



WHAT IS A WATER FOOTPRINT?



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The Water Footprint Network



Water Footprint Water Footprint NETWORK

Introduction

[Arabic] [Chinese] [Dutch] [French] [German] [Greek] [Italian] [Korean] [Persian] [Portuguese] [Spanish] [Turkish]

Living Planet Report 2014
Species and species, people and places

Water Footprint Network partners with WWF, Zoological Society of London and Global Footprint Network to create the "Living Planet Report 2014".

WFN is pleased to have contributed to the tenth edition of WWF's biennial flagship publication, the most encompassing, science-based analysis of the state of earth's natural systems to date. The report finds that for more than 40 years, humanity's demand on nature has exceeded what our planet can replenish. This is having a devastating impact on life and points to an urgent need for collective action to set a new course for a sustainable future.

- Whilst population has risen fourfold in the last century, the water footprint has increased sevenfold.
- Shortages are forecast in 200 of the world's estimated 263 river basins.
- Wildlife populations have more than halved since the 1970s
- Freshwater species are declining fastest, with three quarters lost since the 1970s.

Download [the full report here](#).

Ground-breaking UK study points to future of water management worldwide

The Environment Agency and the Water Footprint Network have launched the results of a pioneering, collaborative study of water use in a densely populated region of the UK; the Hertfordshire and North London (HNL) Area. By looking at water use in this specific area through the lens of a Water Footprint Assessment, we have unearthed an effective, new and innovative approach to tackling water problems that can be applied worldwide. Read the [full press release here](#) and the full [report here](#). We also invite you to watch our [live streamed seminar, Does Water Footprint Assessment Enhance Sustainable Management of River Basins?](#)

Call for papers for special issue of 'Sustainability'

You are invited to submit your research paper to the Special Issue "Water Footprints and Sustainable Water Allocation" of the open-access journal "Sustainability". The deadline for manuscript submissions is 28 February 2015, but you can submit any time before. Publication follows immediately after acceptance. For more information please download the [Call for papers](#).

The Water Footprint Assessment Manual
The Global Water Footprint Standard – developed through a joint effort of the Water Footprint Network, its partners, and scientists of the University of Twente in the Netherlands – has garnered international support from major companies, policymakers, NGOs and scientists as an important step toward solving the world's ever increasing water problems. The standard is contained in the Water Footprint Assessment

The Water Footprint of Modern Consumer Society
The new book by professor Arjen Hoekstra, creator of the water footprint concept, is available now: The Water Footprint of Modern Consumer Society. An absolute must-read for everyone interested in sustainable water use.

Special Thanks to:
Arjen Y. Hoekstra
Professor in Water Management
University of Twente,
the Netherlands

www.waterfootprint.org



Overview of Presentation

- The Water Footprint (WF) concept
- WF of a product
- WF of a geographic region
- WF of a company
- What can we do

The Water Footprint Concept





What is a Water Footprint?

"Water Footprint" is a measure of water use equal to total volume of freshwater used to produce goods and services consumed



Water Footprint

Water Footprint can be calculated for:

- A product over its entire supply chain
- A company or business (1 or more products)
- A consumer
- A city or state
- A nation
- Globe



The total Water Footprint of the average consumer in the world

The Water Footprint of a consumer considers both **direct** and **indirect** water use



3.8% of the Water Footprint
relates to home water use



96.2% of the Water Footprint is 'invisible',
related to the products bought on the market

91.5% agricultural products, 4.7% industrial products

Water Footprint of a Product





The Water Footprint of a Product

The volume of freshwater used to create a product, summed over the various steps of its production chain

A Water Footprint includes a temporal and spatial dimension (when and where the water was used)

The Water Footprint of a Product



Green Water Footprint
Volume of rainwater
incorporated into a product



Blue Water Footprint
Volume of surface or
groundwater evaporated or
incorporated into a product



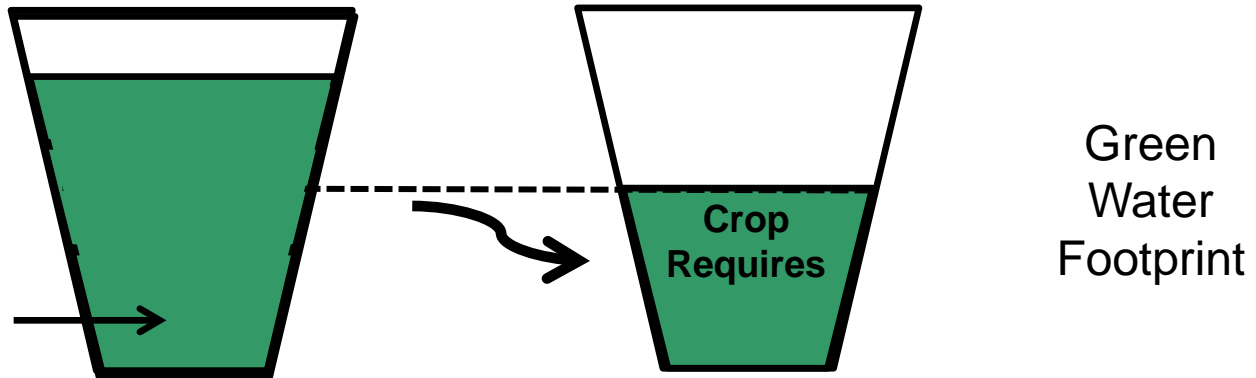
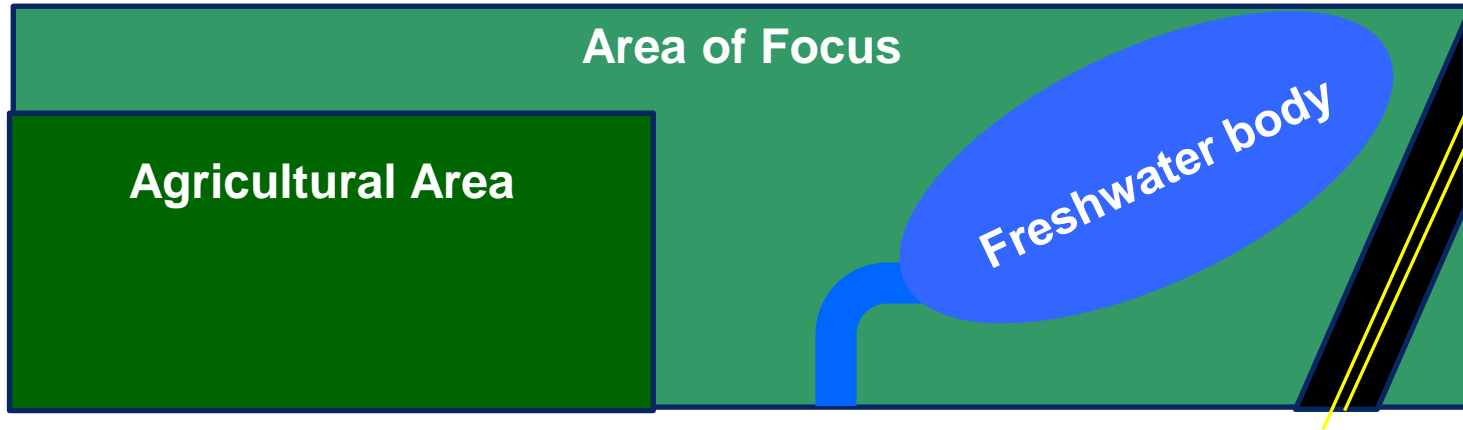
Grey Water Footprint
Volume of polluted water

