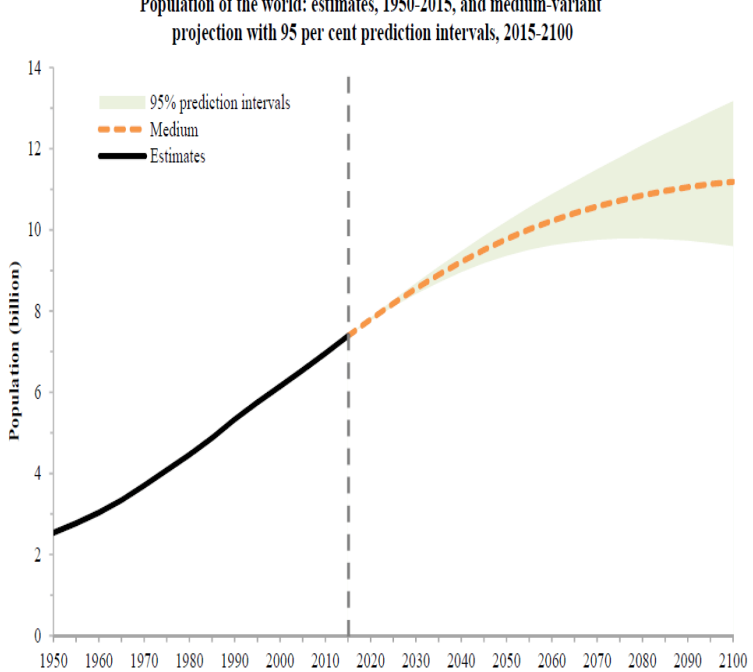
The Next Big Challenge in Fresh-Water Pollution:

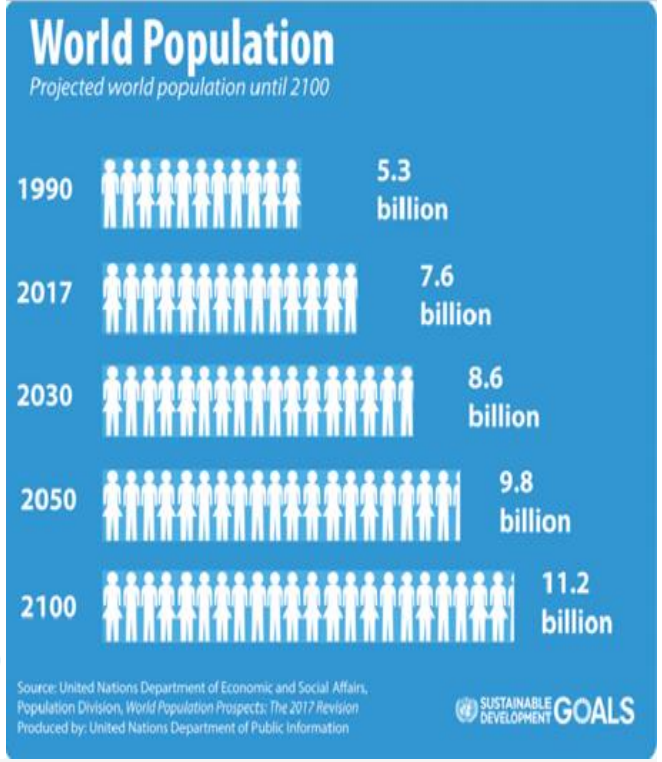
From the Global to the Local, saving Whangamata Surf-bar from the next generation of fresh-water pollution.

