

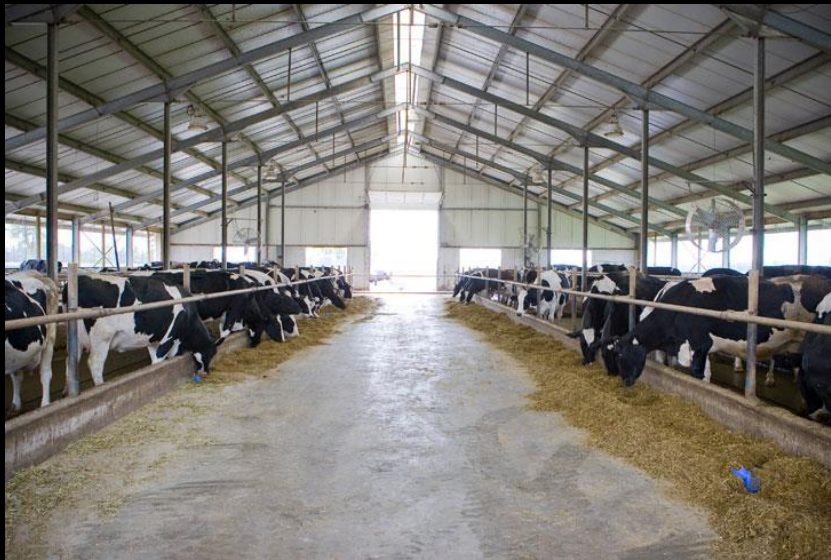


Water Footprint Assessment

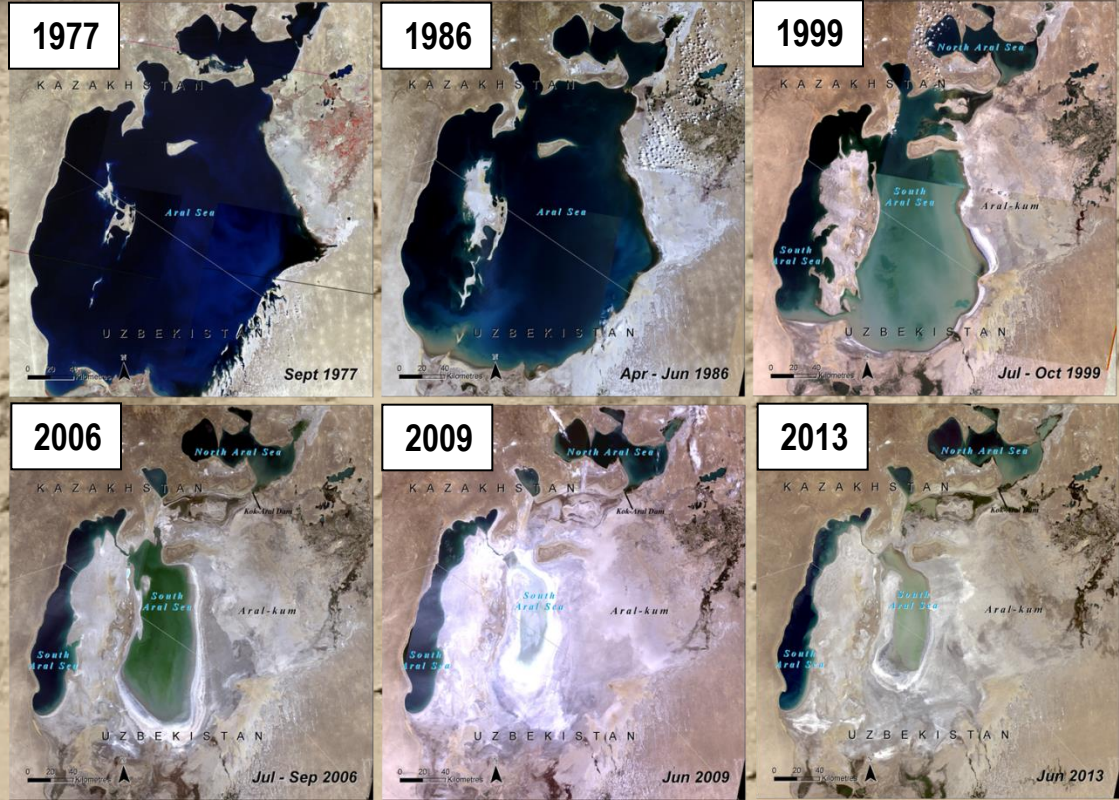
Analysing sustainability, efficiency, equity and security

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Cotton from the Aral Sea Basin, Central Asia