Water Footprint Accounting/Assessment



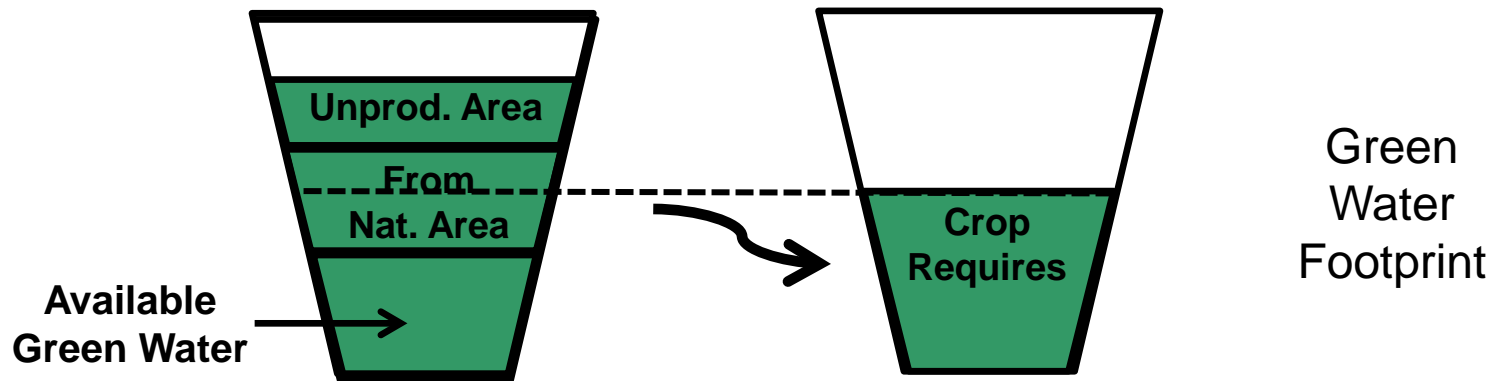
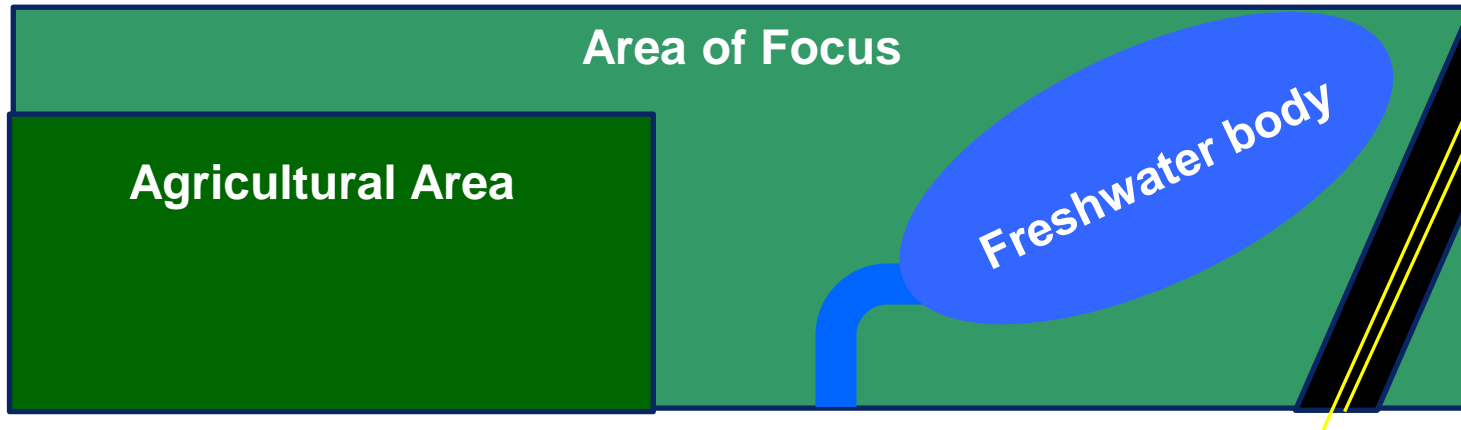


Example: Green Water Footprint versus Availability



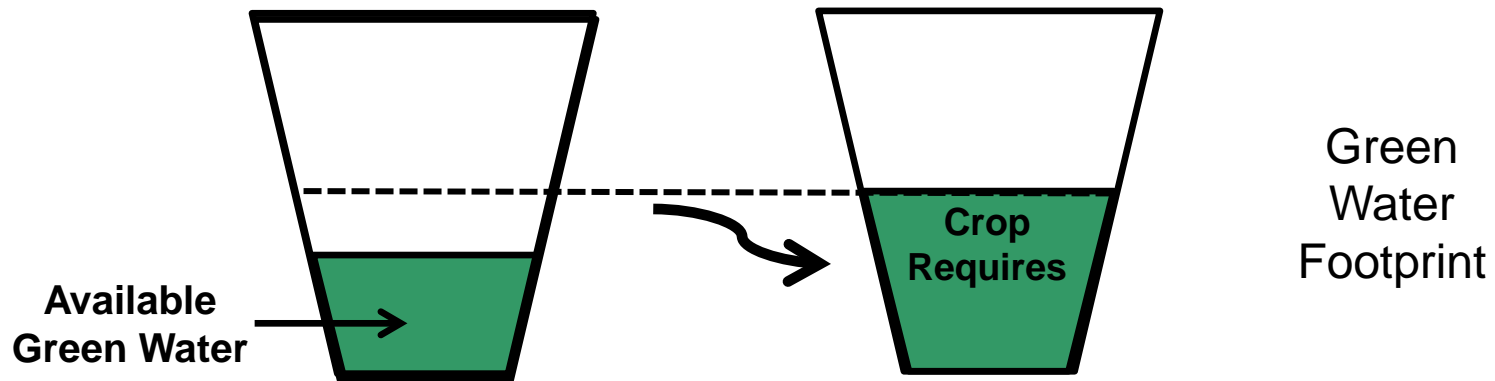
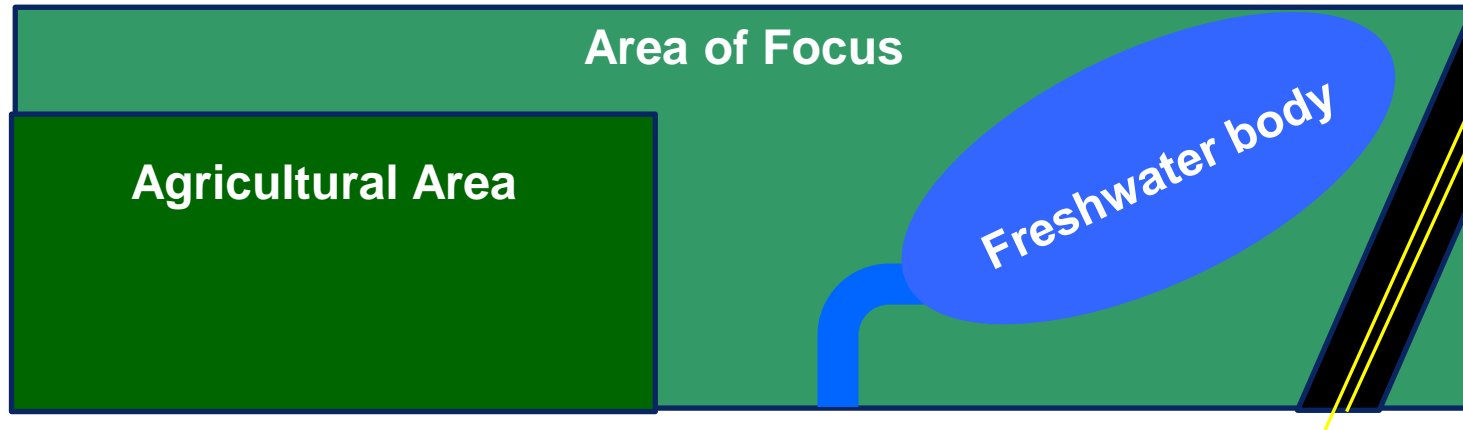


Example: Green Water Footprint versus Availability



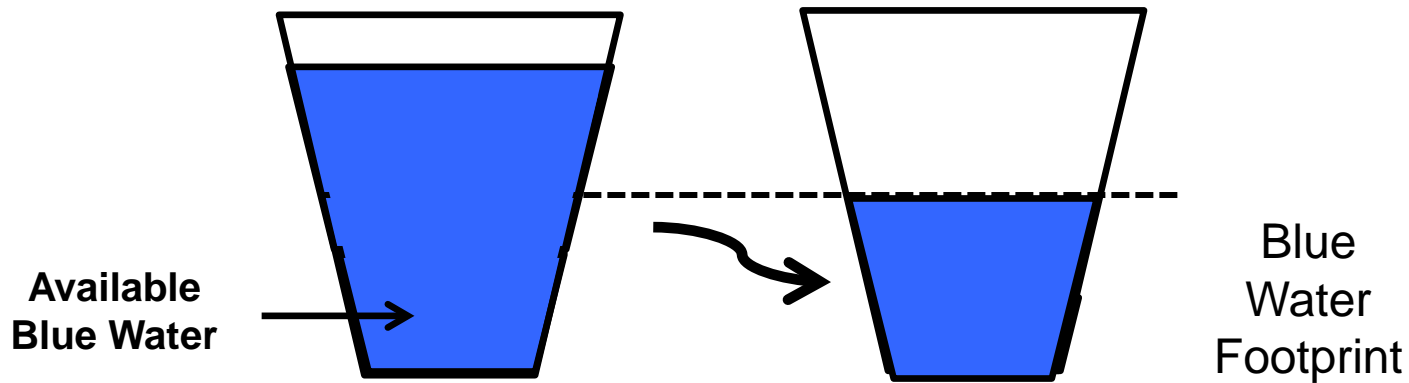
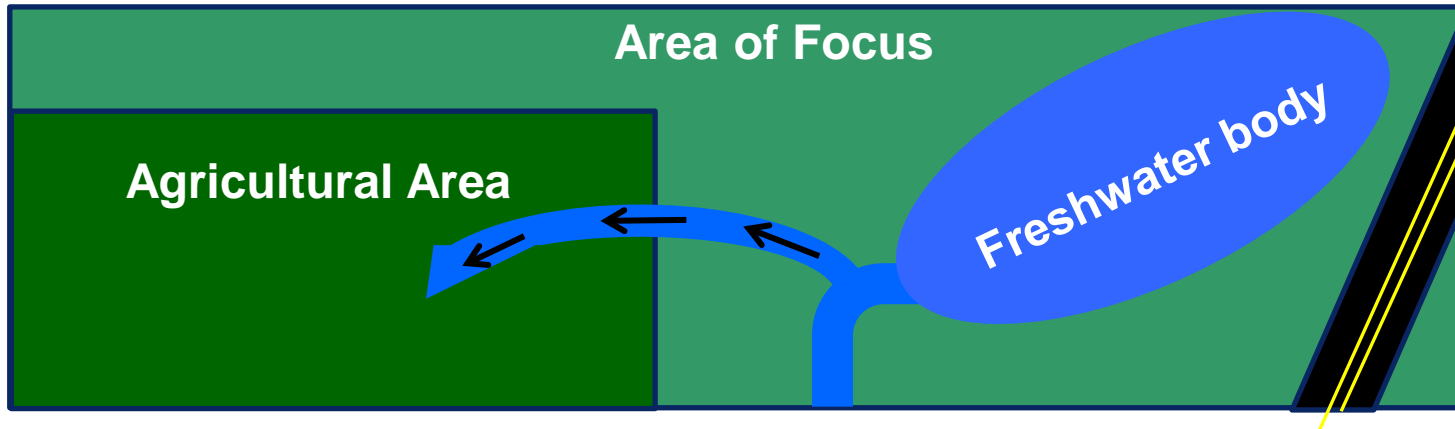


