 %
from 40 % to 20 %
from 20 % to 10 %
less than 10 %

WATER STRESS INDICATOR



Ratio of withdrawals to supply

WATER SCARCITY



Physical water scarcity: More than 75% of river flows are allocated to agriculture, industries, or domestic purposes. This definition of scarcity — relating water availability to water demand — implies that dry areas are not necessarily water-scarce.

Approaching physical water scarcity: More than 60% of river flows are allocated. These basins will experience physical water scarcity in the near future.

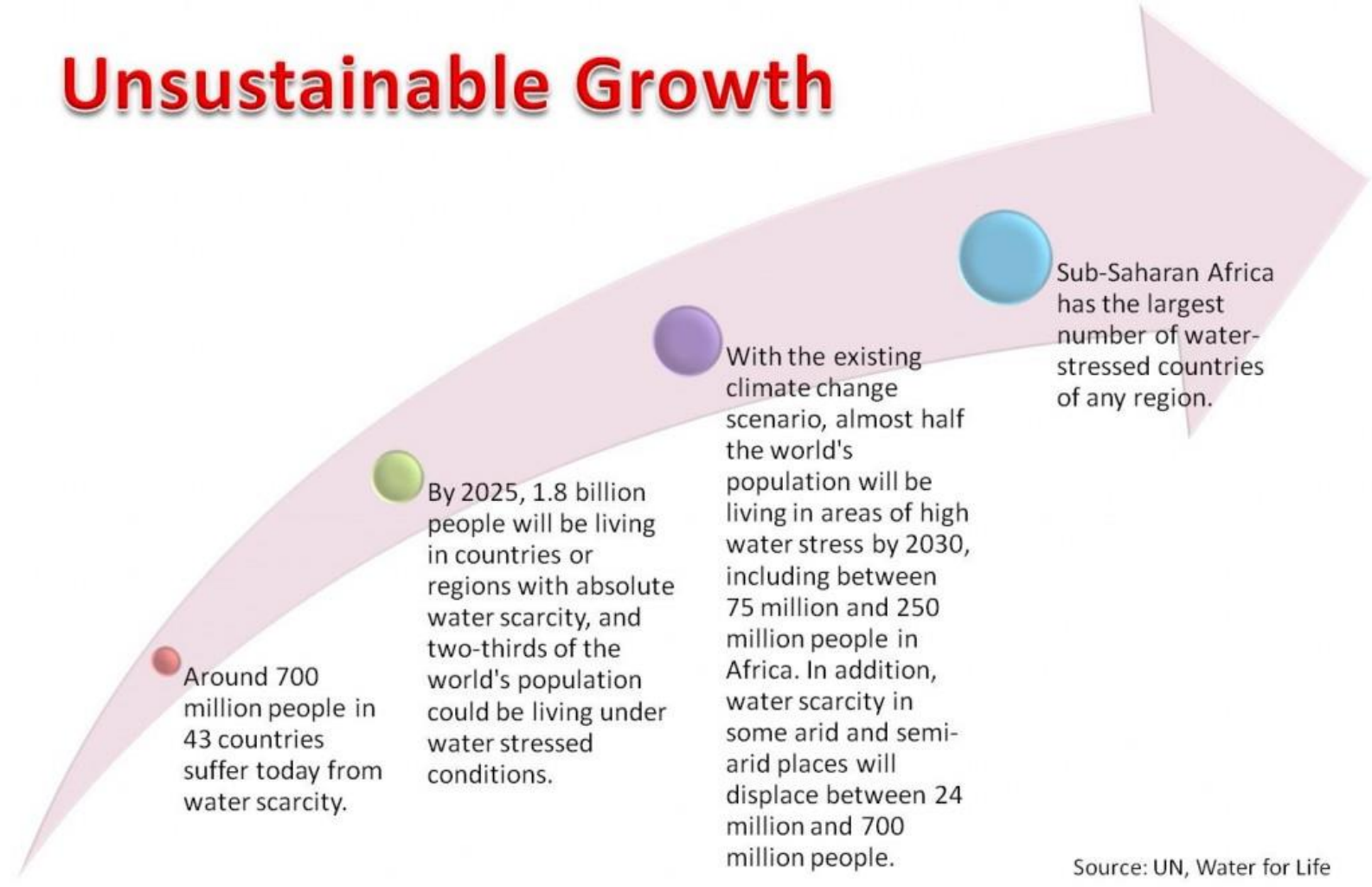
Economic water scarcity: Water resources are abundant relative to water use, with less than 25% of water from rivers withdrawn for human purposes, but malnutrition exists.

Little or no water scarcity: Abundant water resources relative to use. Less than 25% of water from rivers is withdrawn for human purposes.

Not estimated

Source: International Water Management Institute.