Animal feed from California, USA

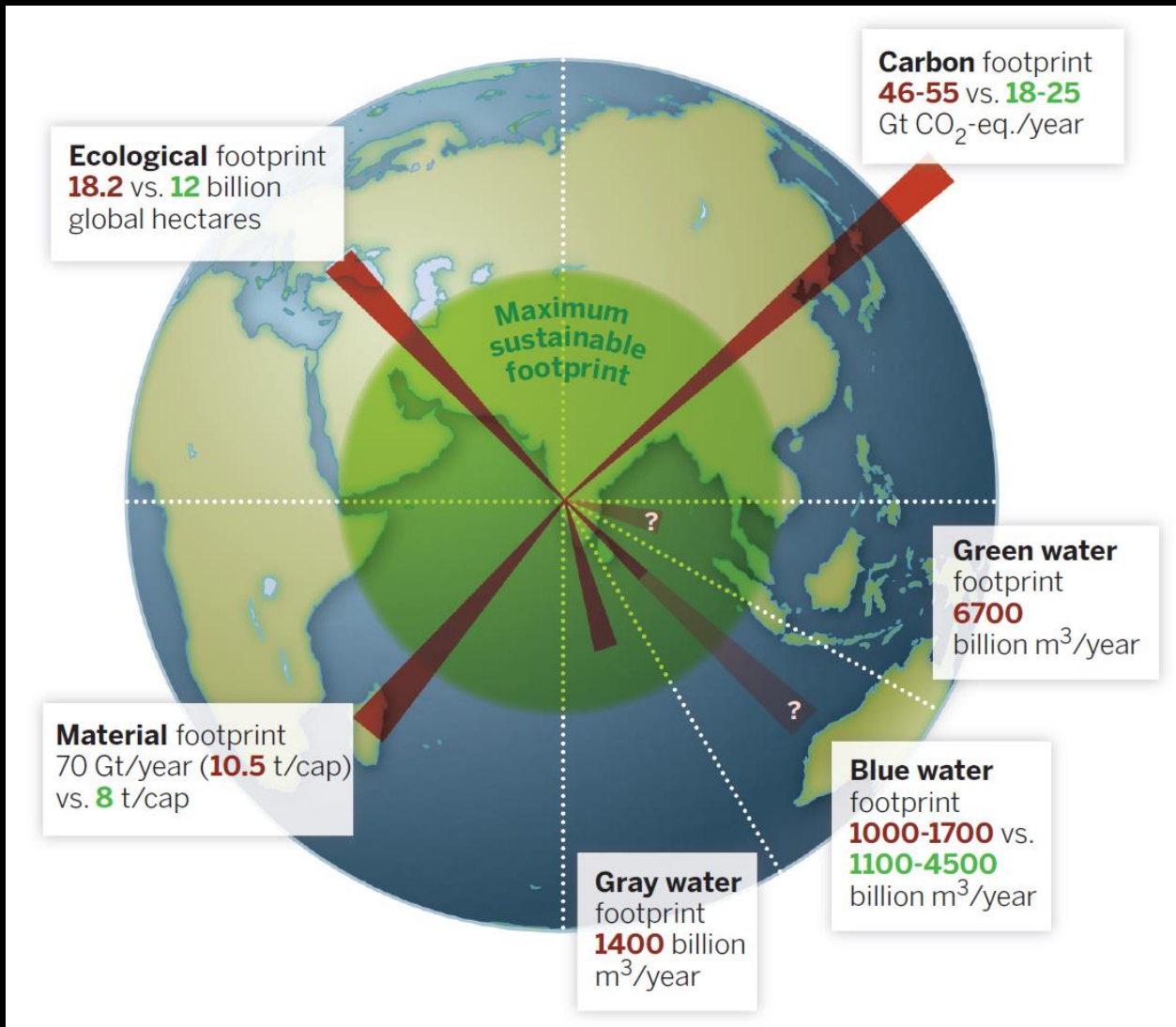
Food Grows Where Water Flows

Top-6 water consumers California:

1. animal feed
2. almonds & walnuts
3. residential areas
4. rice
5. grapes
6. cotton