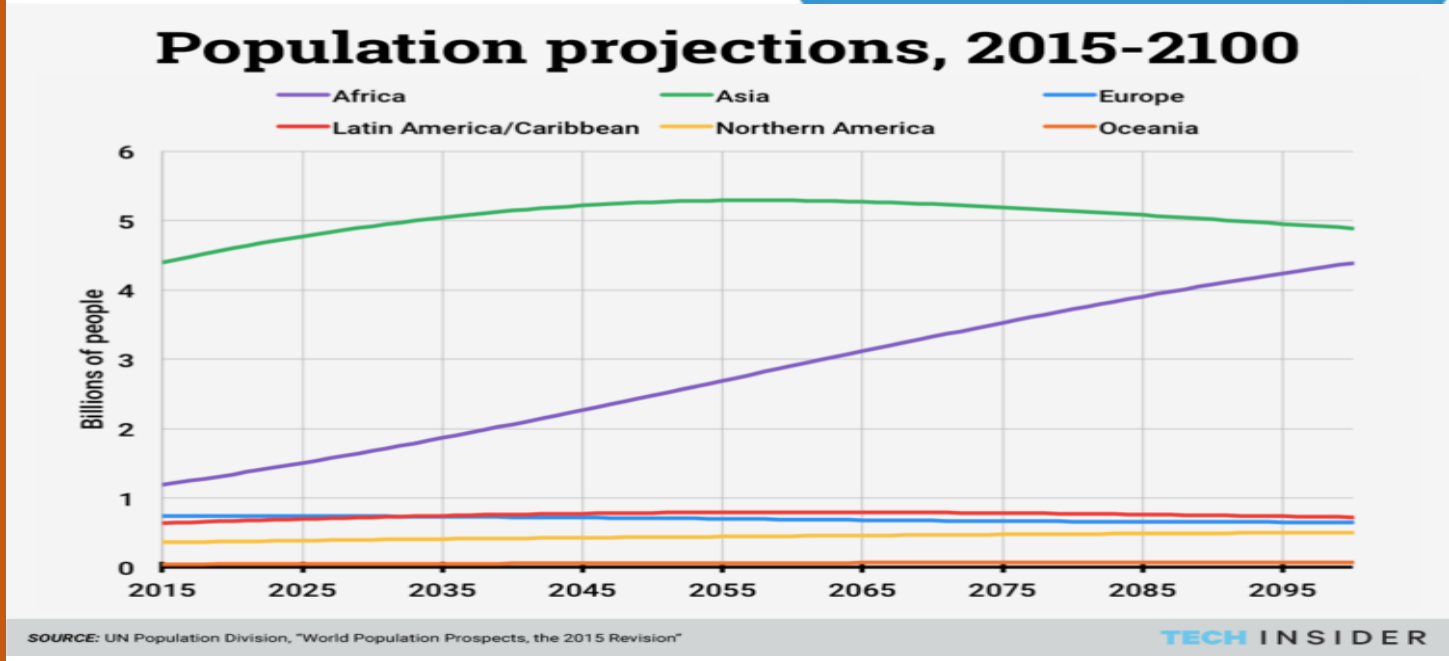
From the local to the global

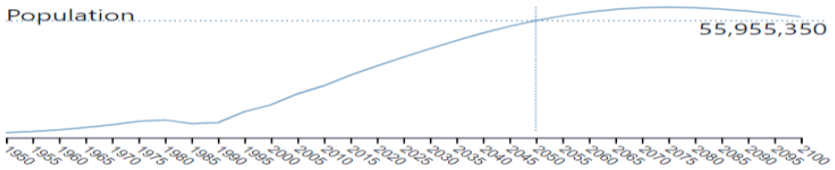
Trend: Human numbers.



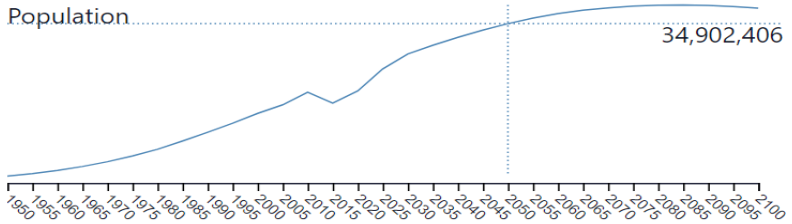
Source: United Nations, Department of Economic and Social Affairs, Population Division (2017). *World Population Prospects: The 2017 Revision*. New York: United Nations.



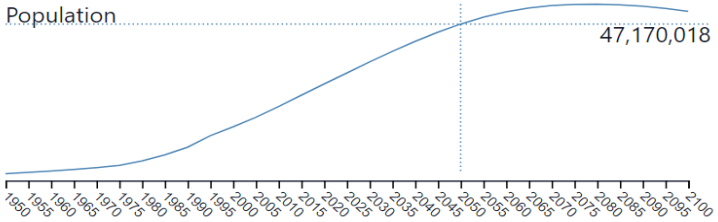




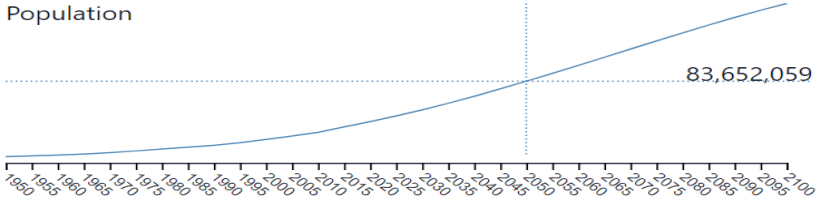
Afghanistan - 32m now, 56m in 2050, 58 m 2100.



Syria, - 18m now, 35m in 2050, 38m 2100.



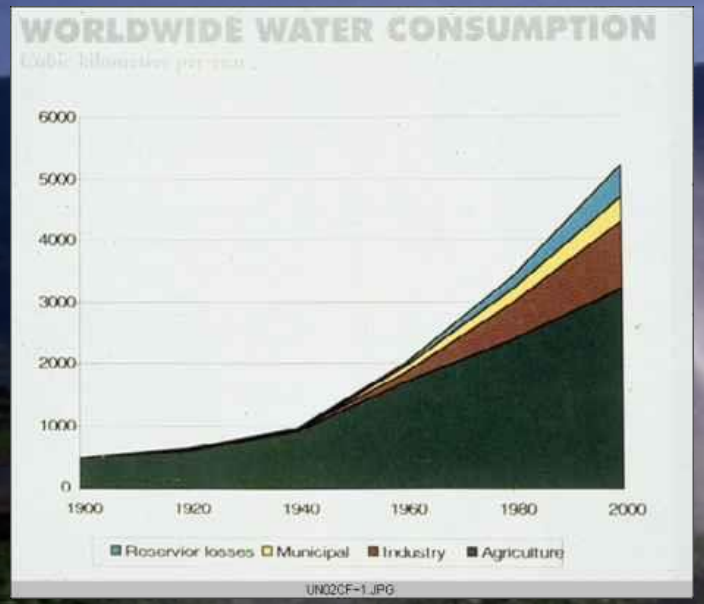
Yemen, - 26m now, 47m in 2050, 51 m 2100.