Unsustainable Growth



62% of the world population under water scarcity in 2030

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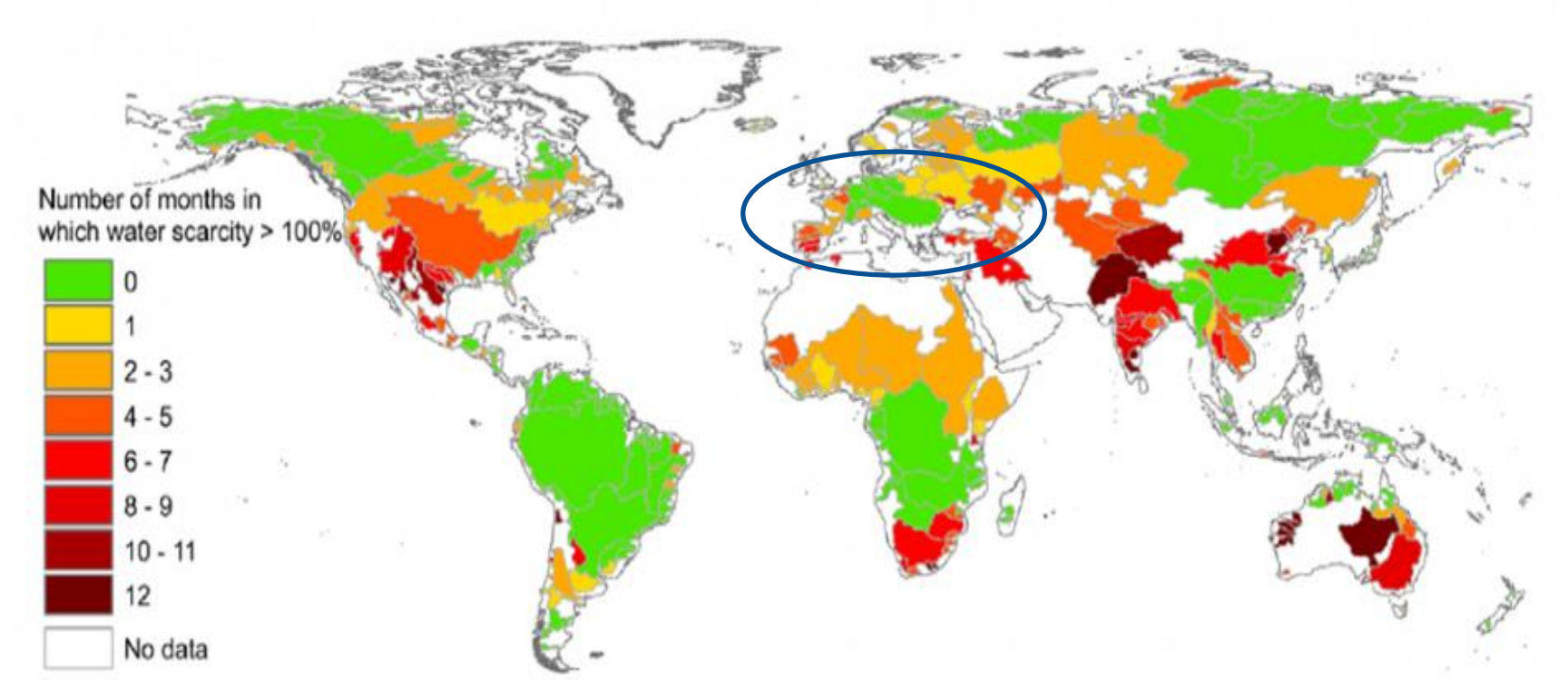
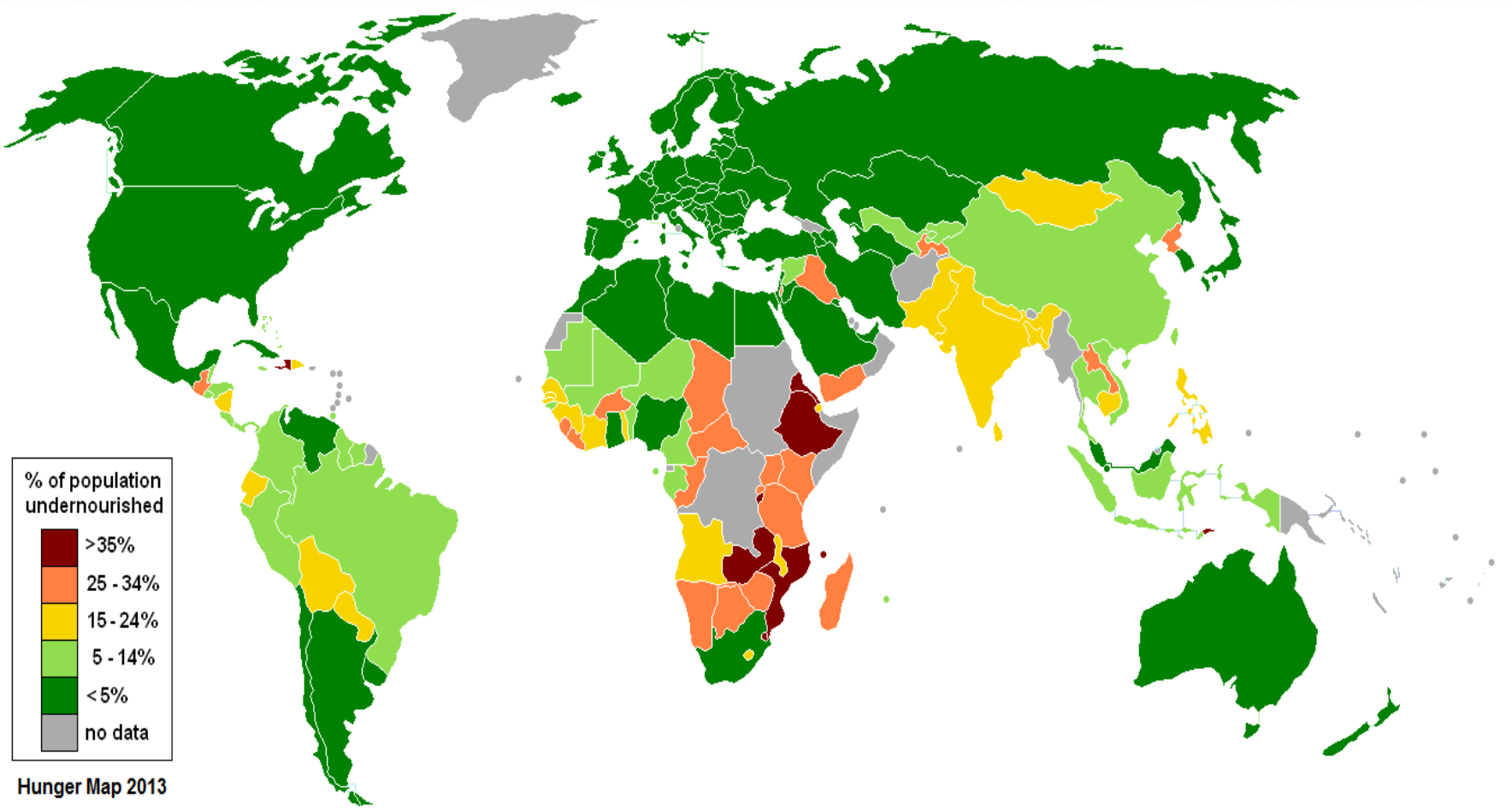
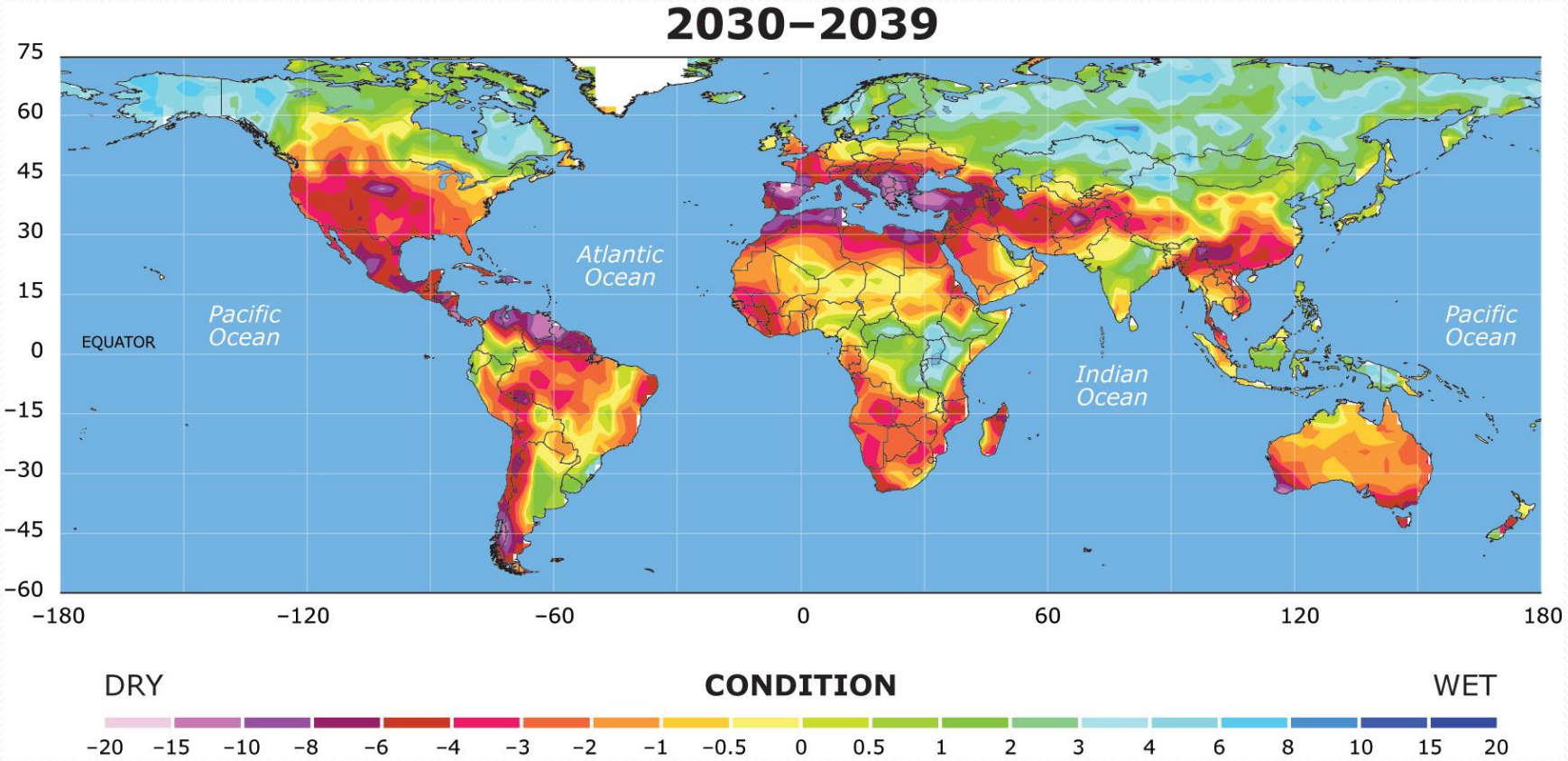
Drough in warmer periods