Humanity's unsustainable environmental footprint



Sustainability

resource use & emission caps

Efficiency

product benchmarks

Equity

fair shares by community

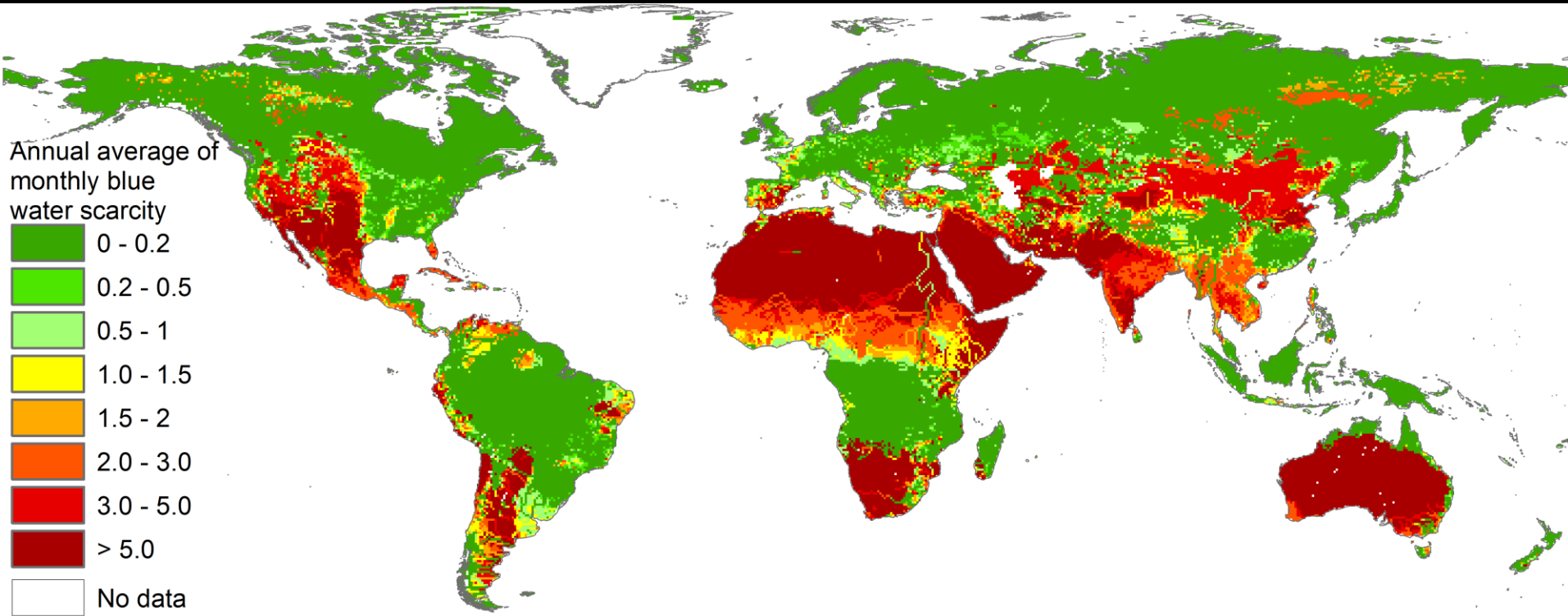
Resource security

some level of self-sufficiency



The water footprint of humanity: not sustainable

Blue water scarcity = blue WF / maximum sustainable blue WF



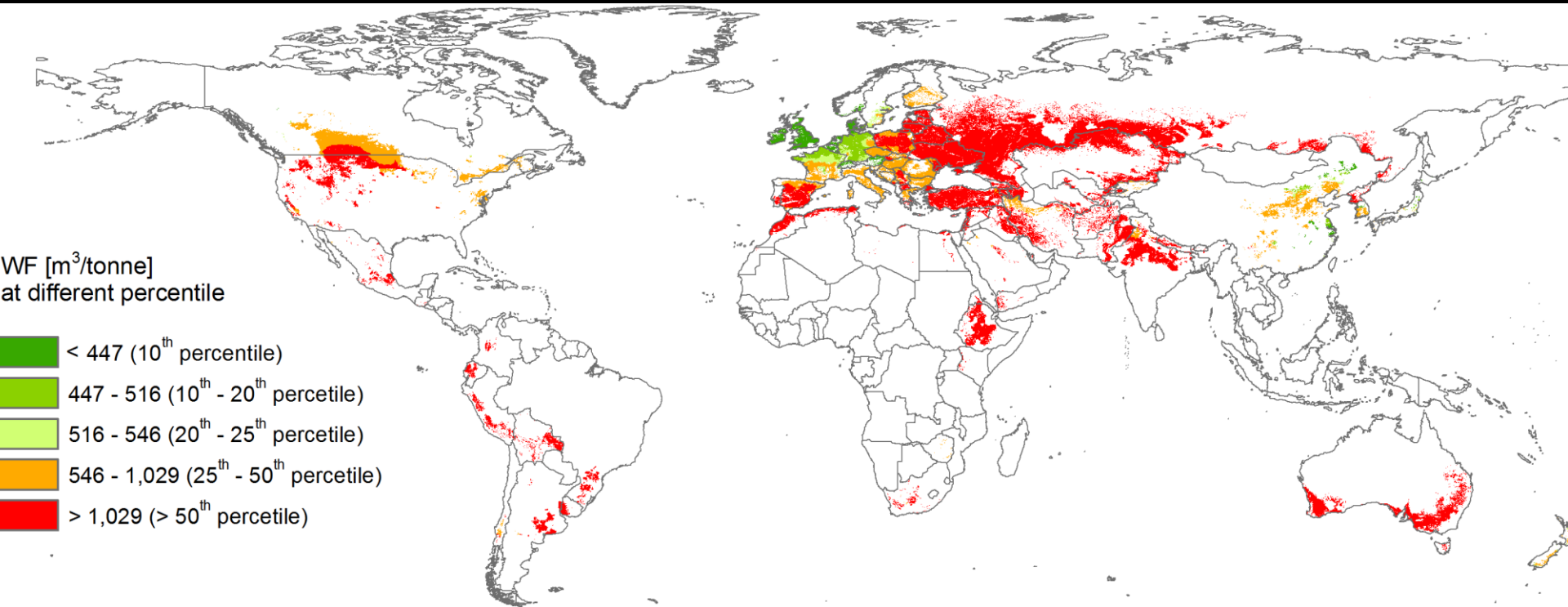
Source: Mekonnen & Hoekstra (2015)