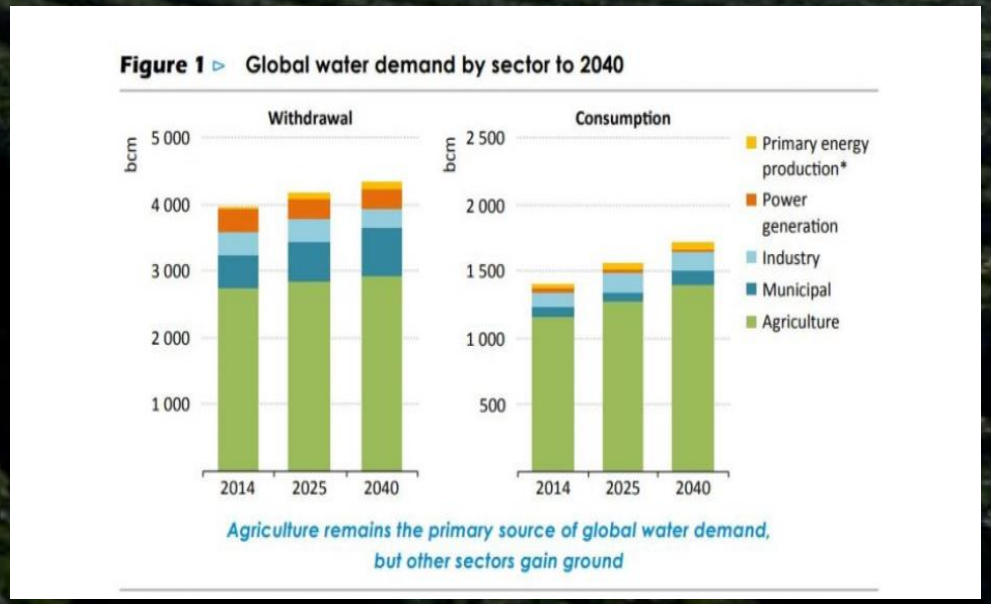


Iraq, - 36m now, 83m in 2050, 164 m 2100.

Trend: Demand

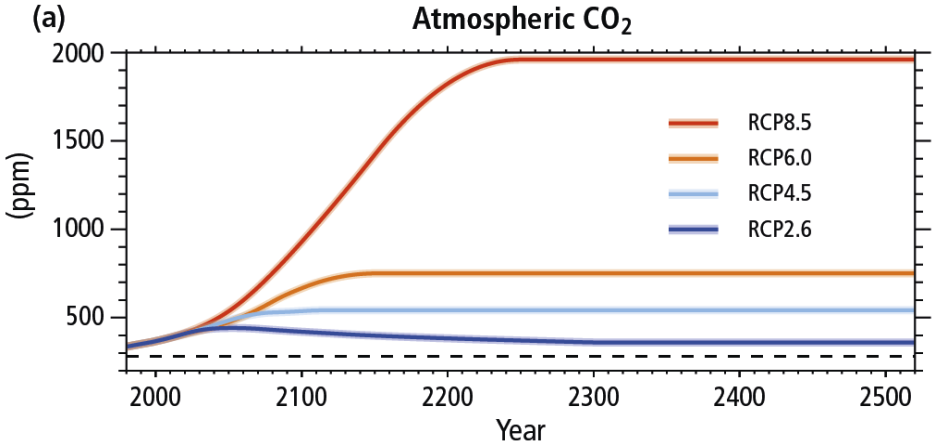
Global water use has increased by a factor of six over the past 100 years.