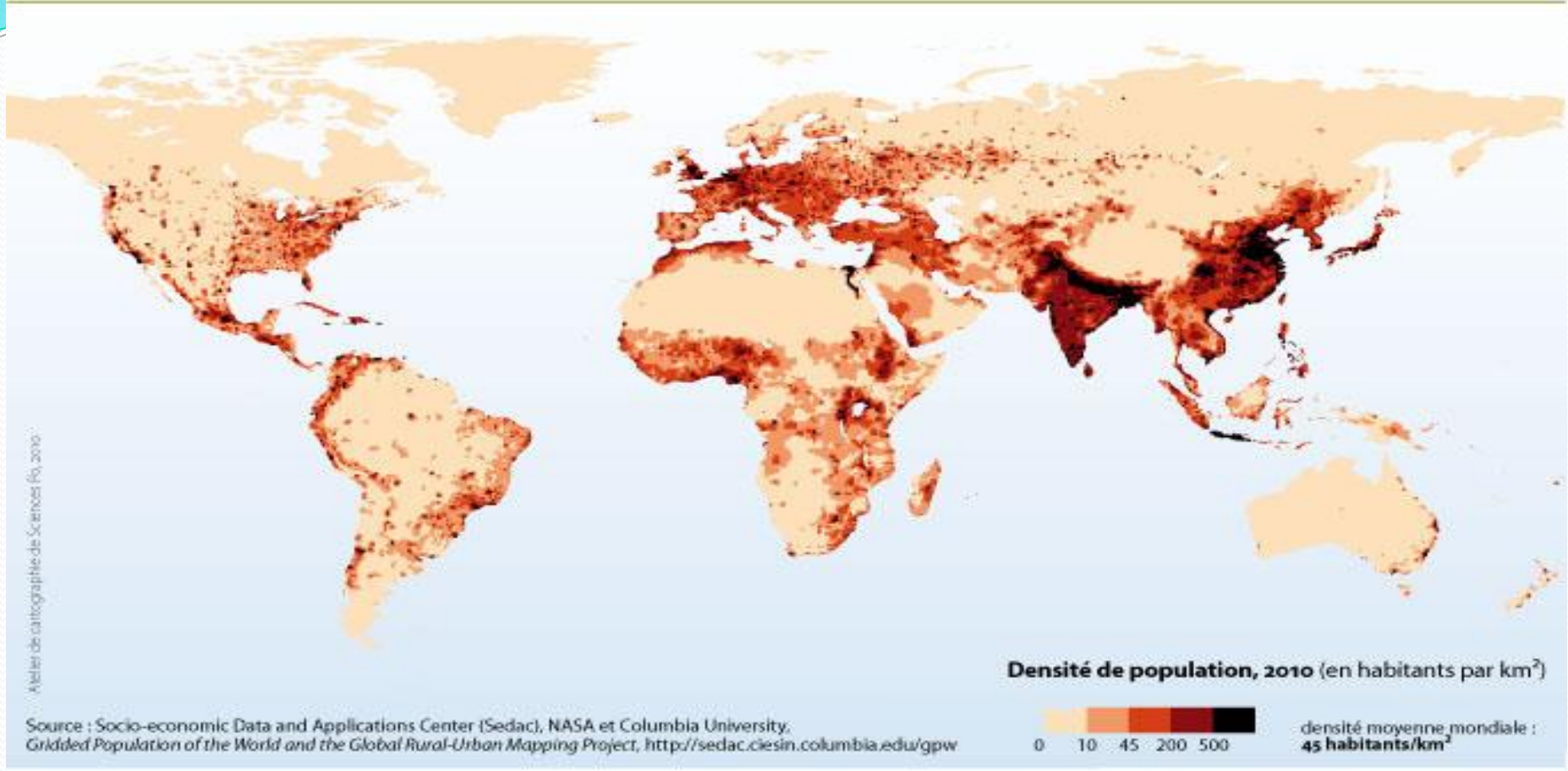
HUNGER MAP


% of population undernourished
>35%
25 - 34%
15 - 24%
5 - 14%
< 5%
no data