We need water footprint caps per river basin (specified per month)



The water footprint of humanity: not efficient

Spatial differences in the consumptive water footprint of barley



Worldwide reduction of consumptive water footprints of crops to benchmark levels set by the best 25% of global production, would result in a global water saving of 40%.



The water efficiency of our food

Global average water footprint



	litre/kcal
starchy roots	0.5
cereals	0.5
sugar crops	0.7
pulses	1.1
vegetables	1.3
fruits	2.1
pork	2.2
poultry	3.0
beef	10.2

Source: Mekonnen & Hoekstra (2012) A global assessment of the water footprint of farm animal products, *Ecosystems*



The water efficiency of our food

The WF of meat & dairy is 30% of the overall WF of our food,
in industrialized countries generally 40%



 The water footprint of our choices



Stop showering = water saving of 50 litre/day



Stop eating meat = water saving of 800 litre/day



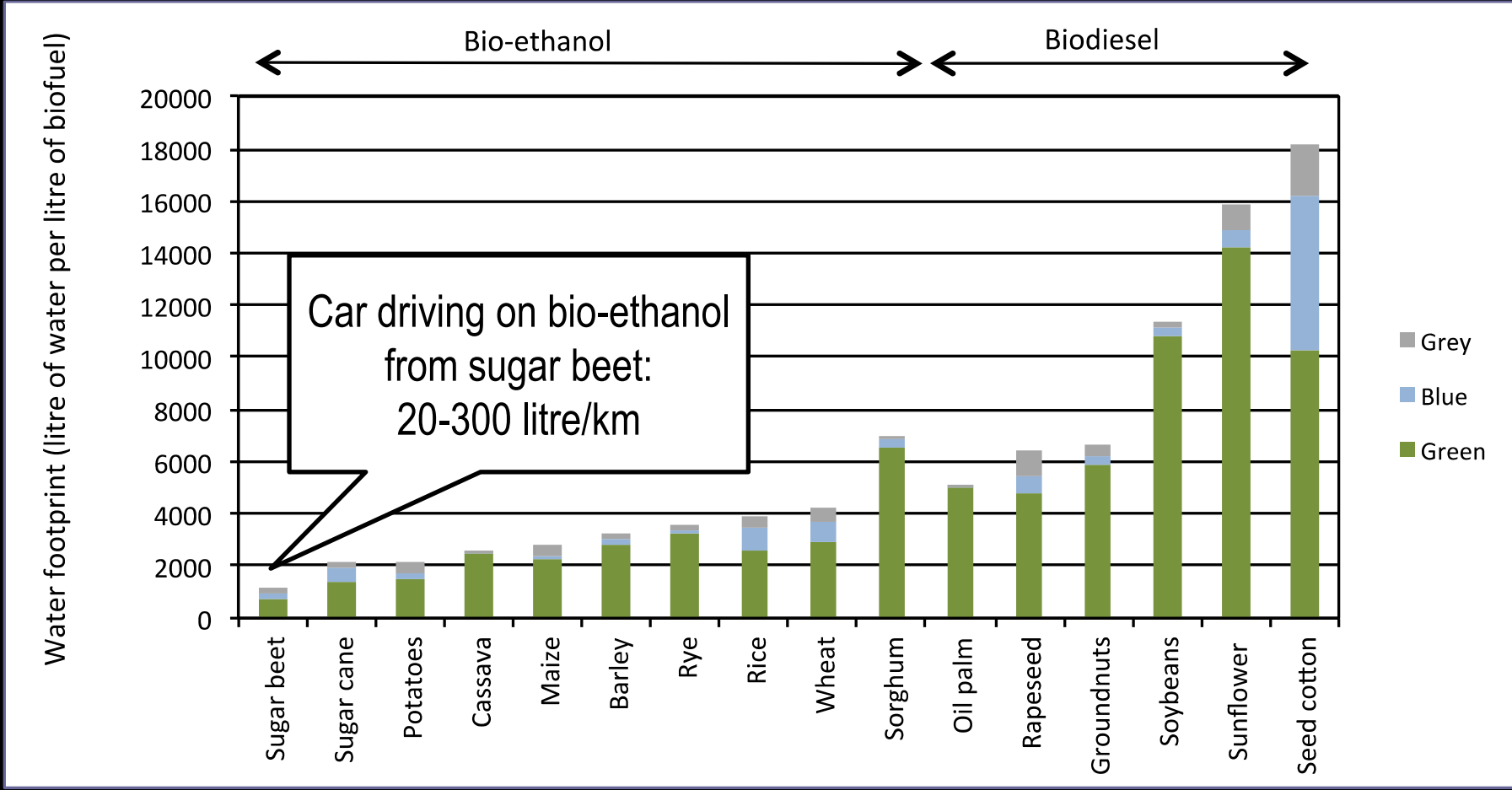
The two separate worlds of water and energy

