One aspect of water security: the relationship between water, energy and food.

ANTONIO EMBID IRUJO
CATEDRÁTICO DE DERECHO ADMINISTRATIVO
UNIVERSIDAD DE ZARAGOZA. ESPAÑA.

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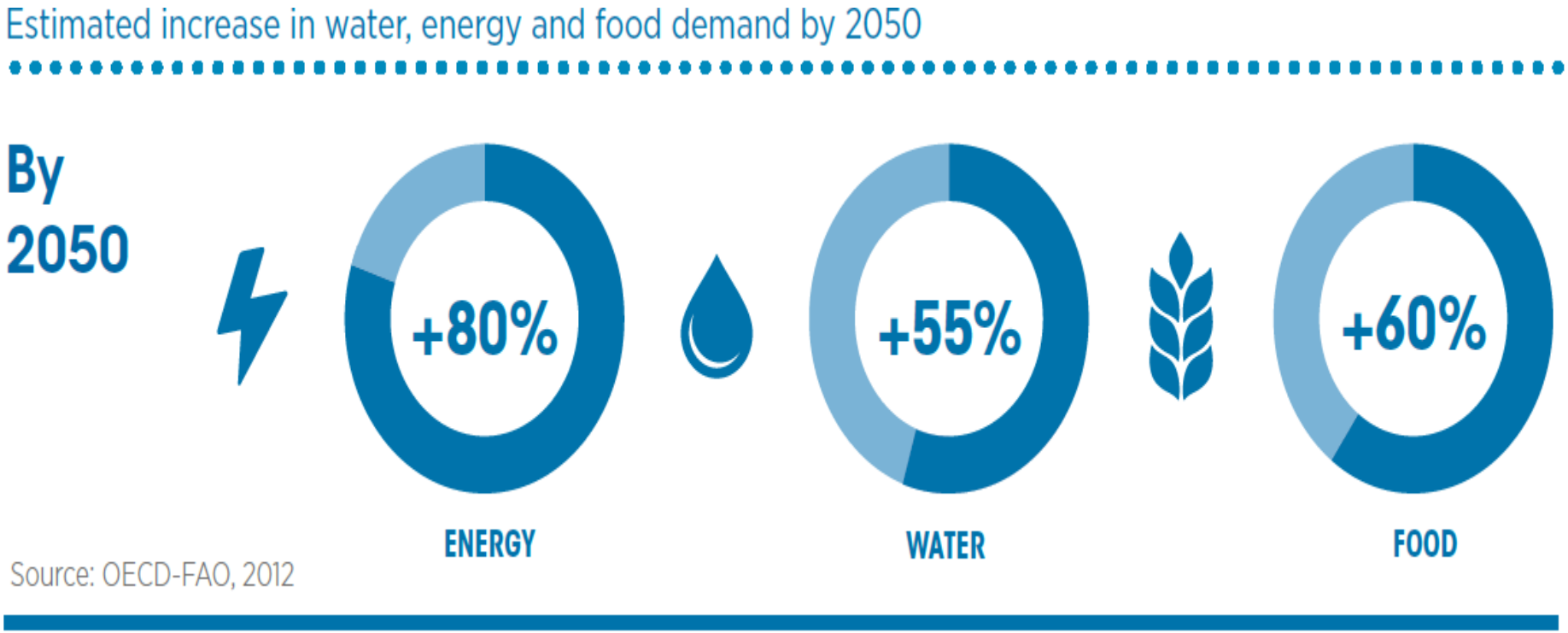