Hunger Map 2013

Climate change evolution Ipcc



DENSITÉ de population, 2010

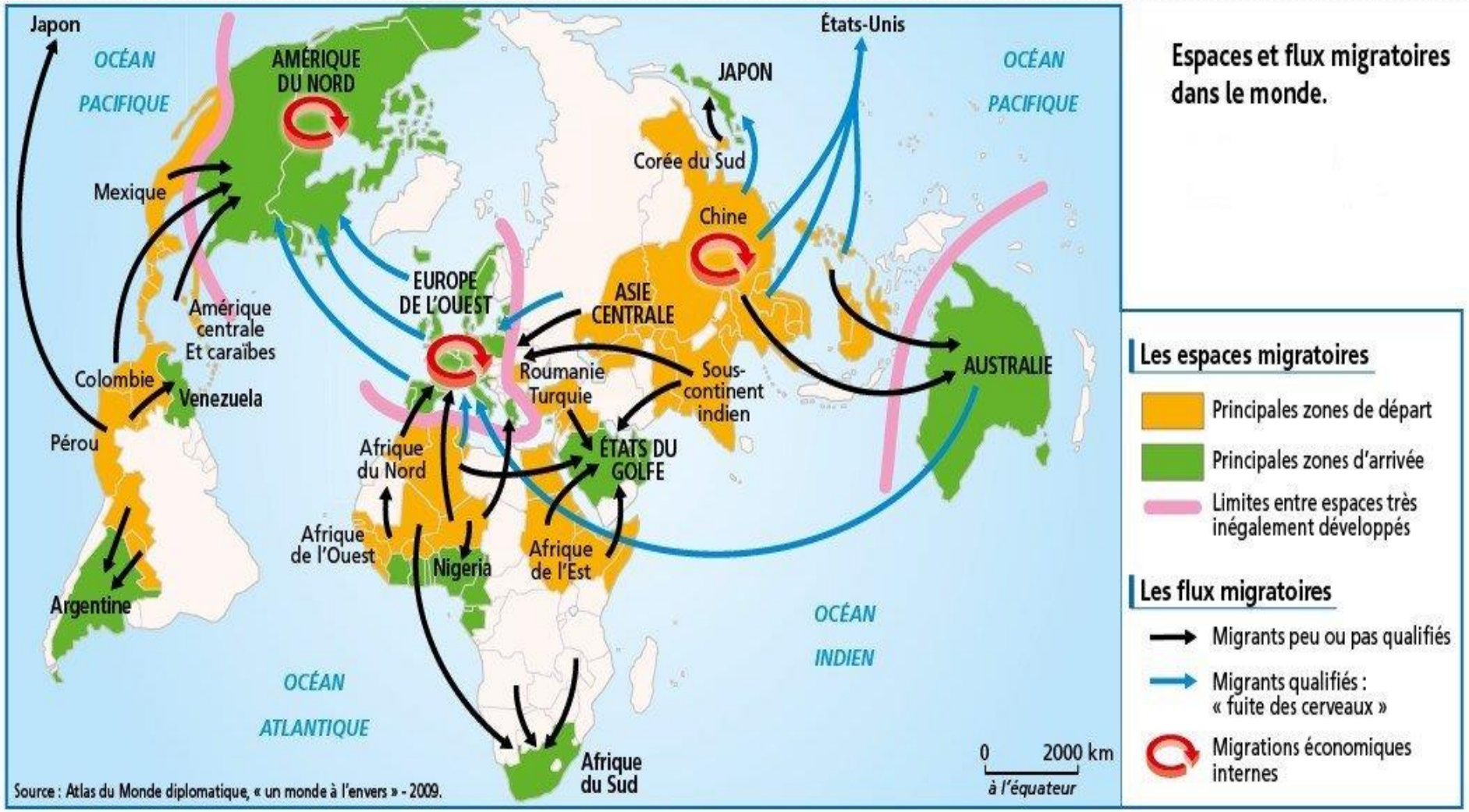


SciencesPo.