- ▶ The **water sector** is becoming more **energy-intensive**
 - desalination
 - pumping deeper groundwater
 - large-scale (inter-basin) water transfers

- ▶ The **energy sector** is becoming more **water-intensive**
 - biomass
 - shale oil & gas



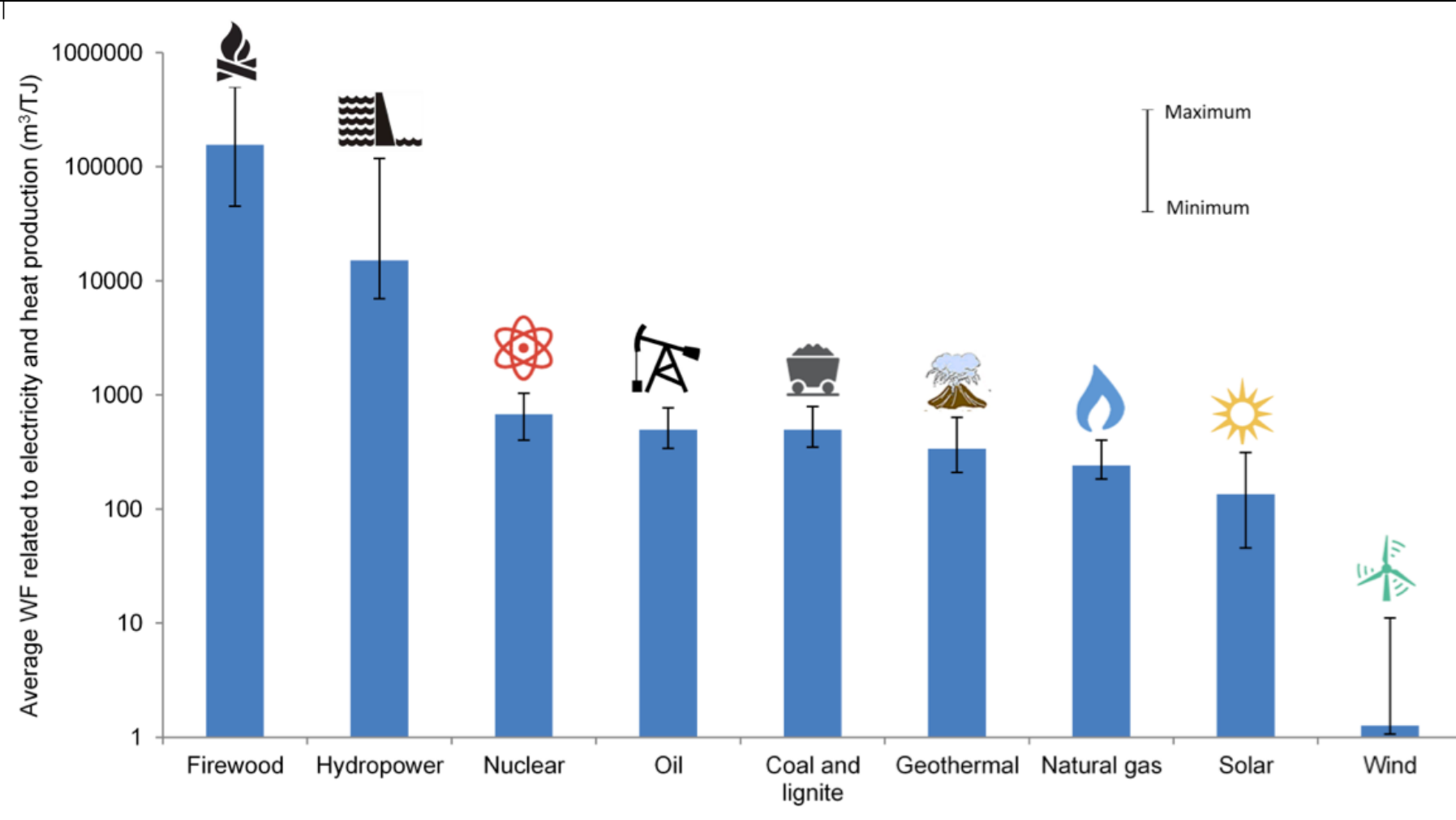
The water efficiency of biofuels



Source: Mekonnen & Hoekstra (2011)



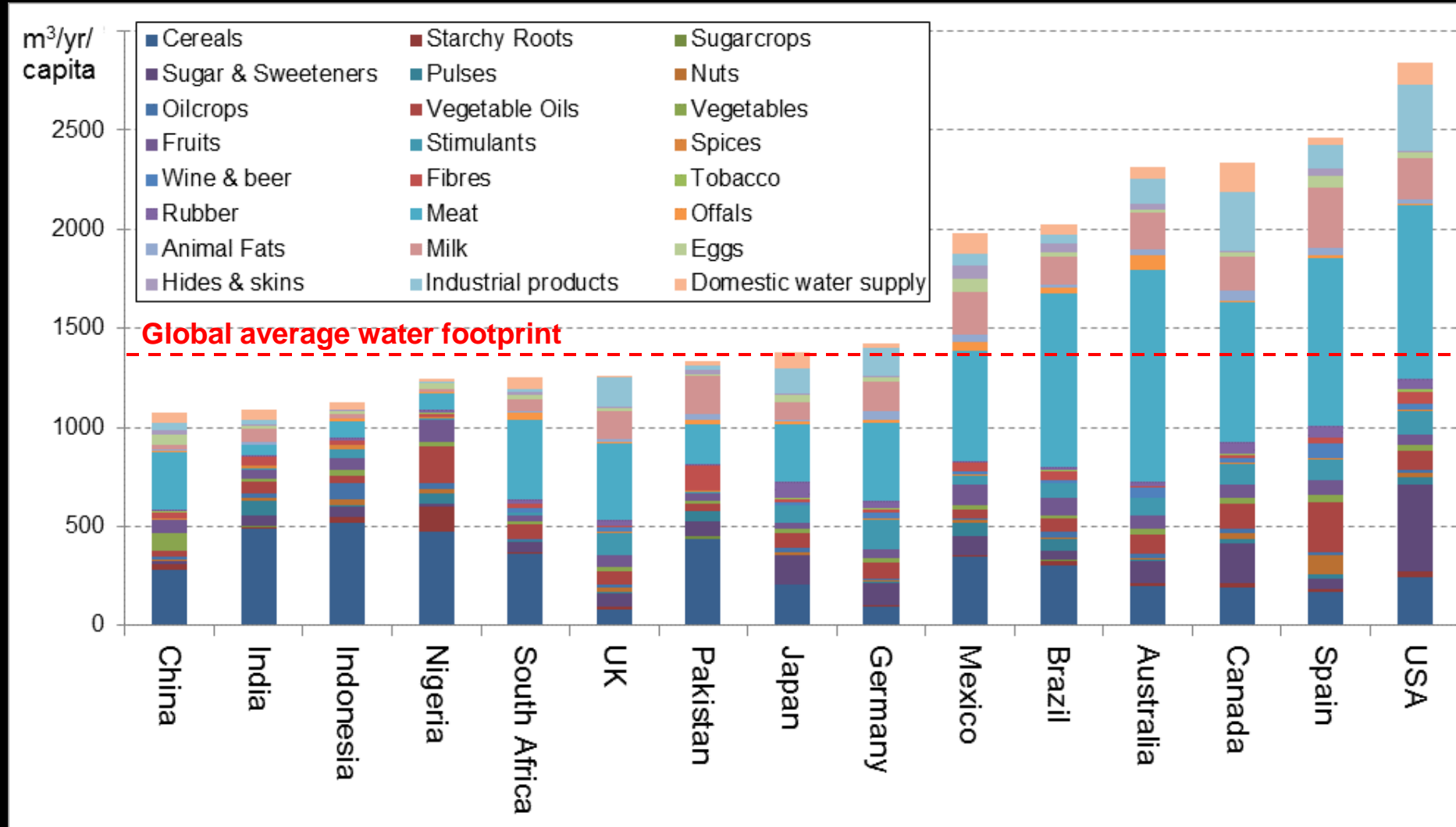
The water efficiency of electricity



Source: Mekonnen, Gerbens-Leenes & Hoekstra (2015)