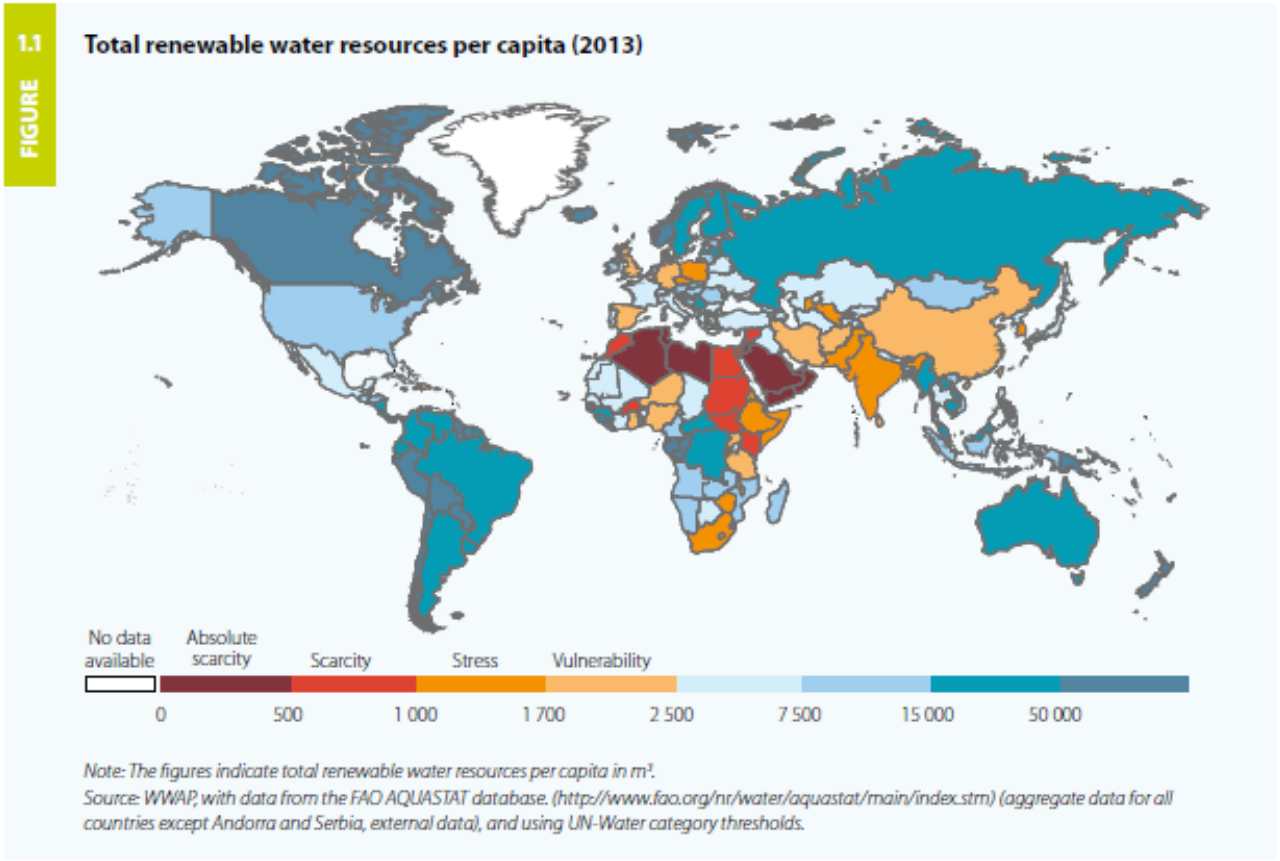
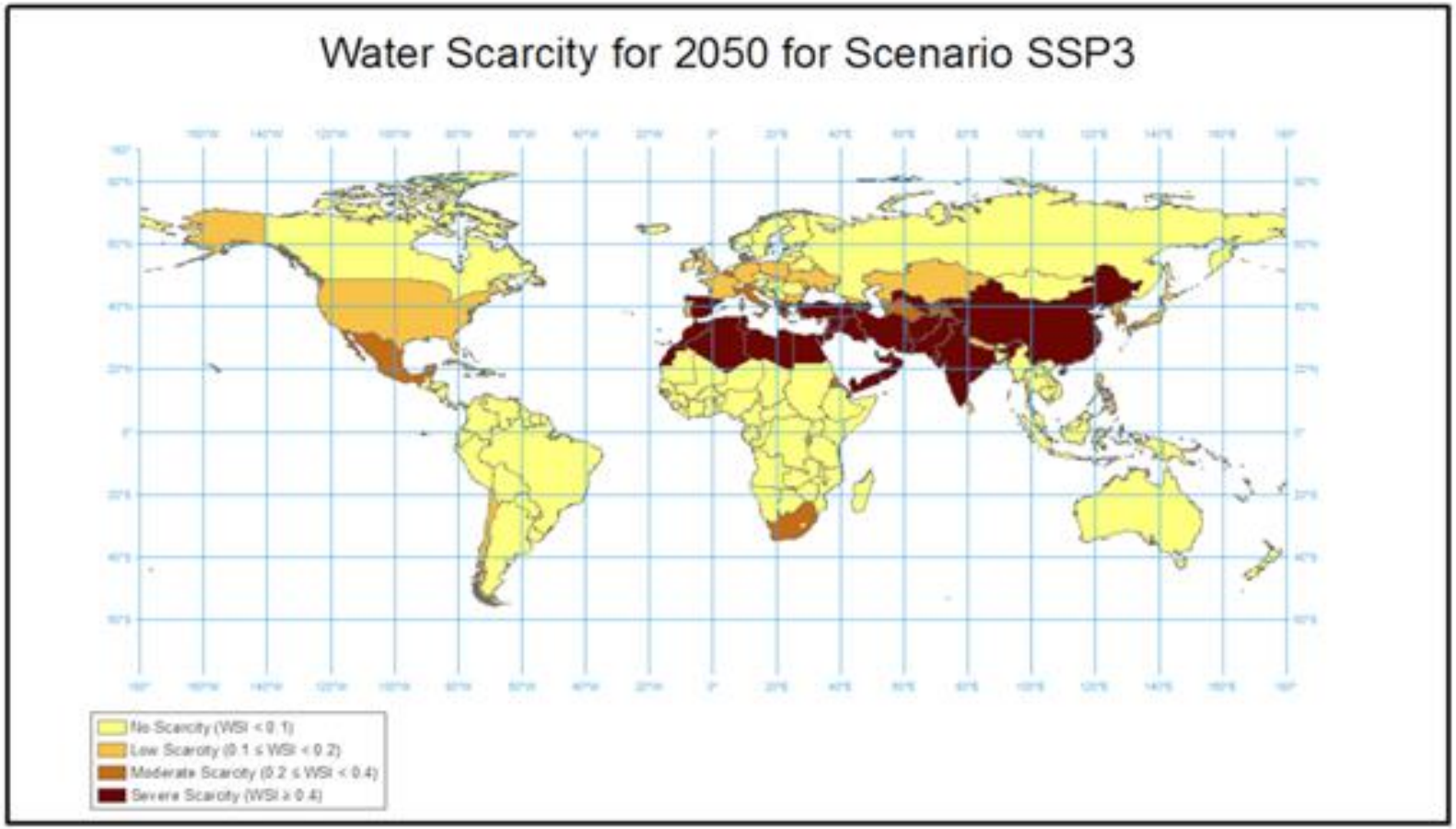
THE NEXUS. IRENA (2015), p. 23