Example: Green Water Footprint versus Availability



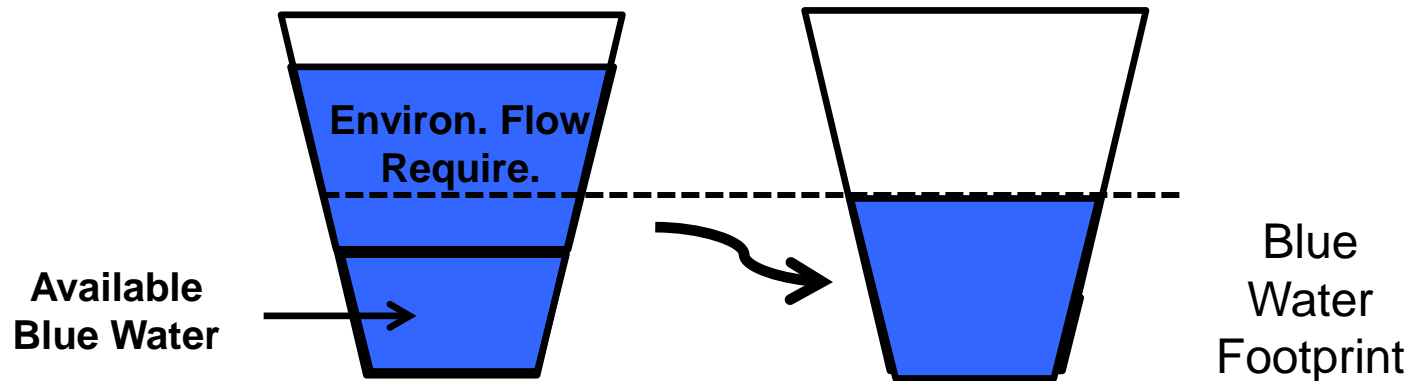
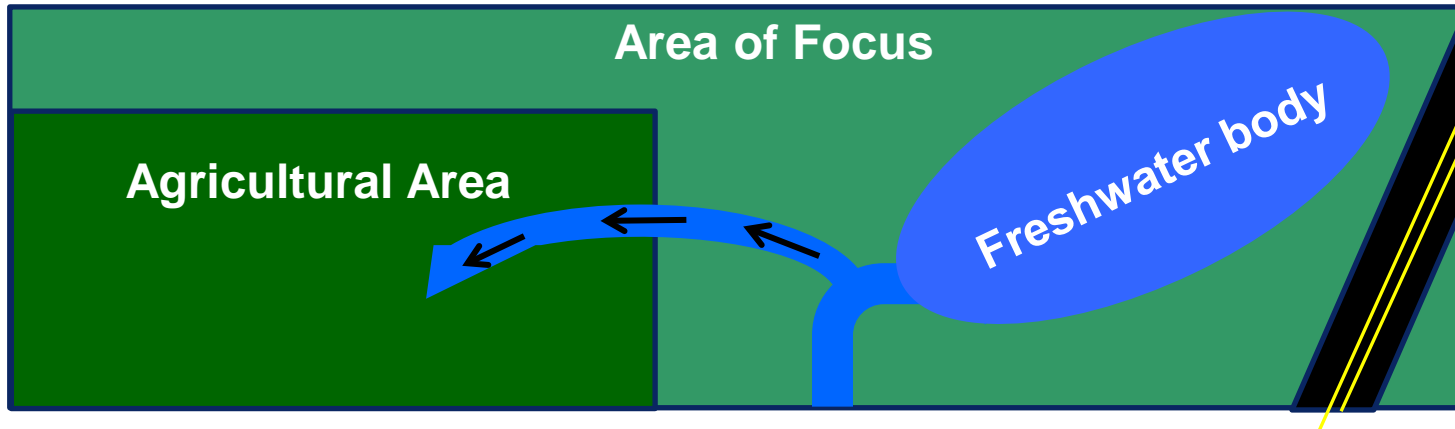


Example: Blue Water Footprint versus Availability



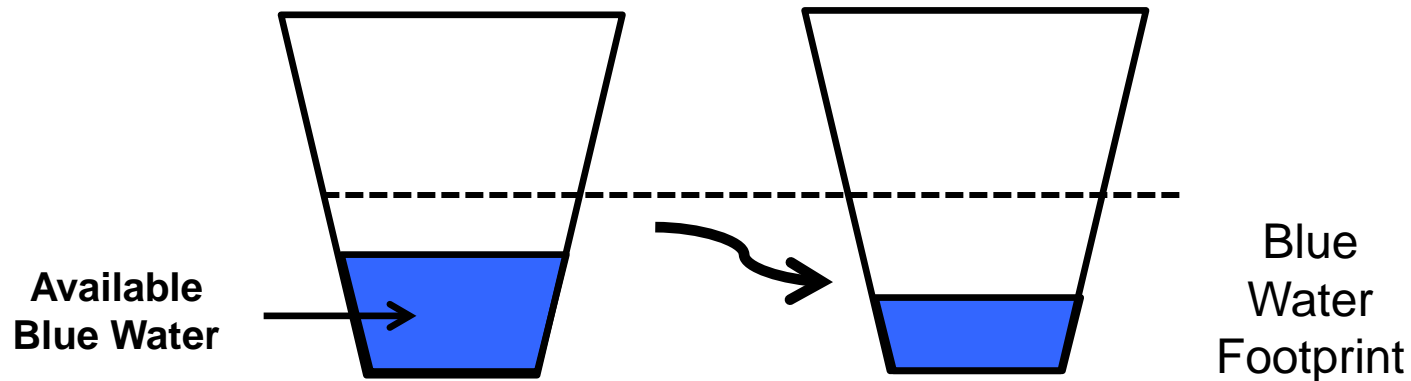
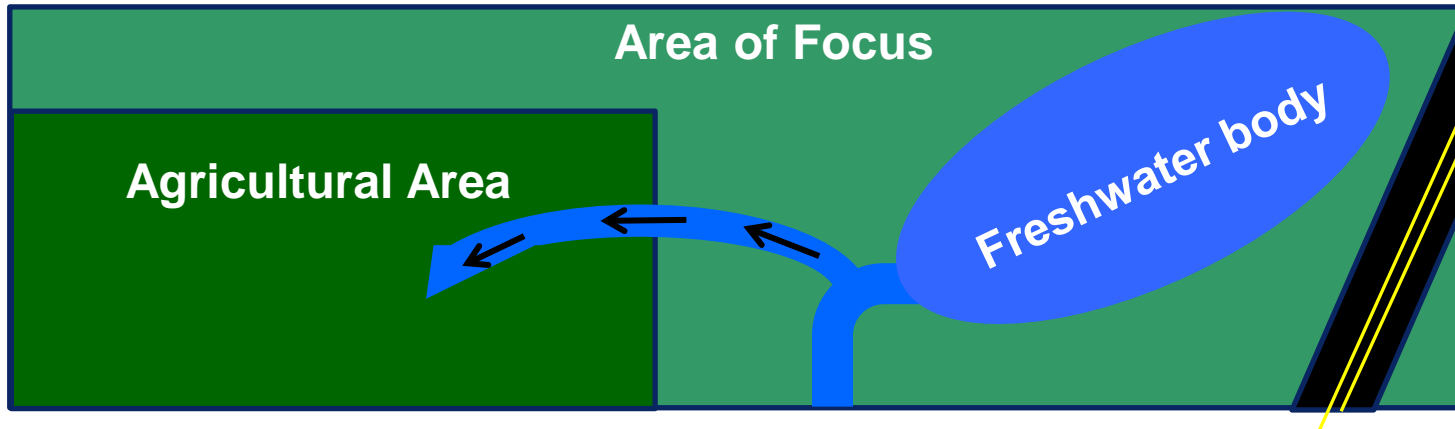