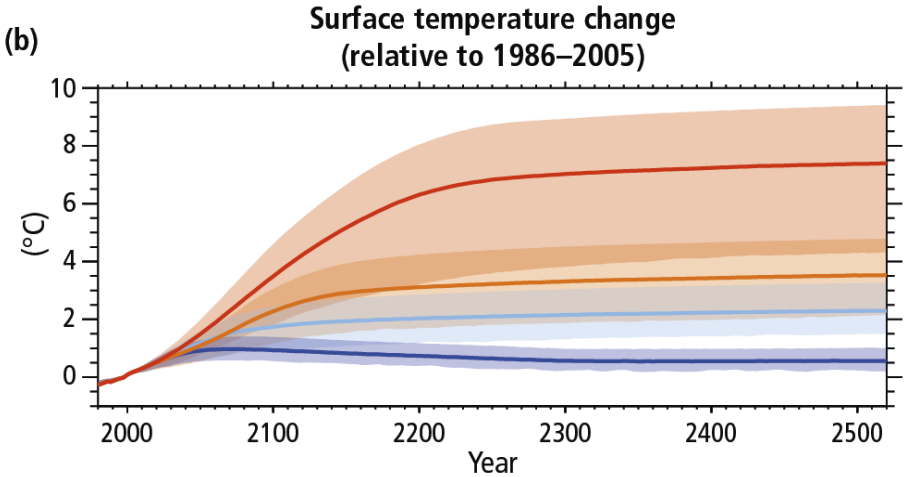


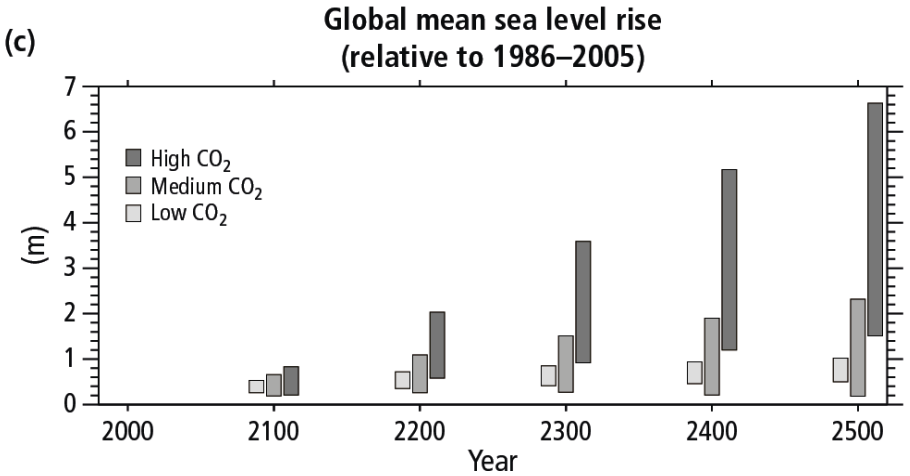


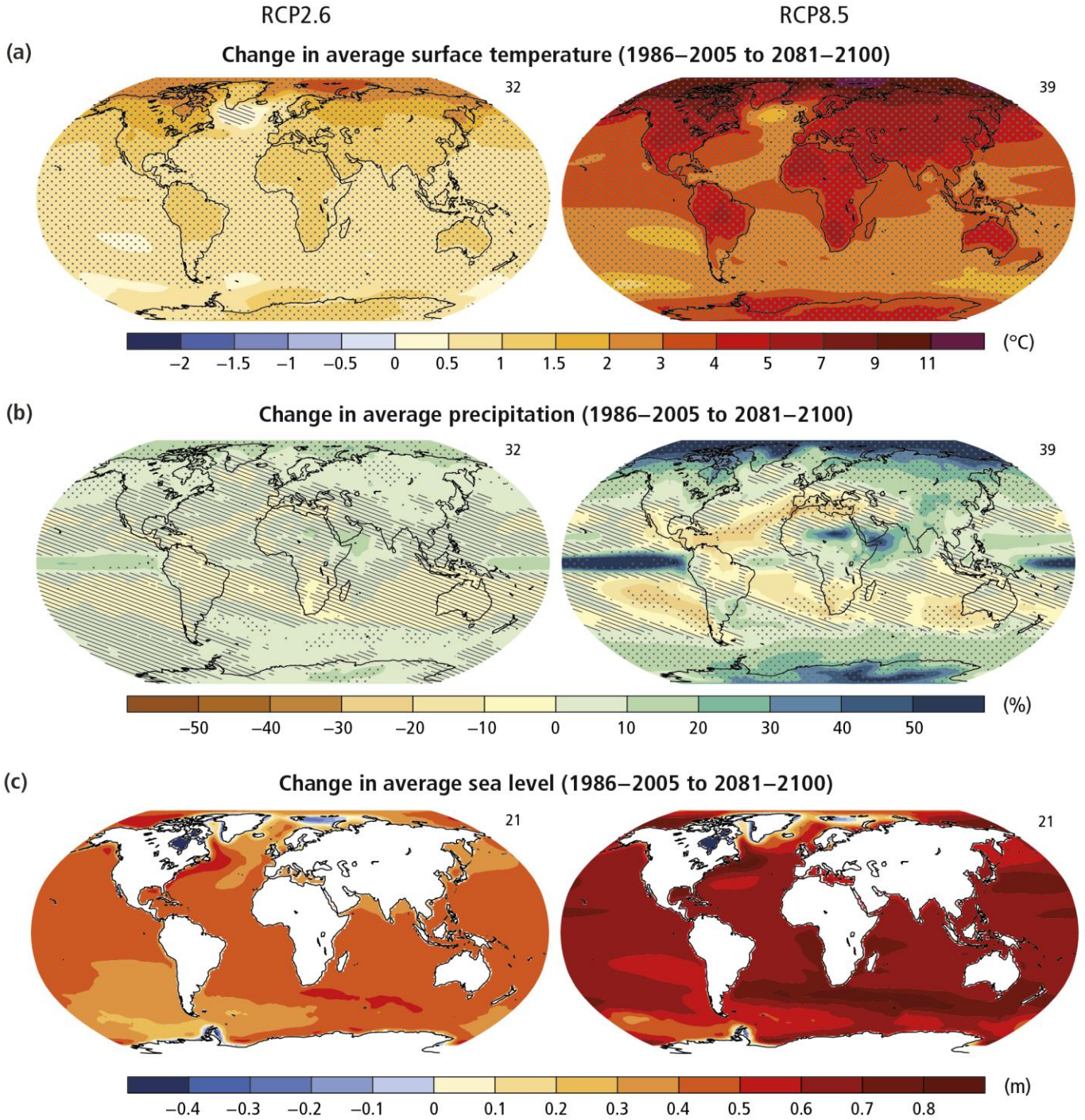
Demand should grow, depending on population, GDP and technology at 1% per annum