LATINOAMÉRICA Y EL CARIBE (1).



LATINOAMÉRICA Y EL CARIBE (2).
(Universidad de Maryland)



LATINOAMÉRICA Y EL CARIBE. (3) (WILLAARTS y otros 2014, p. 271).

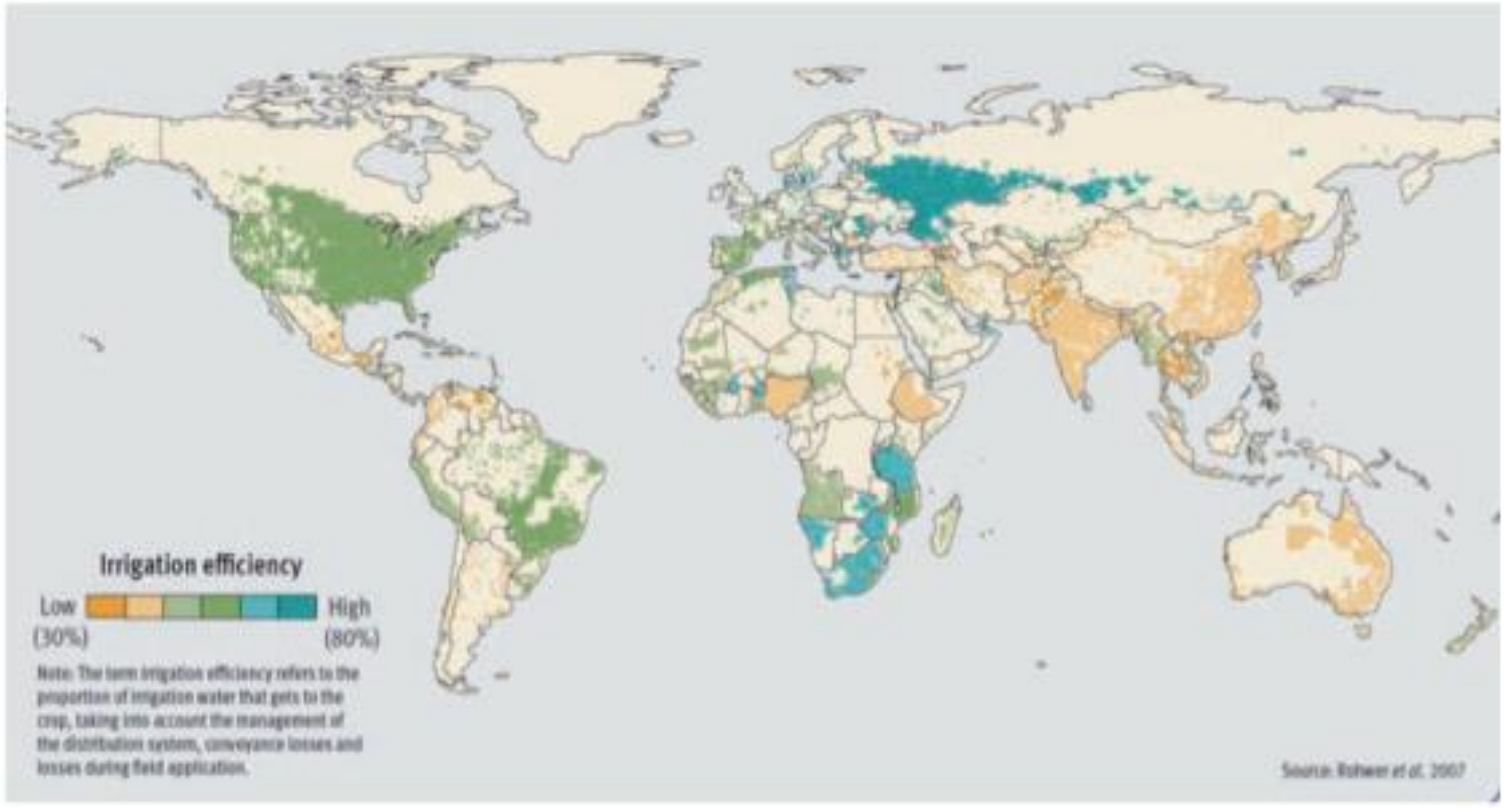
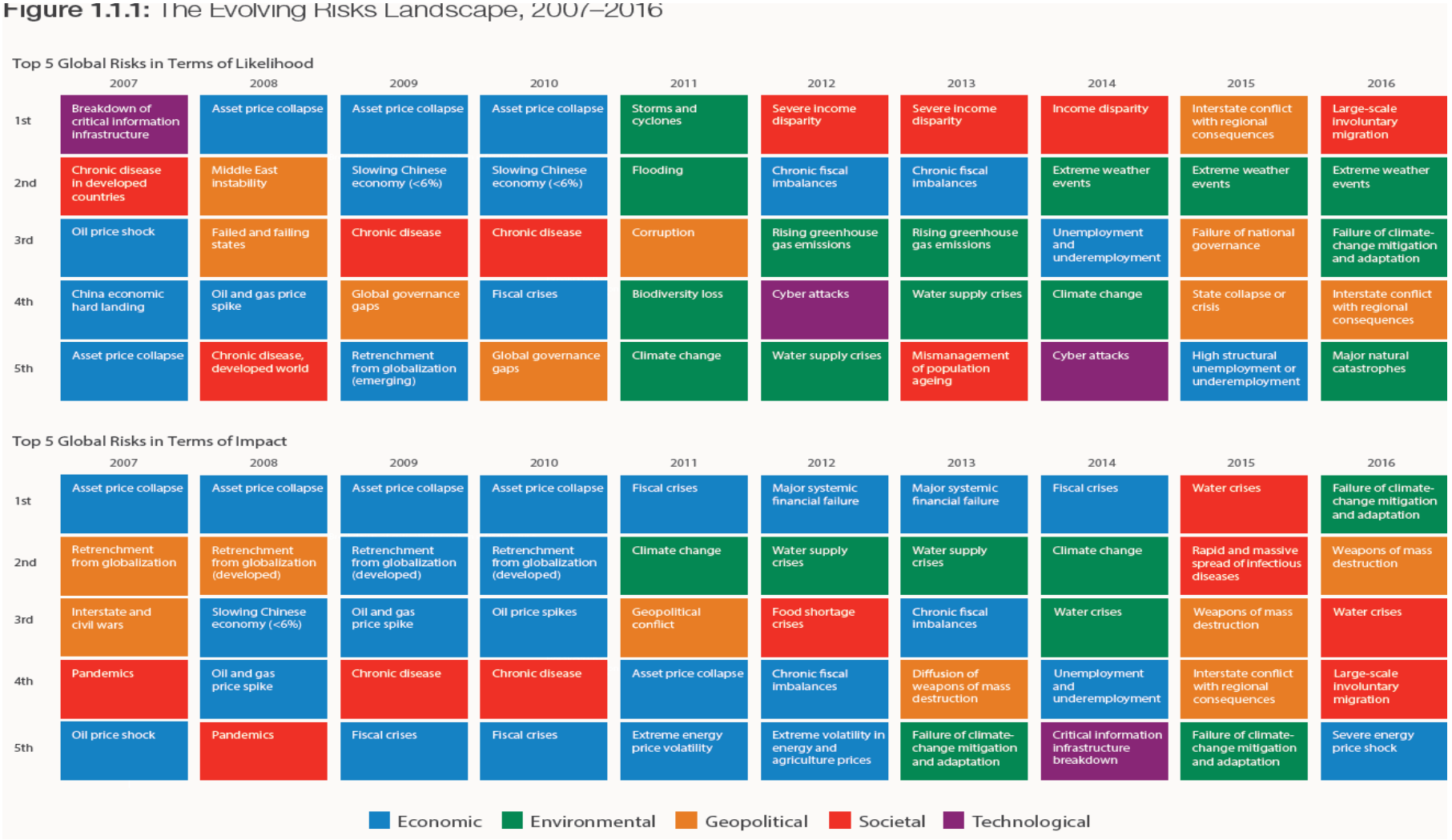