Example: Blue Water Footprint versus Availability



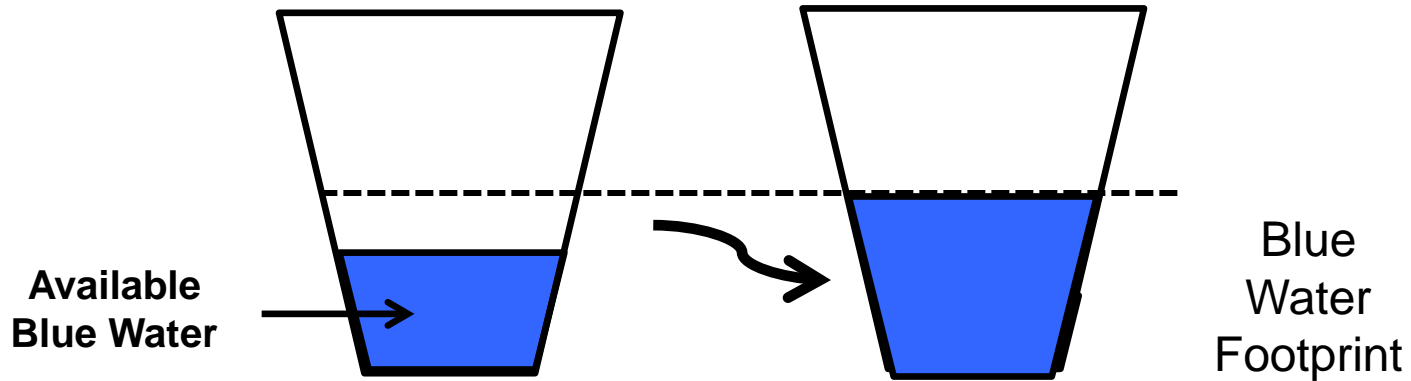
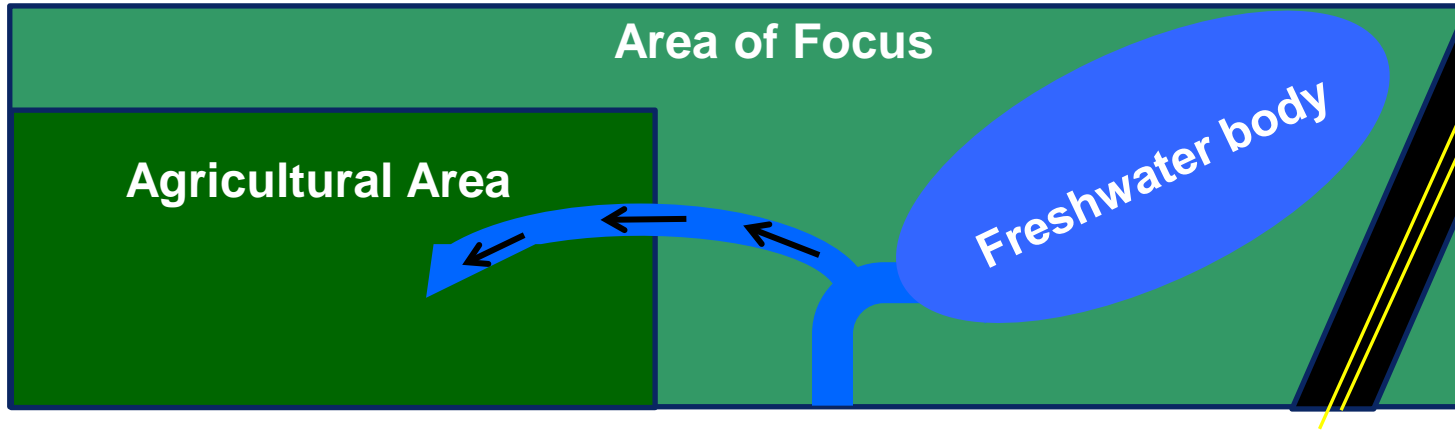


Example: Blue Water Footprint versus Availability





Example: Blue Water Footprint versus Availability





Blue Water Footprint vs. Blue Water Availability



Subsidence
(lowering of ground elevation)
is a global problem

In the United States, more than
17,000 square miles in 45
States have been directly
affected by subsidence

Aral Sea Basin, Central Asia: Water Diverted to Produce Cotton



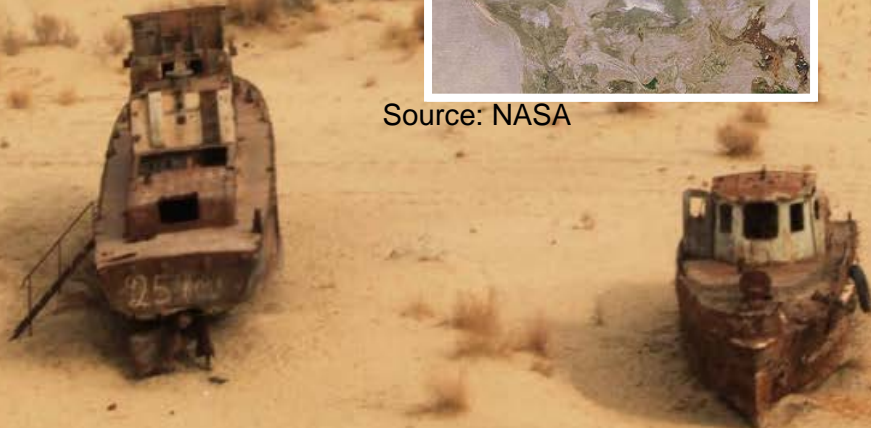
Aral Sea Basin, Central Asia: Water Diverted to Produce Cotton



2008



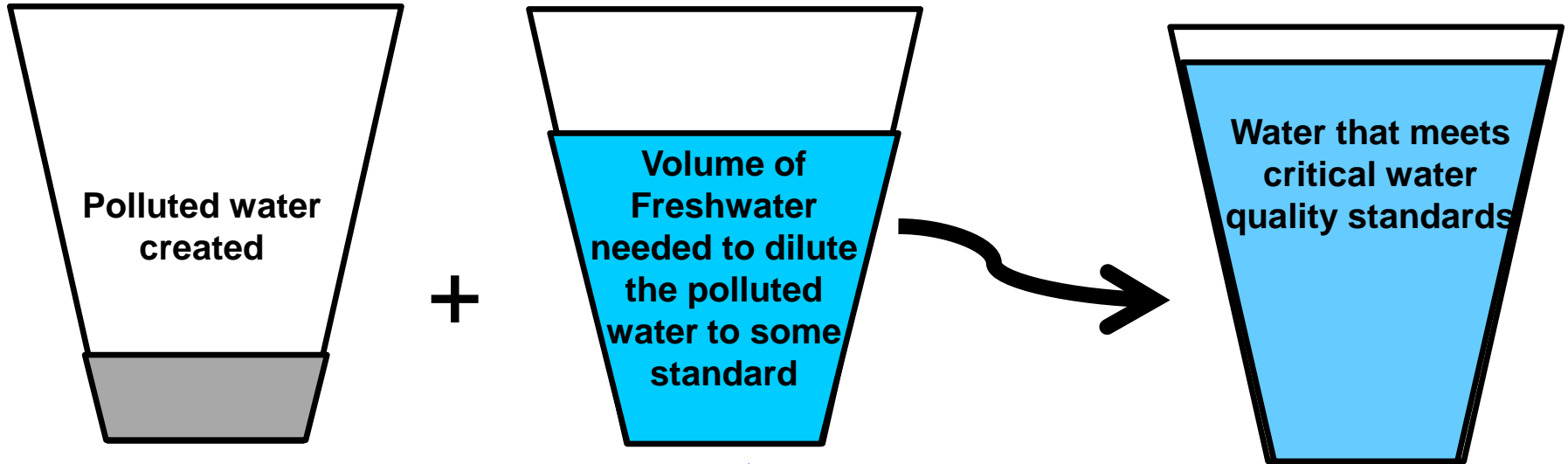
Source: NASA




Grey Water Footprint

- Related to the volume of polluted water created during the production of a product in its full supply-chain
- ...but it is not the volume of polluted water itself
- **It is the volume of water that is required to dilute pollutants whereby the quality of the water remains above (some) water quality standards**

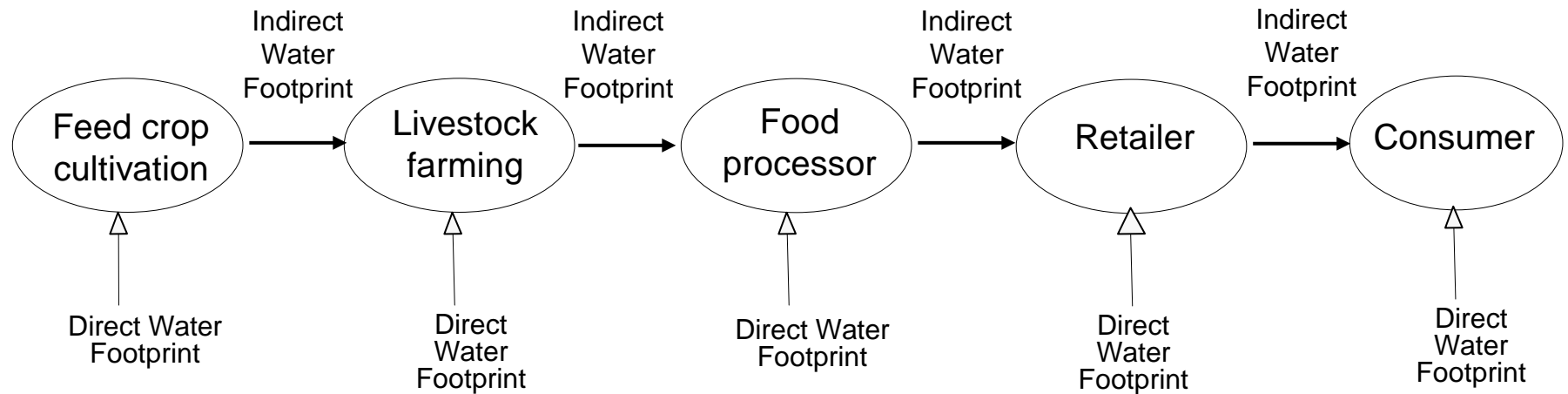
Grey Water Footprint



This volume  is the Grey Water Footprint



Water Footprints Accounting – Example Beef



Virtual water flow through the supply chain





This Has Been Done for Many, Many Items...