d'après Marie-Françoise DURAND, Philippe COPINSCHI
Benoît MARTIN, Patrice MITRANO, Delphine PLACIDI-FROT,
Atlas de la mondialisation, dossier spécial Russie,
Paris, Presses de Sciences Po, 2010

Atelier de cartographie de Sciences Po, 2010,
www.sciences-po.fr/cartographie

Human migration



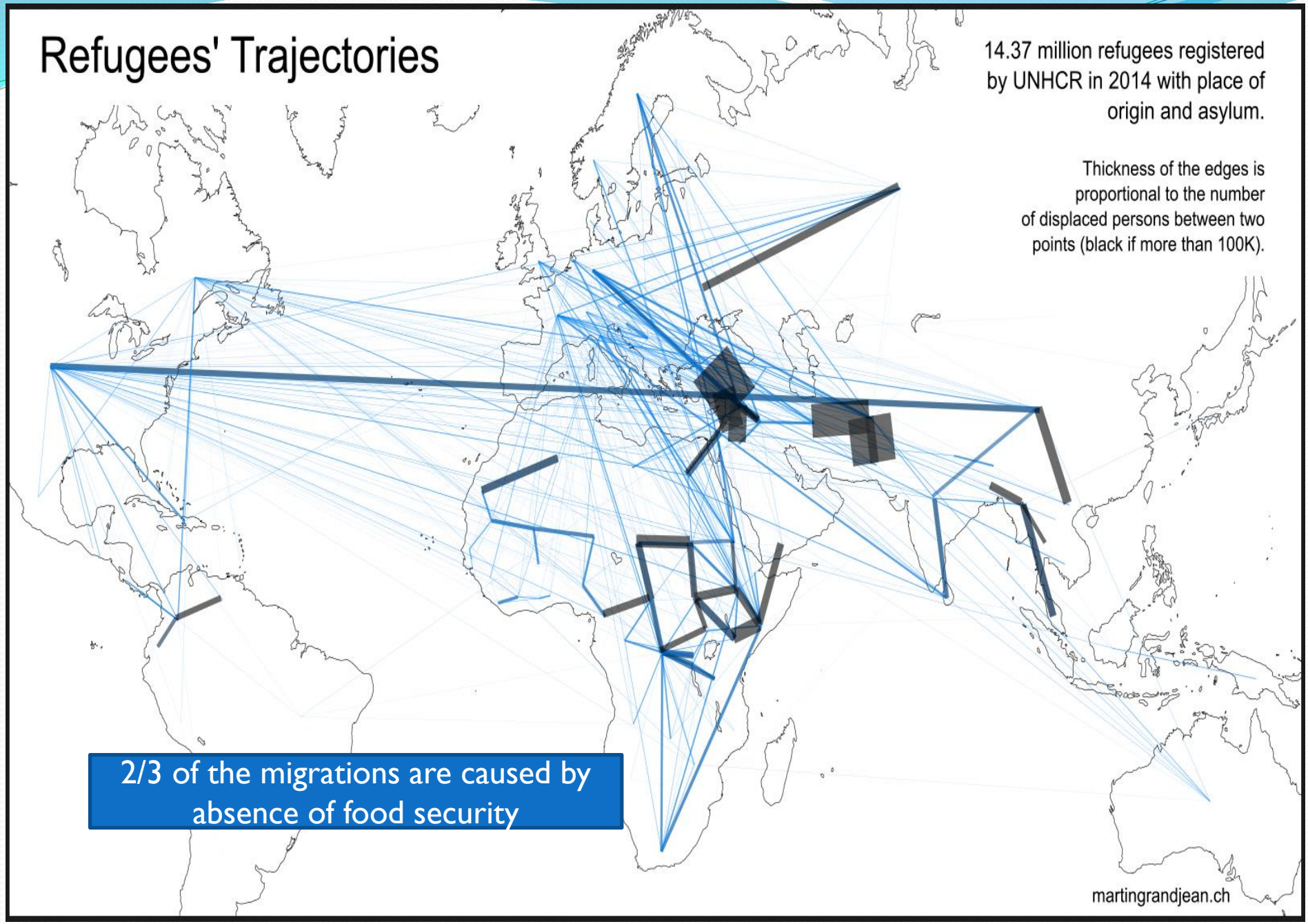
Espaces et flux migratoires dans le monde.

Les espaces migratoires

- Principales zones de départ
- Principales zones d'arrivée
- Limites entre espaces très inégalement développés

Les flux migratoires

- Migrants peu ou pas qualifiés
- Migrants qualifiés : « fuite des cerveaux »
- Migrations économiques internes


Refugees' Trajectories
14.37 million refugees registered by UNHCR in 2014 with place of origin and asylum.
Thickness of the edges is proportional to the number of displaced persons between two points (black if more than 100K).
2/3 of the migrations are caused by absence of food security
martingrandjean.ch

What research can bring?