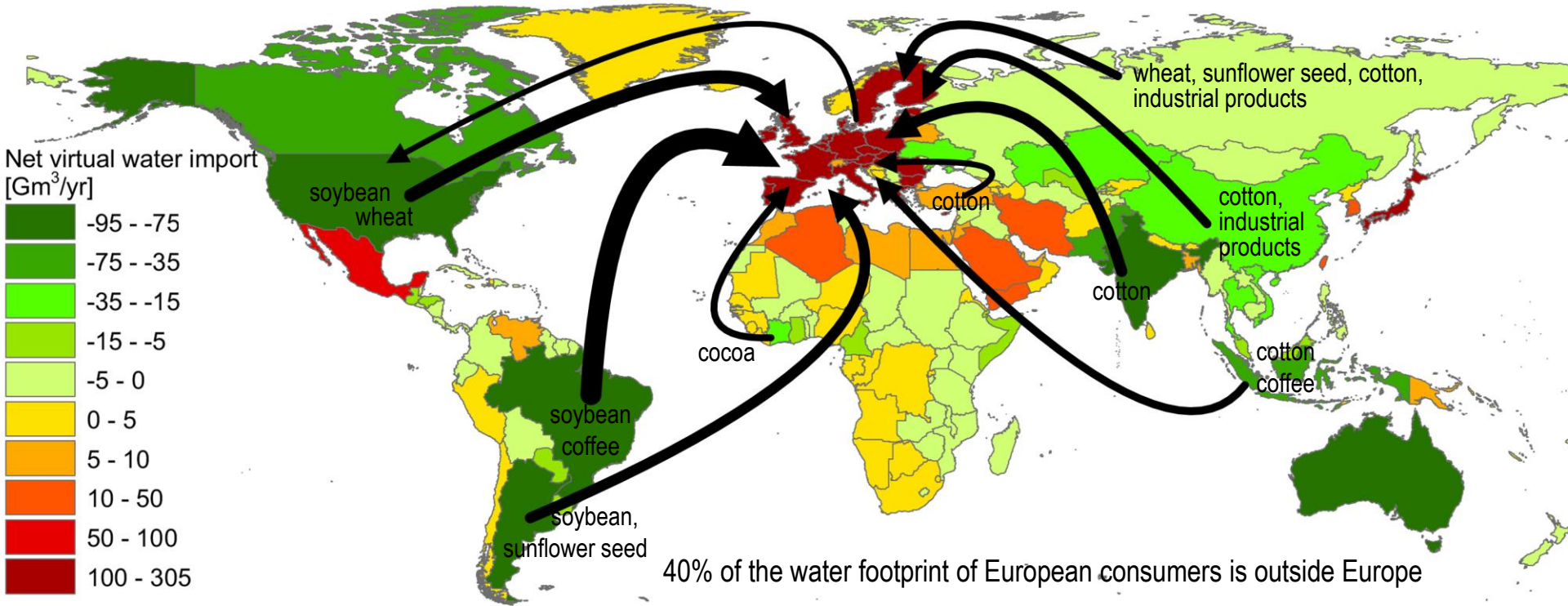
The water footprint of humanity: not fairly distributed