Item	Unit	Gallons
Beef	1 lb	1,861
Pork	1 lb	576
Chicken	1 lb	468
Pizza	Small Pie	333
Bananas	1	42
Coffee	8oz	37
Bread	1 slice	11
Tea	8oz	9
Pasta	ONE Noodle	1
Soda	16 oz	2
	0.125 gals	
Bottled water	1 lt	1.39
	0.26 gals	

Item	Unit	Gallons
Jeans	1 pair	2,000
Cotton T-Shirt	1	660
Paper	1 Sheet	2.6
Paper Napkins	10	0.7
Plastic bottle	1 lt bott.	1.6

Diet	Gallons/Day
Omnivore	951
Vegetarian	610
Vegan	400



Water Footprint Assessments

WFs in a specific river basin

- Blue & Green availability
- Grey assimilation critical loads

Use benchmarks (*Our WF versus similar*):

- Products
- Processes
- Consumers
- Companies

A blue icon of a footprint with a water drop falling from the heel, symbolizing water footprint.

Water Footprint Assessments

Four Steps (Beef Example):

1. Identifying the scope of the investigation
2. Quantifying target water footprint over specified space and time
3. Assess the environmental, social and economic sustainability of this water footprint; and
4. Formulate a response strategy



Water Footprint: Global Perspective

World Population February 2015 = 7.3 billion

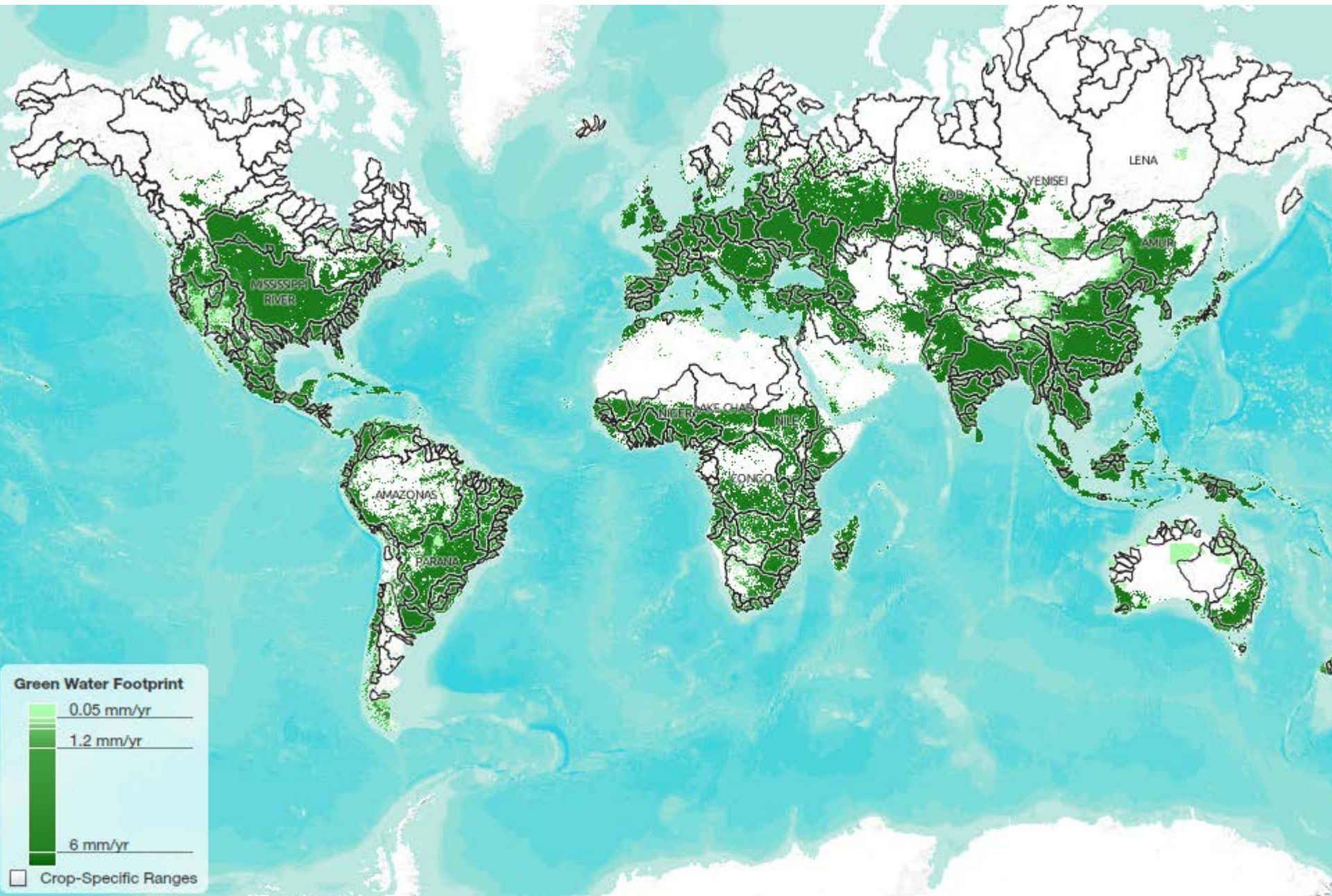
"Three billion more people are going to be on this planet [by 2050]. Somehow, we're going to have to use the same amount of water we use today."