Trend: Climate change



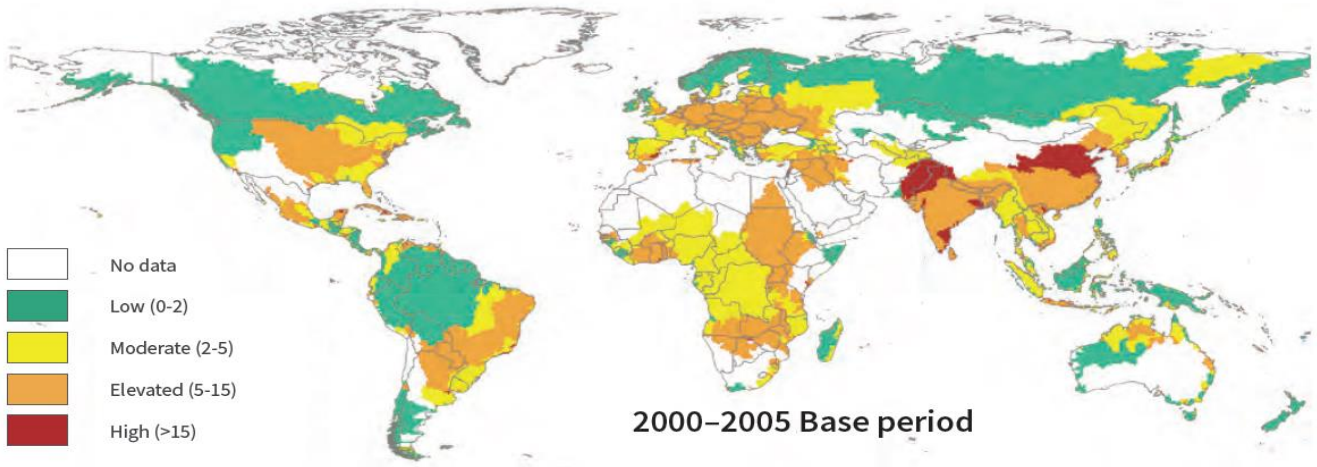




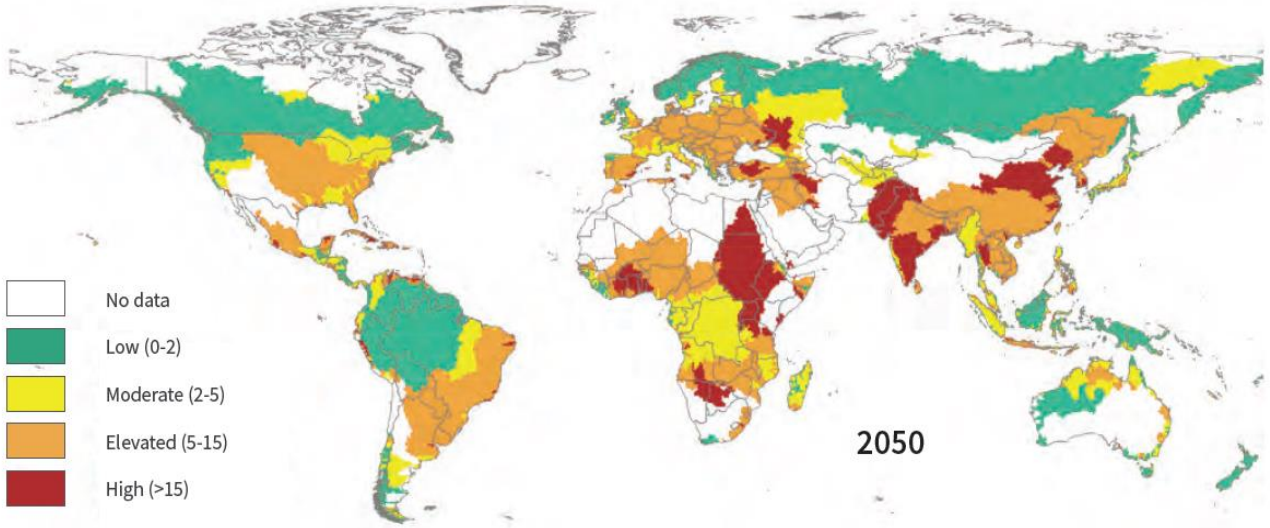


Trend: Pollution

Figure 4 Water quality risk indices for major river basins during the base period (2000–2005) compared to 2050 (nitrogen index under the CSIRO*-*medium-scenario***)



Since the 1990s, water pollution has worsened in almost all rivers in Africa, Asia and Latin America.

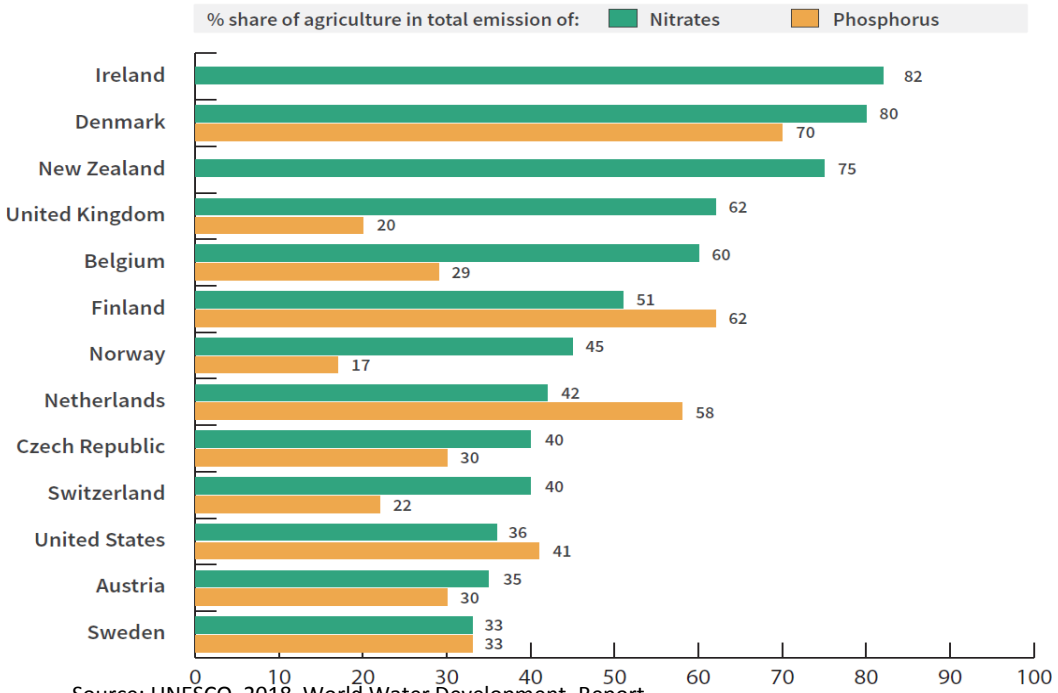


Source: UNESCO, 2018. World Water Development Report.

Trend: Nutrient Pollution

Globally, the most prevalent water quality challenge is nutrient loading, which, depending on the region, is often associated with pathogen loading. Chemicals are also in the mix, although there are large gaps in understanding.

Percentage share of agriculture in total emissions of nitrates and phosphorus in OECD countries, 2000–2009



Source: UNESCO, 2018. World Water Development Report.