The water footprint of humanity: inter-regional dependencies

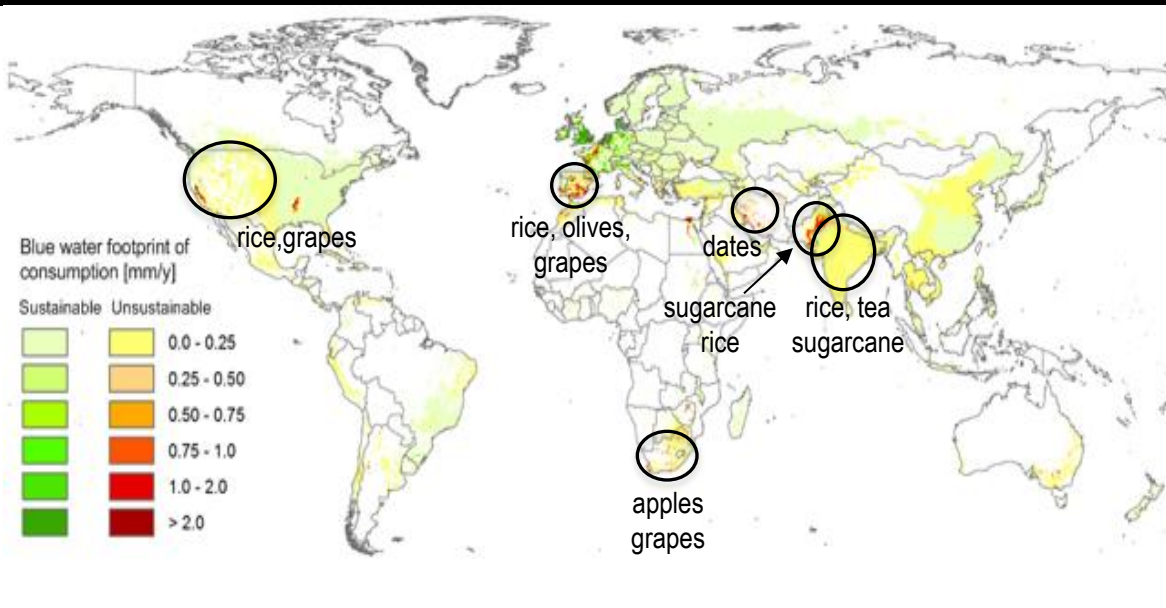
Example European Union



Source: Hoekstra & Mekonnen (2012) The Water Footprint of Humanity, PNAS



Global blue water footprint of UK consumption



Source: Hoekstra & Mekonnen (2015)

41% of UK's global blue WF is unsustainable (located in places where blue WF > max. sustainable blue WF)

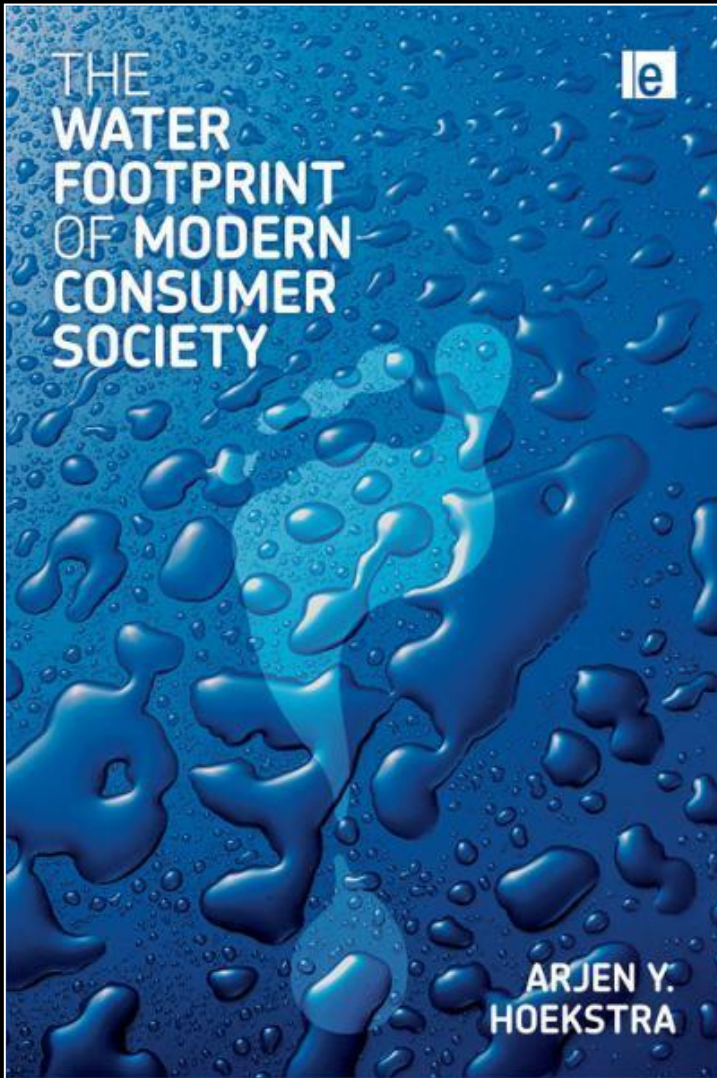
51% of the unsustainable part of UK's blue WF is located in six countries:

1. Spain (15%)
2. USA (11%)
3. Pakistan (8%)
4. India (7%)
5. South Africa (6%)
6. Iran (5%)



Wise water governance

- ▶ water footprint caps by river basin
- ▶ water footprint benchmarks by product
 - ▶ best available technology and practice
 - ▶ water disclosure
 - ▶ product transparency
- ▶ fair water footprint shares by consumer
 - ▶ national water footprint reduction targets
 - ▶ Kyoto protocol for water?
- ▶ greater levels of (water-food-energy) self-sufficiency



www.waterfootprint.org

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