- Stuart Orr, Freshwater Footprint Project

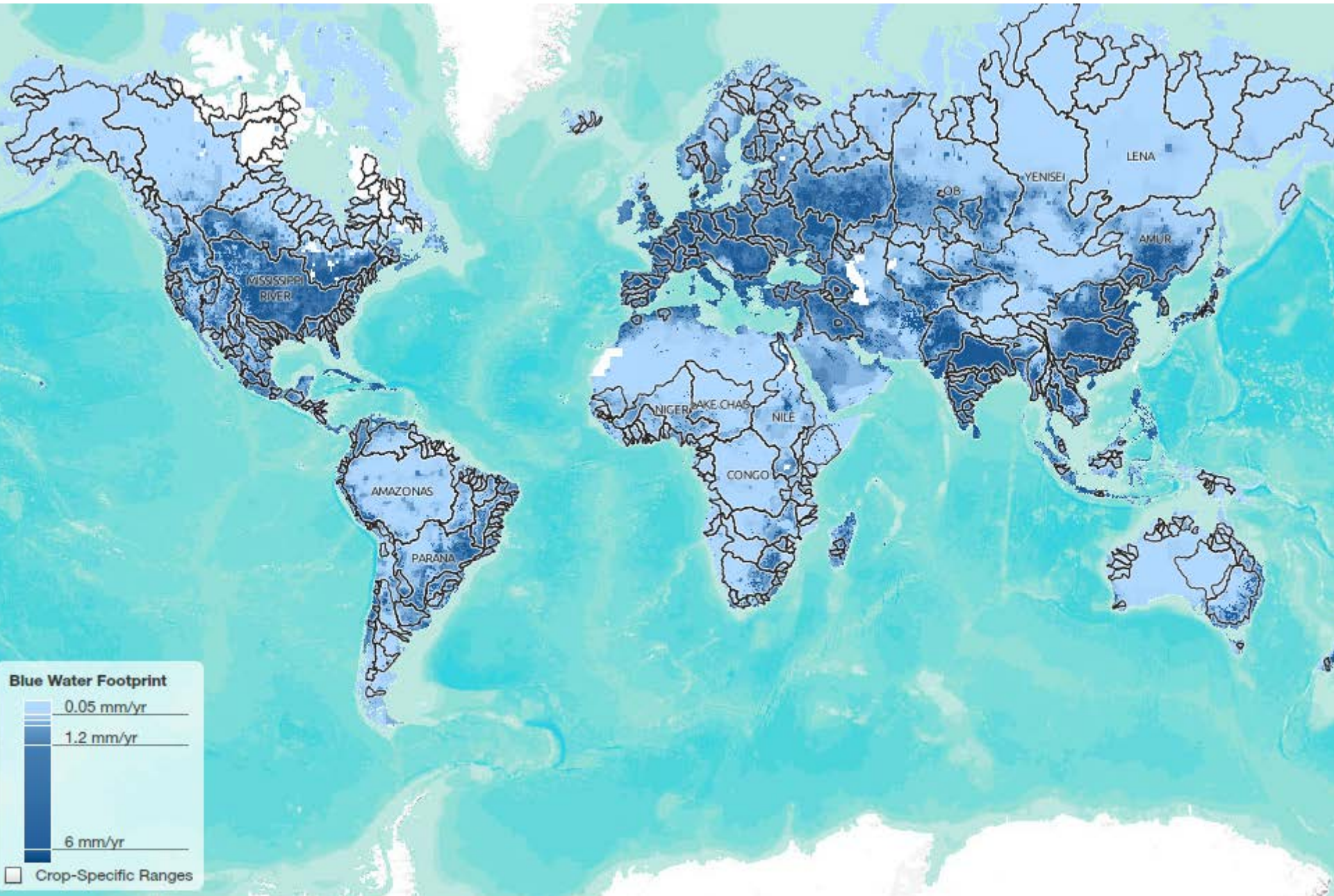


**Water scarcity affects about 2.7 billion people
for at least one month each year**

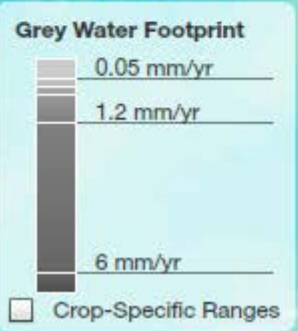
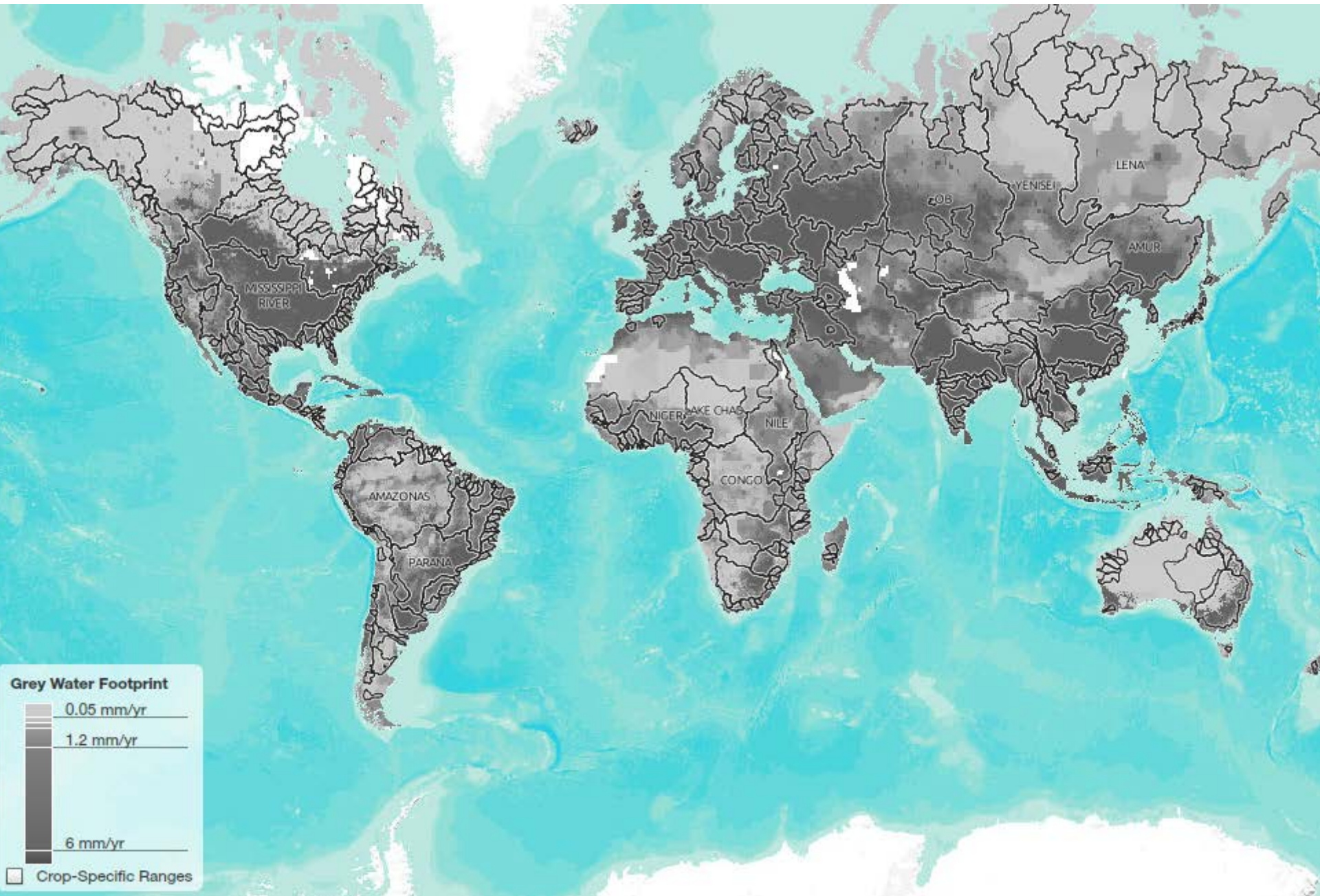
Green Water Footprint of Humanity (Use of Rainwater)



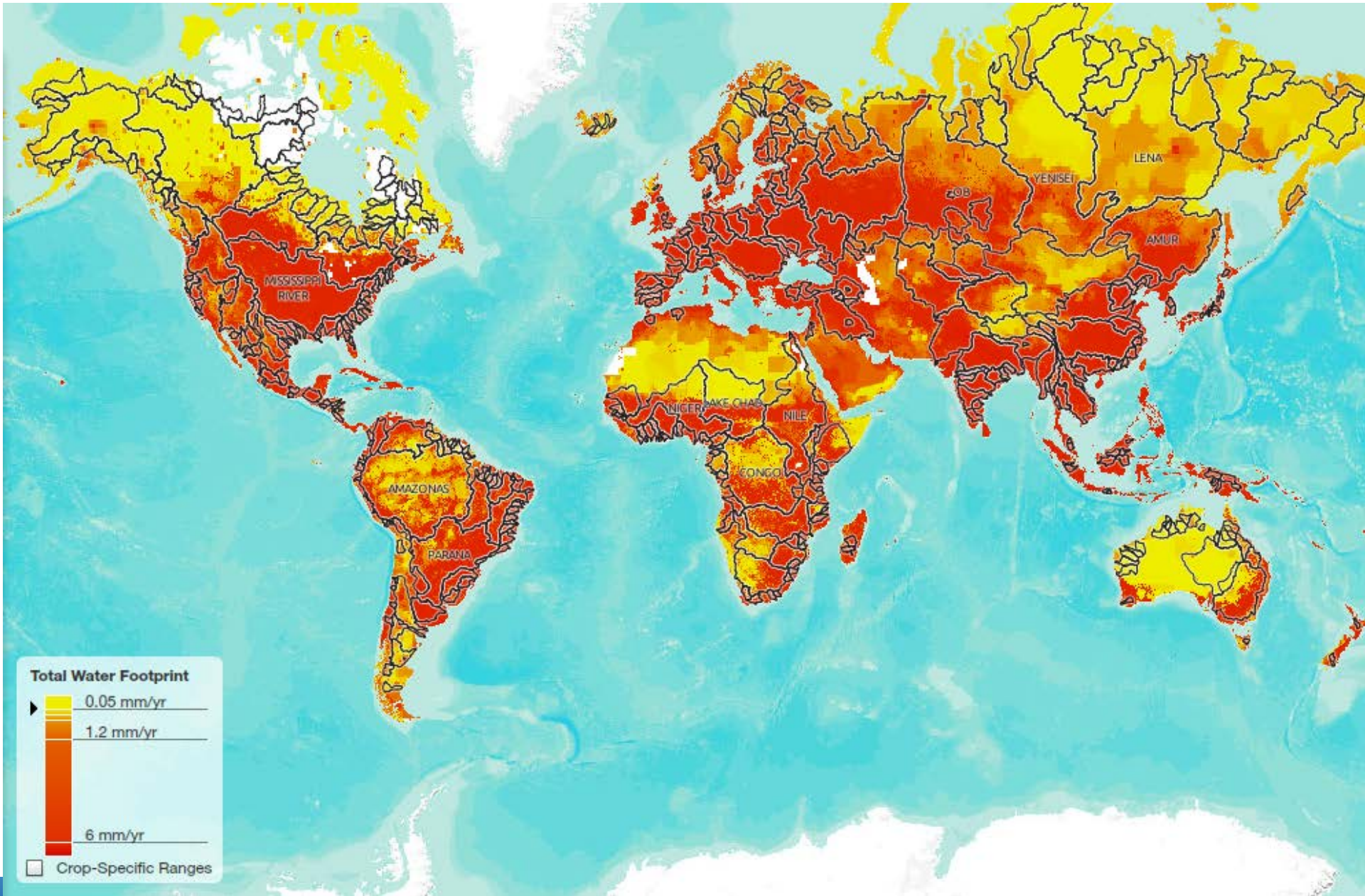
Blue Water Footprint of Humanity (Use of Surface & Groundwater)



Grey Water Footprint of Humanity (Pollution)