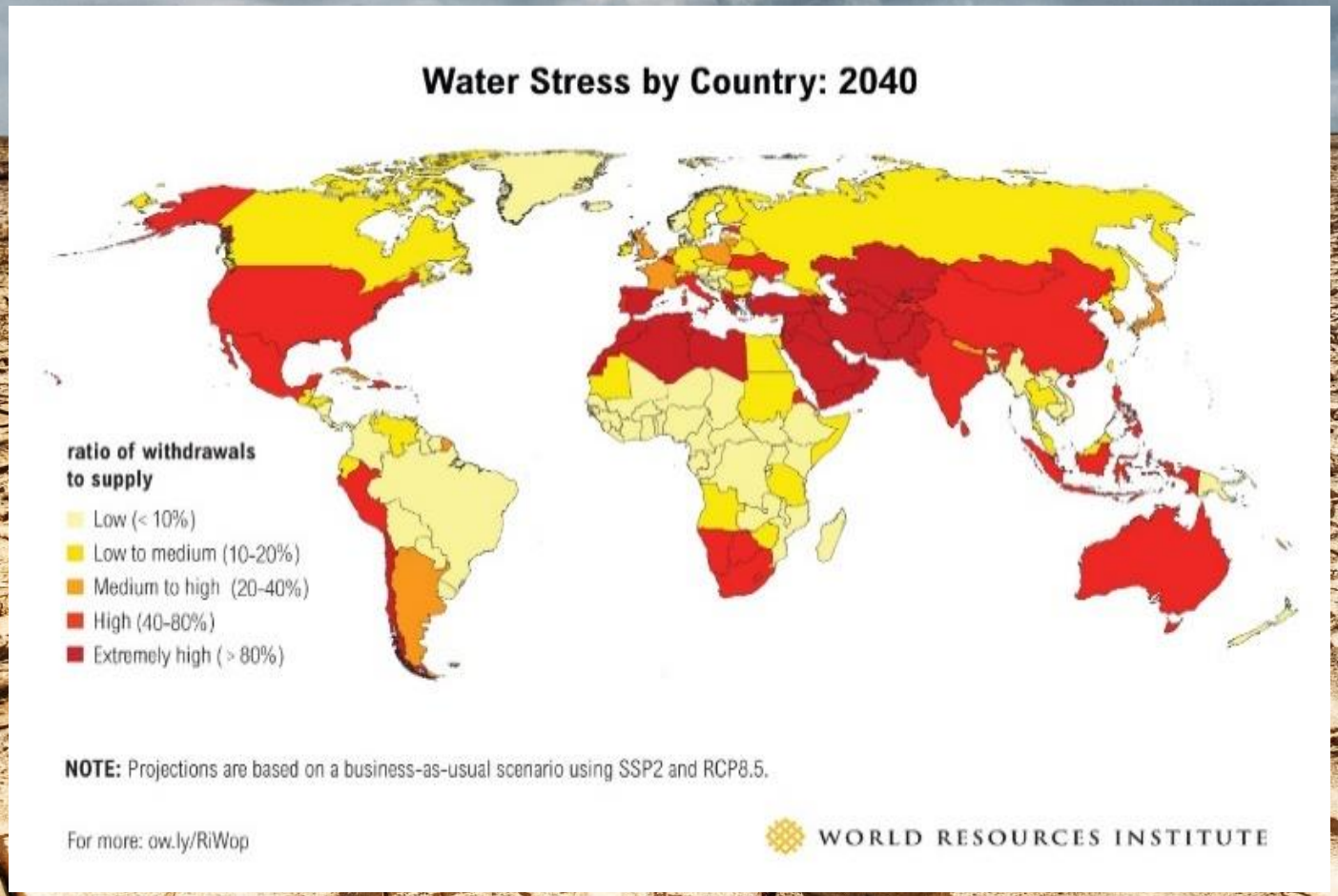
Is the main source of water pollution in the OECD

New Zealand is in full accord with OECD trends.

Expect to get worse unless change in accelerators or responses.

The exception is Europe =the only region which is moving in the opposite direction, and improving. 70% of surface waters are improving, together with 66% of groundwater (although considerable progress is still required).

The prediction

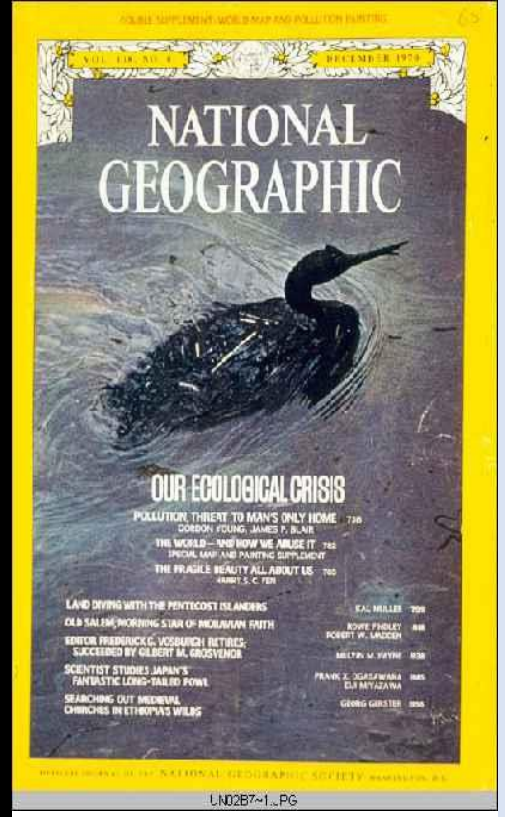


At present, about 3.6 billion people live in areas that are potentially water-scarce at least one month per year. The call for water should grow by 30% by 2050 in general, but in high growth areas, up to 100%.

Progress: Nationally

The Great London Stench, 1851

- The rapid spread of technology.
- From sanitation to river pollution, with the Pollution Prevention Act 1876.
- From one pollutant to another: From Sewage, to oil, to chemicals…



Learning from History

Progress: Internationally

The growth of international environmental law

In theory: International law in this area looks good.