- Identification of the ressources surface and underground and their sustainable levels of exploitation
- Expected evolution of the ressources for medium term
- Solutions to better manage the water ressources , reservoirs, distribution , leakages
- Developing safe water systems by inprooving sanitation technics
- Prevention and treatment of water human deseases
- Creation of new ressources: recycling, wastes treatments, desalinisation, morning dew, condensation collectors…
- Climate enginiering: clouds, shadow, role of forest and rain, green barier to stop desertification,
- Improove agriculture less water consuming: plants adapted to drough, adapted new periodic irrigation system, ICT agri
- Soil changes with increase of organic matter(4%°) for water retention and carbon sequestration
- Contribute to limit climate change by promoting use of renewable energy in all the water chain
- Water prices, social acceptance and governance issues
- Developp international cooperation to go faster and promoting world innovation

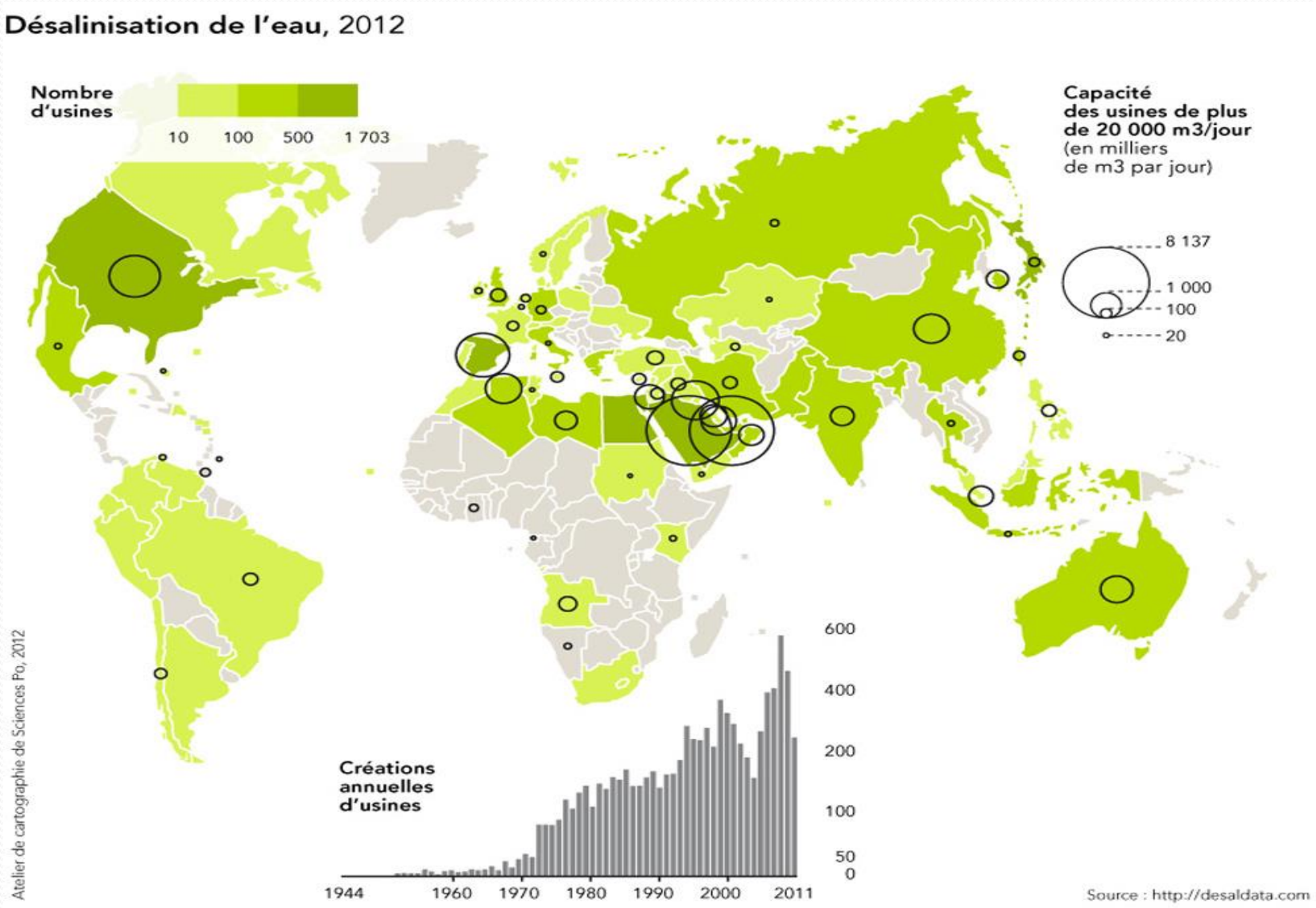
On the way: International Cooperation

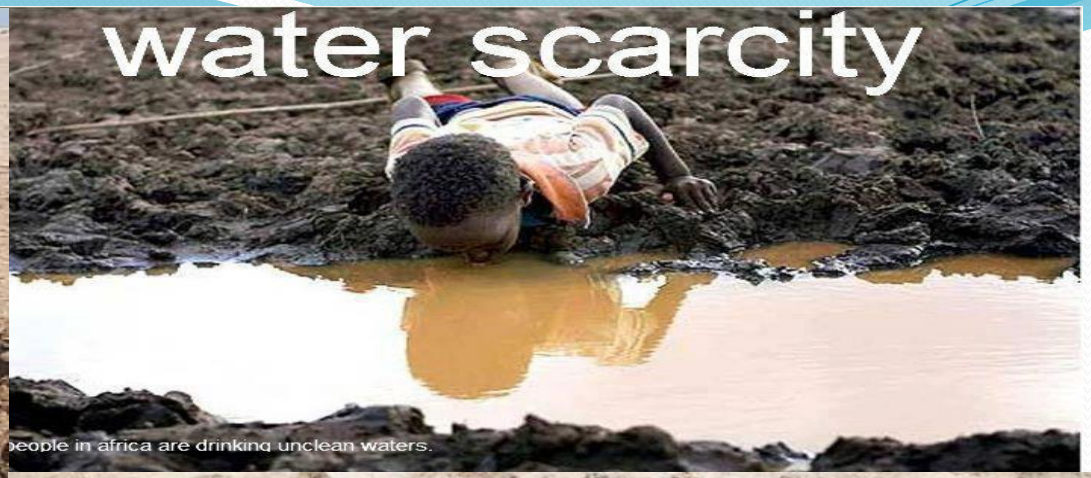
- RDI activities and participation of their research funding organisations in the ERA-NETs COFUND with FACCE
  - ✓ Brazil
  - ✓ Canada
  - ✓ USA
  - ✓ China
  - ✓ Vietnam
  - ✓ Taiwan
  - ✓ India
  - ✓ South Africa
  - ✓ Tunisia
  - ✓ Egypt

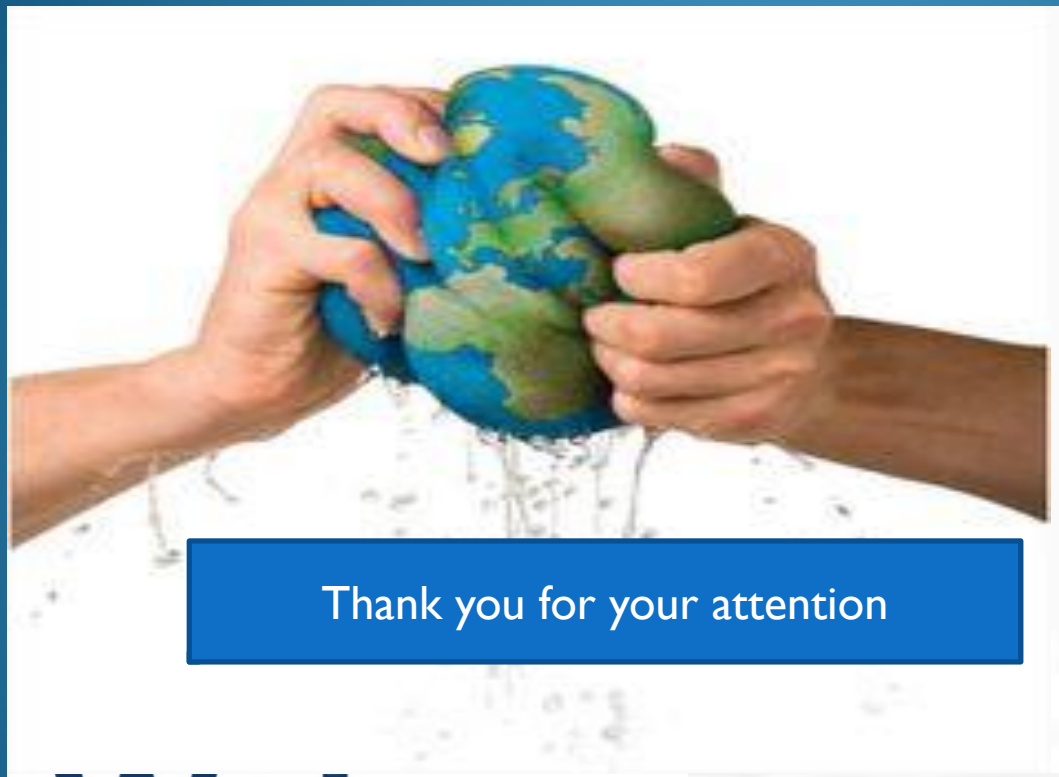
COOPERATION BETWEEN EU and MEDITERRANEAN, AFRICAN and ASIATIC INITIATIVES

Targeted countries: India and China

Technology improovement




water scarcity
people in africa are drinking unclean waters.



Thank you for your attention

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