Global Water Footprints





Global Dimension of Water Footprints Starts at National Levels

Water Footprint of national consumption

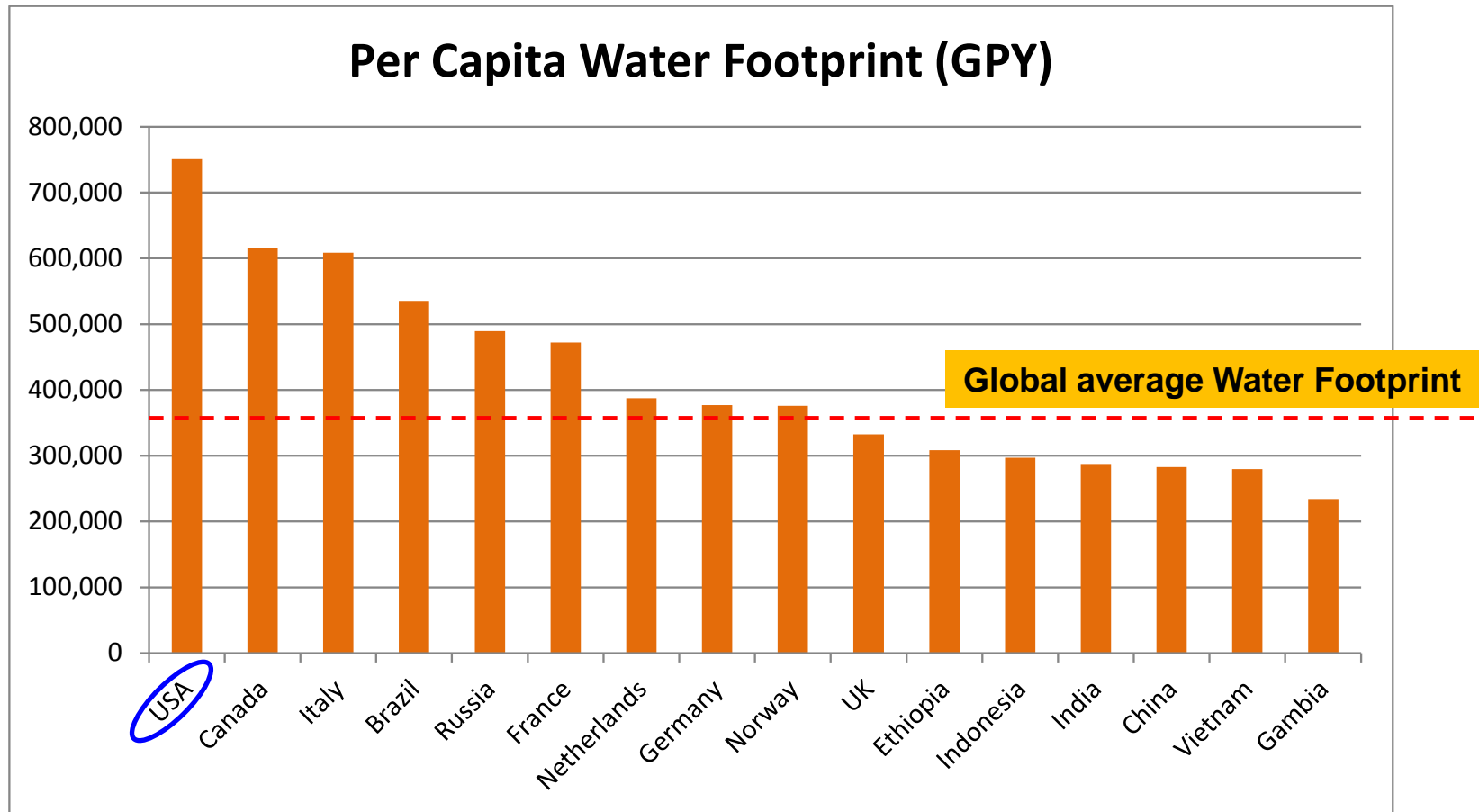
Total amount of freshwater used to produce the goods and services consumed by the inhabitants of the nation

It consists of two components:

- 1. Internal** Water Footprint, i.e. the water use inside the country
- 2. External** Water Footprint, i.e. the water use in other countries

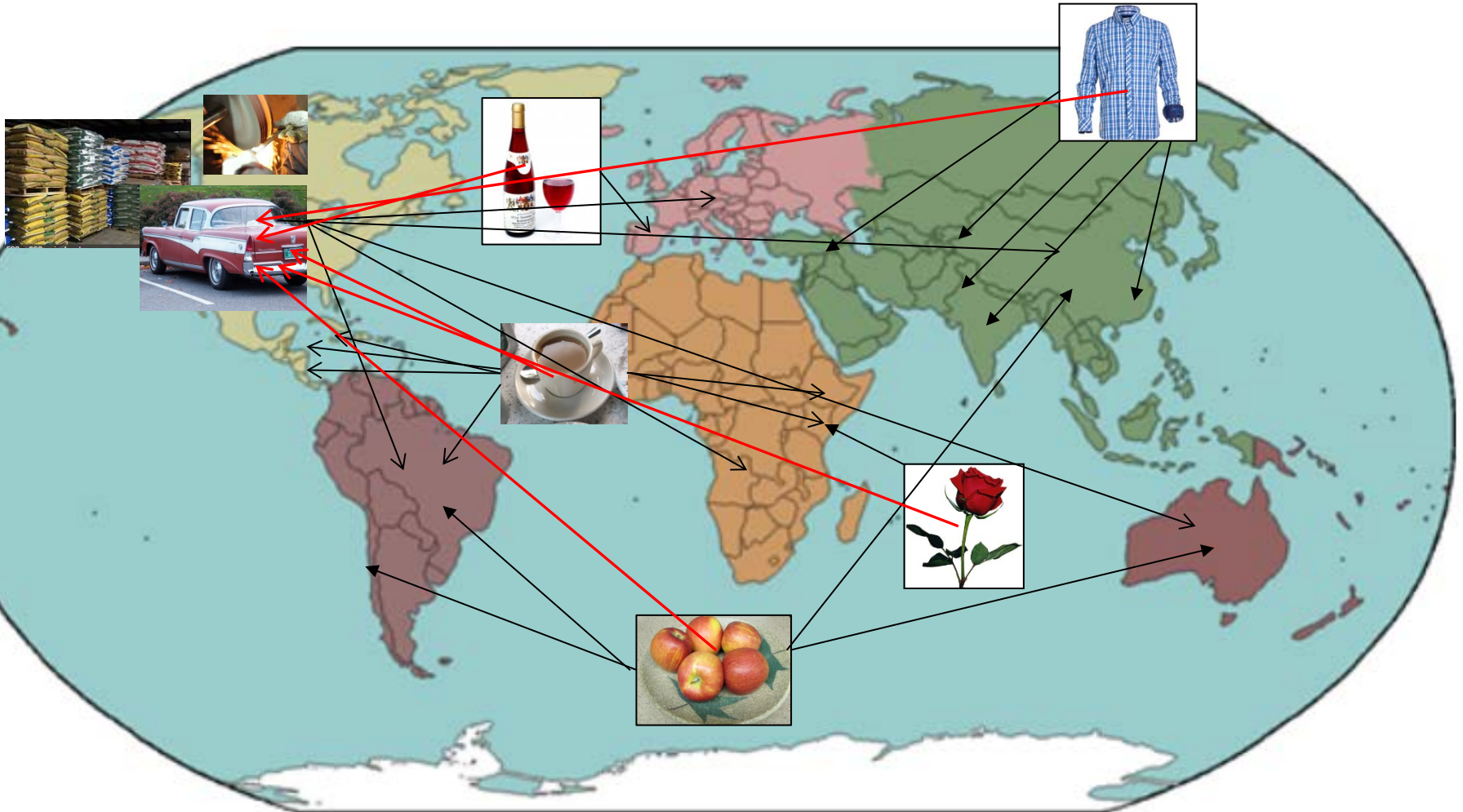


National Water Footprints (Gallons/Year/Person)

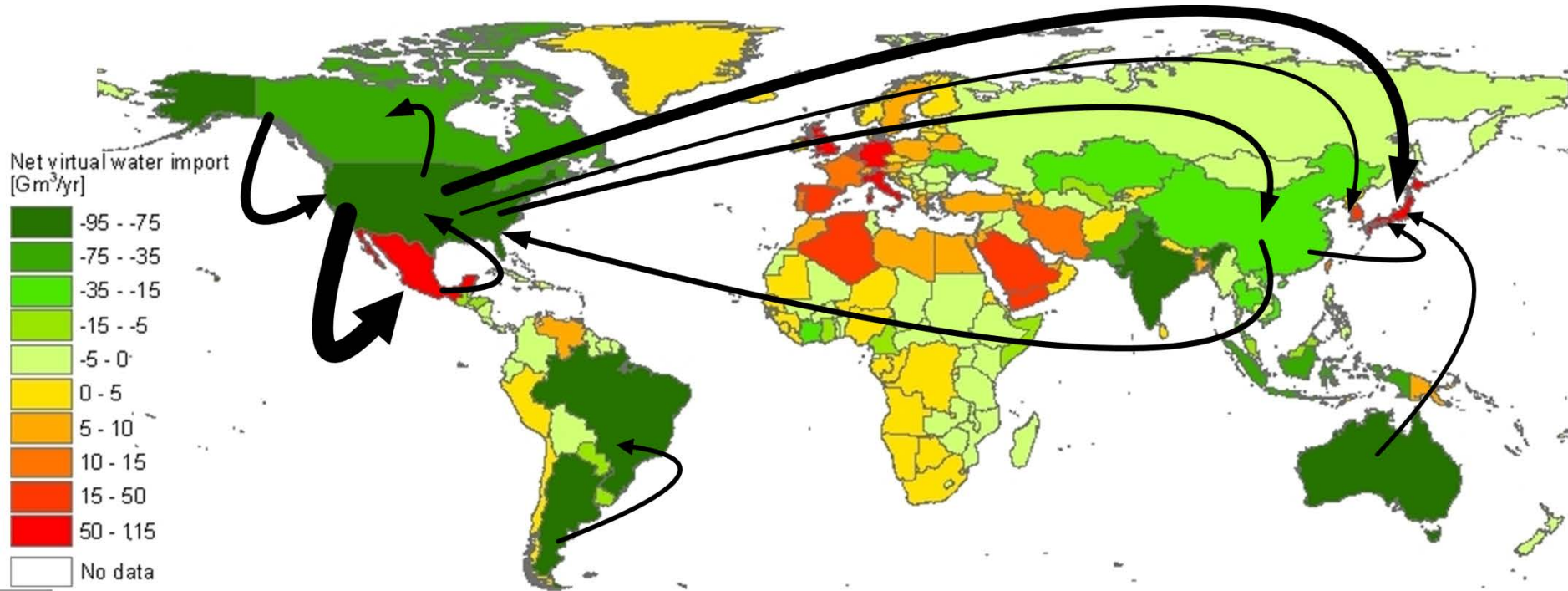




National Virtual Water Balances



National Virtual Water Balances



Arrows show gross virtual water flows
>15 Gm³/yr (or 2.6 x 10²⁹ gallons)

Water Footprint of a Business





Why Should a Business care beyond than their own water utility bill?