- Regional cooperation began in 1868.
- The first international convention on point was in 1921. Conservation (via arbitration) principles from 1927.
- The first international conference in 1977.
- And the 1997 Convention on the Non- Navigational Uses of International Waterways .
- Even the ICJ has chipped in:
- **All agree on equity and (limited) conservation.**

In reality: 158 of the world's 263 international basins (which contain more than 60% of the world's river flows) lack any type of cooperative framework; and of the 106 basins covered by agreements, approximately two- thirds do not include all basin states.

Progress: MDGs

Target 7c of the Millennium Development Goals (MDG 7c) aimed to halve the population that had no sustainable access to water and basic sanitation before 2015. According programme in charge of measuring progress towards MDG 7c, 2.6 billion people gained access to safe water [663 million still without] and 2.3 billion people to basic sanitation [2.4 million still without].

New Targets: SDGs (by 2030)

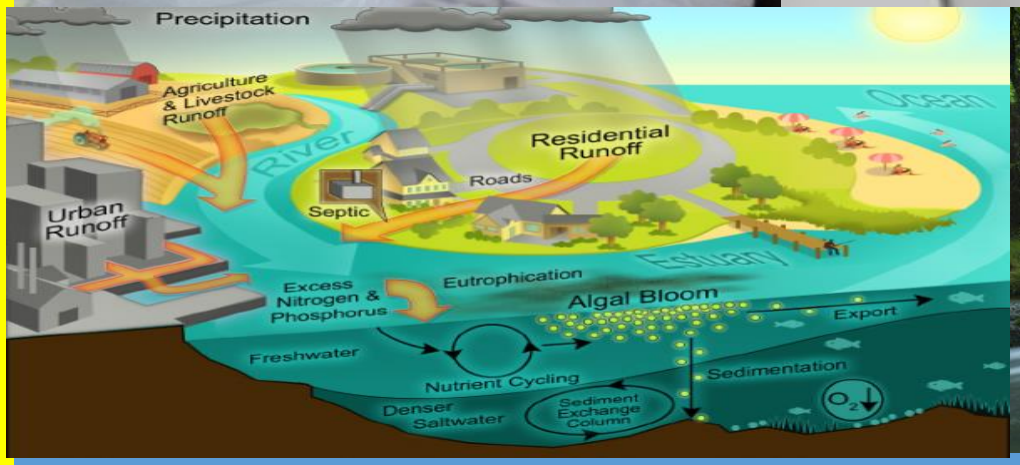
6 CLEAN WATER AND SANITATION

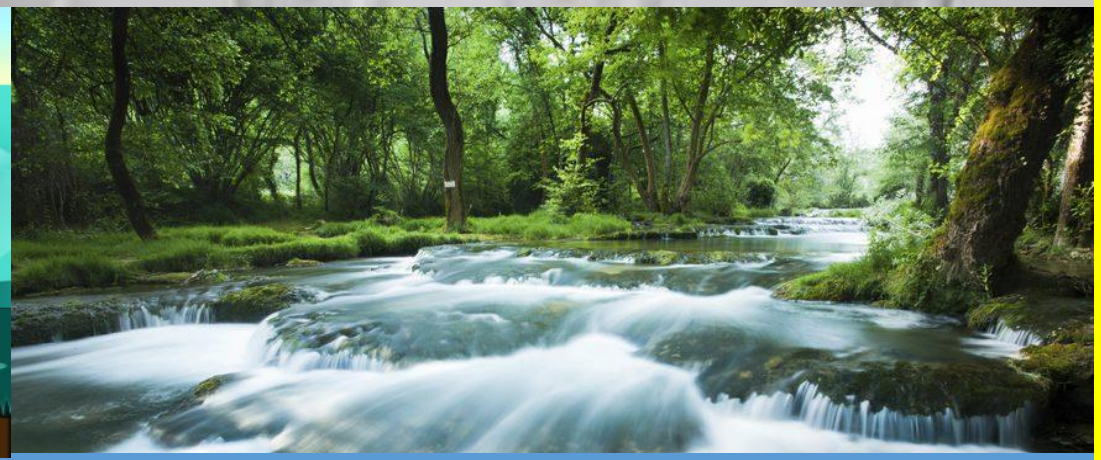
Universal and equitable access to safe and affordable drinking water for all
Adequate and equitable sanitation and hygiene for all and end open defecation.
Improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse.
Substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity
Implement integrated water resources management at all levels, including through transboundary cooperation as appropriate
By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes.

The basic steps

Scientific Foundations

The Process: The best scientists, independent from policy formation. Transparent, verifiable, accessible and peer reviewed.

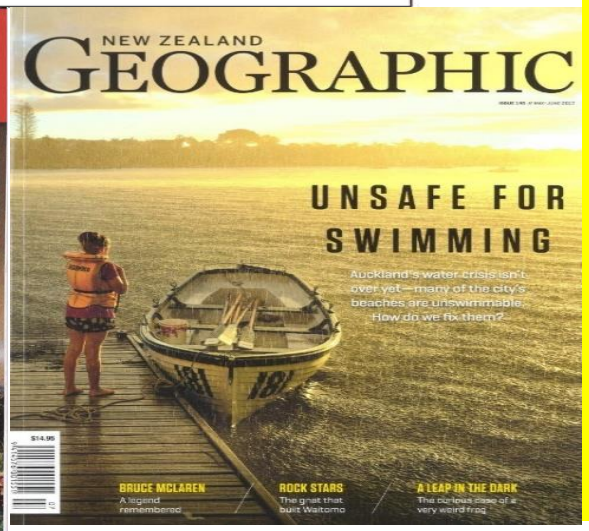




Identification of the pollutants, sources, impacts, differentiation factors because of different habitats, multiplying and time factors, and trends .