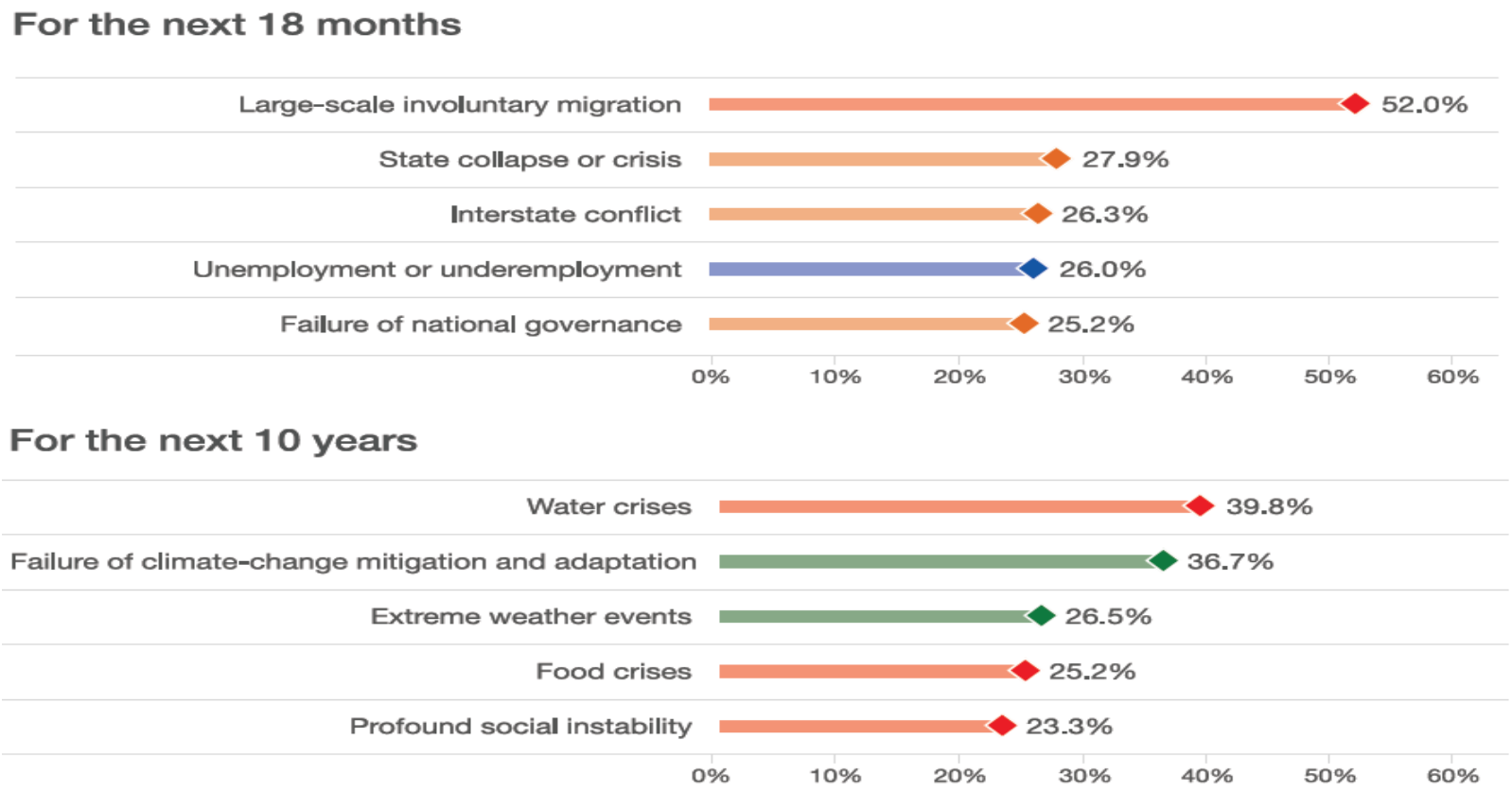
Figure 10.2 Global irrigation efficiencies, year 2000. *Source: UNEP (2012).*