Average Potable Water and Sewer Rates for 110 Utilities in S. Florida

Gallons	Expense
20,000	\$185
50,000	\$426

- The availability of easily accessible, relatively clean groundwater is becoming more and more scarce
- Increased demand on existing infrastructure will lead to costly replacement or capacity upgrades

Water and sewer rates are expected to increase further in the future

But that's not all... Water and Sewer Rates May Not Constitute Your Full Water Expense

- Trade waste charges for BOD, oil and grease, solids
- Water heating
- Chemicals treatments for cooling towers
- Sludge removal
- Trade waste testing
- Electricity charges
- Depreciation expenses on pre-treatment equipment



Your TRUE cost of water can be almost double your water/sewer costs



Why Should a Business Care?

There are Risks to Not Paying Attention:

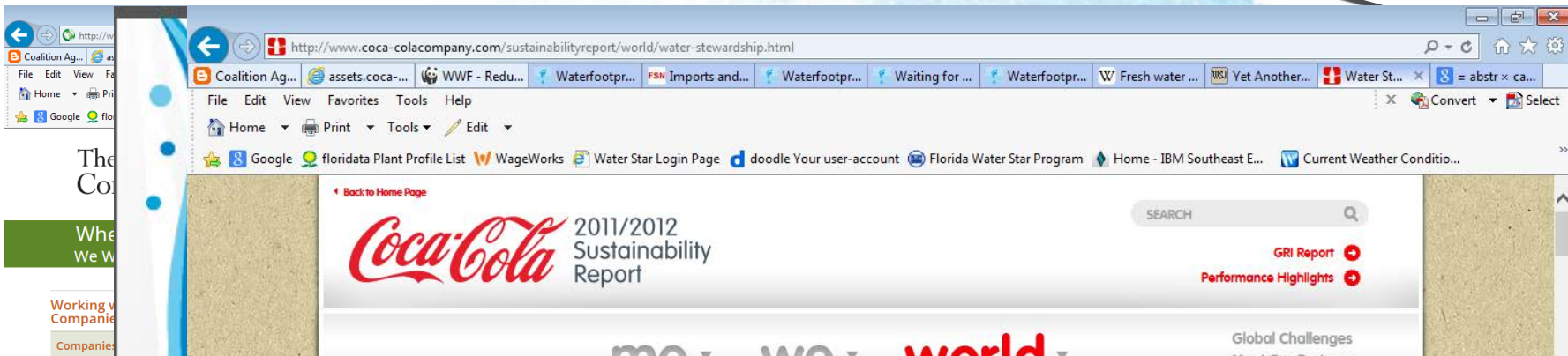
- **Physical** – *Will there be water to make the products we need/use?*
- **Regulatory** – Tightening of restrictions of water use in-country or abroad
- **Reputation** – Corporate image can suffer for poor stewardship
- **Financial** – Any of the above can lead to increased costs or reduced revenues

The Coca Cola Company



New Delhi, 4 Oct 2006

Government authorities in India have declared the groundwater around Coca-Cola's bottling plant in Mehdiganj as "over-exploited" – a category indicating the highest level of stress on the water resources. Over-exploited indicates more water being extracted from the aquifer than replenished – a highly unsustainable state.



“ At The Coca-Cola Company, we are transforming the way we think and act about water stewardship. It is in the long-term interest of both our business and the communities where we operate to be good stewards of our most critical shared resource, water. ”

Muhtar Kent, Chairman and CEO
The Coca-Cola Company



Inside every bottle of Coca-Cola is the story of a company that understands the priceless value of water, respects it as the most precious of shared global resources and works vigorously to conserve water worldwide. We can't imagine treating water any other way.

Clean, accessible water is essential to the health of communities. It is critical to ecosystems and indispensable for economic prosperity. And it is essential for our business. Water is the main ingredient in our beverages, central to our manufacturing process and necessary for growing the agricultural products we use.

- Report Tools**
- [Global Reporting Initiative](#)
 - [Performance Highlights](#)
 - [Downloads](#)
- Global Challenge(s)**
- [Water Stewardship](#)
- Meet our Partners**

Water Footprint Assessment – Examples from Business

*“Despite the challenges involved, Water Footprinting is poised to grow. [Unilever PLC](#), which owns 400 food and household brands, estimates that it saved about **\$26 million** by reducing water waste in its factories from 2001 to 2007.”*

The screenshot shows a web browser window displaying a Wall Street Journal article. The browser's address bar shows the URL: <http://www.wsj.com/articles/SB123483638138996305>. The page header includes the Wall Street Journal logo and navigation links like 'U.S.', 'LOG IN', and 'SUBSCRIBE'. The article title is 'Yet Another 'Footprint' to Worry About: Water', with a subtitle 'Taking a Cue From Carbon Tracking, Companies and Conservationists Tally Hidden Sources of Consumption'. The author is listed as 'By ALEXANDRA ALTER' and the article was updated on 'Feb. 17, 2009 12:01 a.m. ET'. The main text begins with: 'It takes roughly 20 gallons of water to make a pint of beer, as much as 132 gallons of water to make a 2-liter bottle of soda, and about 500 gallons, including water used to grow, dye and process the cotton, to make a pair of Levi's stonewashed jeans.' The text continues: 'Though much of that water is replenished through natural cycles, a handful of companies have started tracking such "water footprints" as a growing threat of fresh-water shortages looms. Some are measuring not just the water used to make beverages and cool factories, but also the gallons used to grow ingredients such as cotton, sugar, wheat, tea and tomatoes. The drive, modeled partly on

So What Can We Do?





Reducing Humanity's Water Footprint – Consumers

Reduction of the direct Water Footprint:

- Water saving fixtures & equipment etc.

Reduction of the indirect Water Footprint:

- Change consumption patter
- Choose the sustainable version of products
- Use less energy (fuel, electricity...)

“Save water in the supermarket and at the mall”

Asking product transparency from businesses and regulation from governments



What Can Your Company/Business do?

Reduce its operational Water Footprint by:

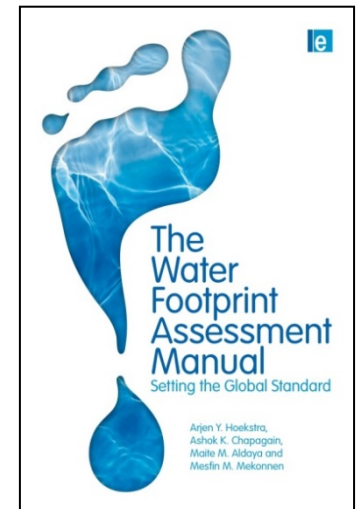
- Conduct a water audit of company facilities
- Improve water use efficiency at its own operations
- Bring water pollution to zero (reduce, recycle and treat before disposal)

Cut supply-chain Water Footprint by:

- Assess your suppliers
- Making supply agreements with certain standards with suppliers or
- Changing suppliers
- Make supply chains fully transparent to consumers

Get Going:

- Set quantitative water-footprint reduction targets
- Benchmarking
- Product labelling
- Certification
- Water Footprint reporting





What Can Governments Do?

- Water Footprint caps by river basin
- Water Footprint benchmarks by product
- Product transparency
 - Product labeling
 - Certification of industries
 - Water Footprint reporting/disclosure
- Global Water Footprint reduction targets
- Full-cost water pricing
- Coherent energy-water strategies

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Water hub

From Guardian Sustainable Business

Will we ever see water footprint labels on consumer products?

Displaying water inputs on consumer items is an idea floated frequently, but is it any closer to becoming reality?



Will Henley

Guardian Professional, Friday 23 August 2013 16.11 BST

[Jump to comments \(5\)](#)



On average it takes 15,400 litres of water to make 1kg of beef. Photograph: Bon Appetit/Alamy

What's the take home?

Start thinking about your *overall* Water Footprint.

What you do and how you do it affects the water security of many people and places.

Improving your company/city/personal water use efficiency is great, but just a start.

We ~~can~~^{must} all be a part of a more water-secure future.

Questions?

Visit:

www.waterfootprint.org



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