The basic steps

What the pollutants are.
What the likely impacts could be.
Where they came from.



Monitor and make public

The basic steps

Voluntary Environmental Stewardship Program

Farm to River Partnership

THE GLOBAL COMPACT

Start with voluntary goals

The basic steps

Identification and liability

The polluter is identified

The polluter pays

The basic steps

Law and targets

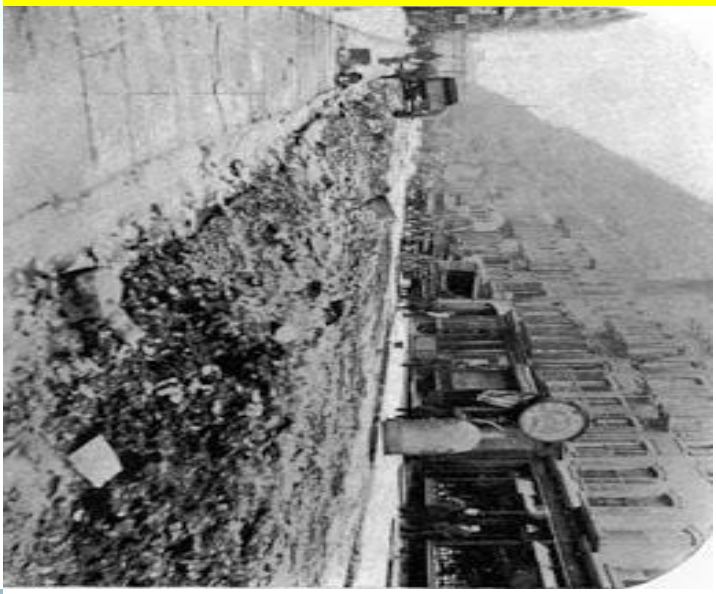
Specific laws on water

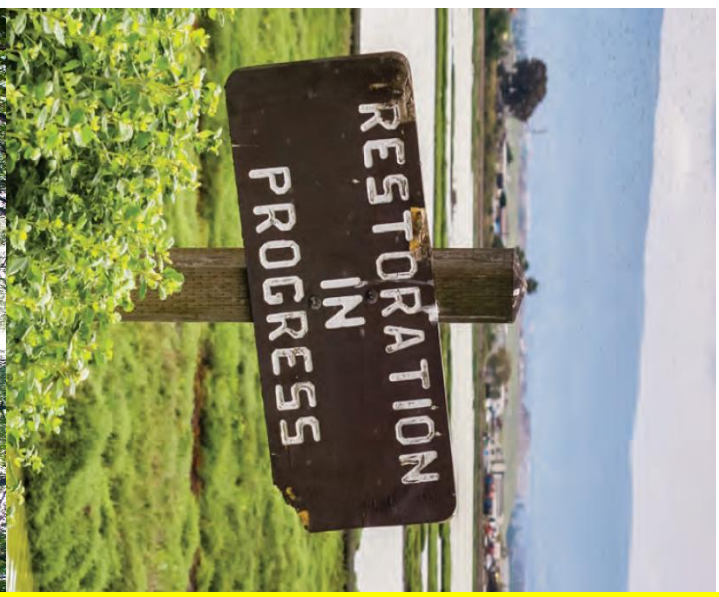
Differentiated targets

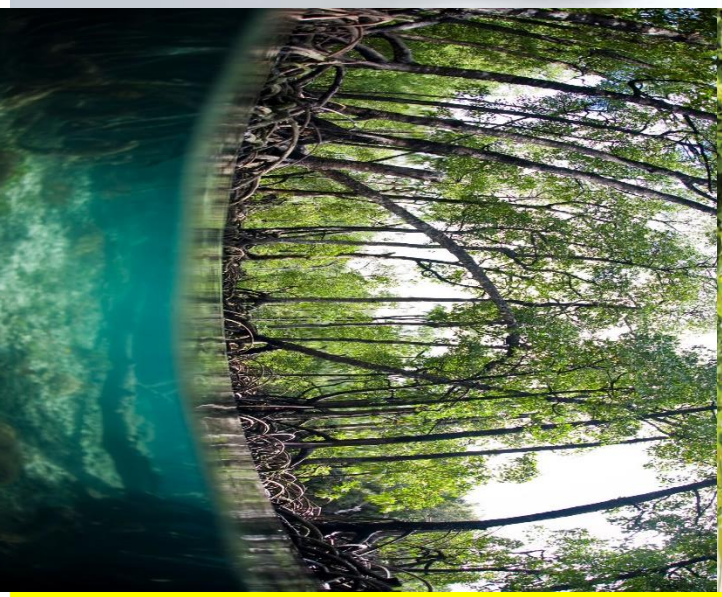
The basic steps

- Identify (50 mg/l of nitrates in ground or fresh/risk of eutrophication) and Assign Nitrate Vulnerable Zones (40% of EU27).
- Codes are compulsory within NVZs- limitation of fertilizer application place, time and amount, minimum storage capacity for livestock manure, rules to control the spread of nutrients near water or on slopes – all linked to maximum amount of livestock manure to be applied (***corresponding to 170 kg nitrogen/hectare/year***).
- Higher standards where eutrophic. Derogations possible (long growing seasons, crops with high nitrogen uptake, high net precipitation or exceptional soil conditions).
- Outside of zones, Codes of Good Agricultural Practice - (exactly the same as NVZ's, but voluntary).

The basic steps







Technology, Efficiency & Nature

So, the challenges are….

To link the local to the global.
To understand the risks ahead
To learn from the past.
To think in a comparative sense.

And for Whangamata ?

Minimal and partisan science.
No specific water law
No targets
No identification of the polluter
No polluter pays
No technological change.
Limited public information

Conclusion