LA SOCIEDAD DEL RIESGO.
Global Risks Report 11ª ed., 2016.



LA SOCIEDAD DEL RIESGO Y LAC (1). (Global Risks Report 11ª ed., 2016).

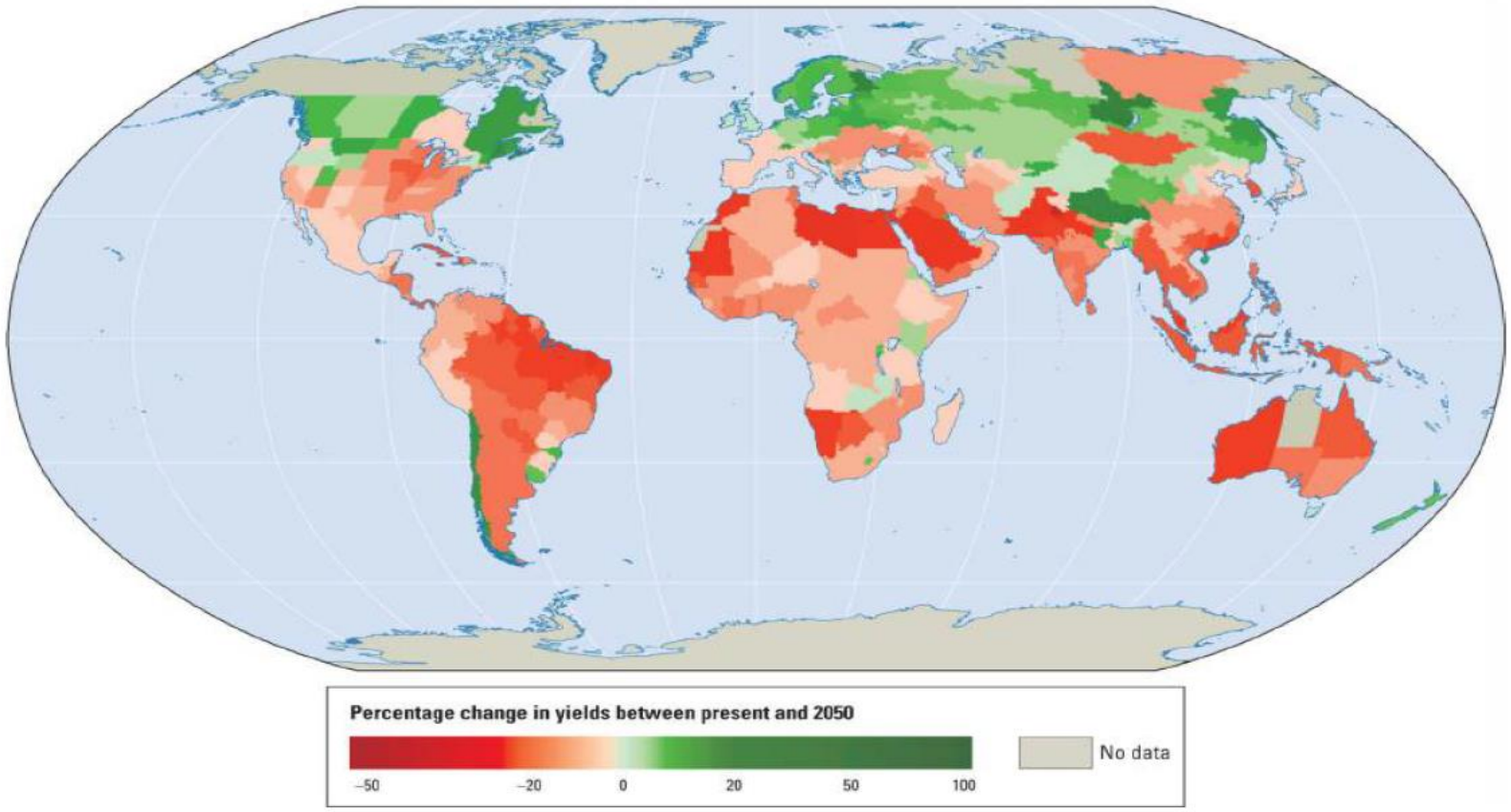
Figure 1.2: The Top Five Global Risks of Highest Concern for the Next 18 Months and 10 Years



Source: Global Risks Perception Survey 2015, World Economic Forum.

LA SOCIEDAD DEL RIESGO Y LAC (2). (Global Risks Report 11ª ed., 2016).

Figure 3.2.1: Projected Impacts on Crop Yields in a 3°C Warmer World

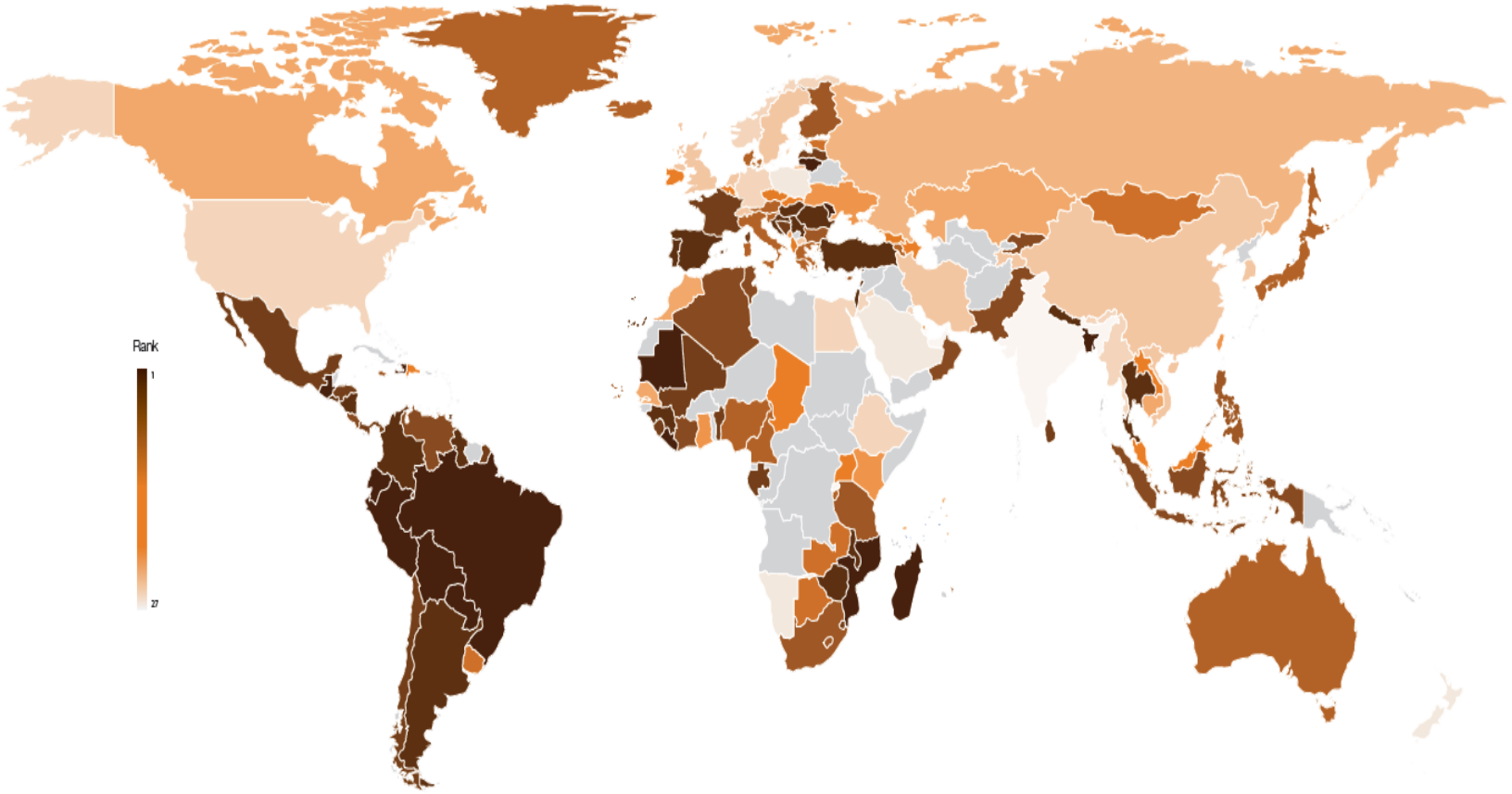


Source: WRI 2013.

Note: –50% change = half as productive in 2050 as in 2015; +100% change = twice as productive in 2050 as in 2015.

LA SOCIEDAD DEL RIESGO Y LAC (3). (Global Risks Report 11ª ed., 2016).

Figure 4.4: Failure of National Governance, rank



Source: Executive Opinion Survey 2015, World Economic Forum.
Note: The darker colour, the higher the concern.

INTERRELATIONS BETWEEN WATER AND ENERGY

-Use of water to produce energy. Traditional approach to hydropower and in cooling nuclear power plants and thermal plants.

-15% of worlwide water abstraction is used in energy production. (It's a very important amount).

-Interrelations too: by hydrocarbon extraction ("fracking" in non-conventional hydrocarbons). Great controversy (Precautionnary principle).

-Use of water and mining: Water use in mining has major problems in arid countries.

INTERRELATIONS BETWEEN ENERGY AND WATER

-Essential role of energy in seawater desalination, pumping of groundwater and irrigation modernization.

In desalination, the main concern is environmental: the dumping of brines but also the energy consumption is very important.

In pumping of water, there is a serious problem when the price of energy is subsidized. This increases water consumption.

The modernization of irrigation systems greatly increases energy consumption, although it can reduce water consumption

-The agrifood chain is estimated to consume around 30% of worldwide energy.

INTERRELATIONS BETWEEN WATER AND FOOD

-Water is used to produce food: irrigation and aquaculture.

-Water uses percentages: it depends on the country. It can range from 70 to 90%.

-The returns the water to the cycle do not usually exceed 20-30%.

It is necessary to line channels to reduce water consumption.

-Usually water enjoys a priviliged position in countries whose legislation is based on a hierarchy of uses. Only human consumption of water is ahead of irrigation.

INTERRELATIONS BETWEEN WATER, ENERGY AND FOOD

-The best example of these interrelation: biomass production.

-In recent years a growth of this phenomenon in some geographical areas can be appreciated: Argentina, Brasil.

-This production can involve a decrease in food production; if the biomass is forest waste, the ecological funcion of the forest can be affected.

-It's also possible an increase in food prices too. Although this is not proven.

The nexus approach can help avoid the drawbacks of these interrelationships

OTHER CONSIDERATIONS BY WAY OF CONCLUSION

-interrelations between water, energy and food should be taken into account in all public policies.

-The central element in the nexus is water. Water should be a relevant issue in the future.

-The environment must be the element underlying all interrelationships.

-Human rights can not be forgotten in the considerations on the nexus.