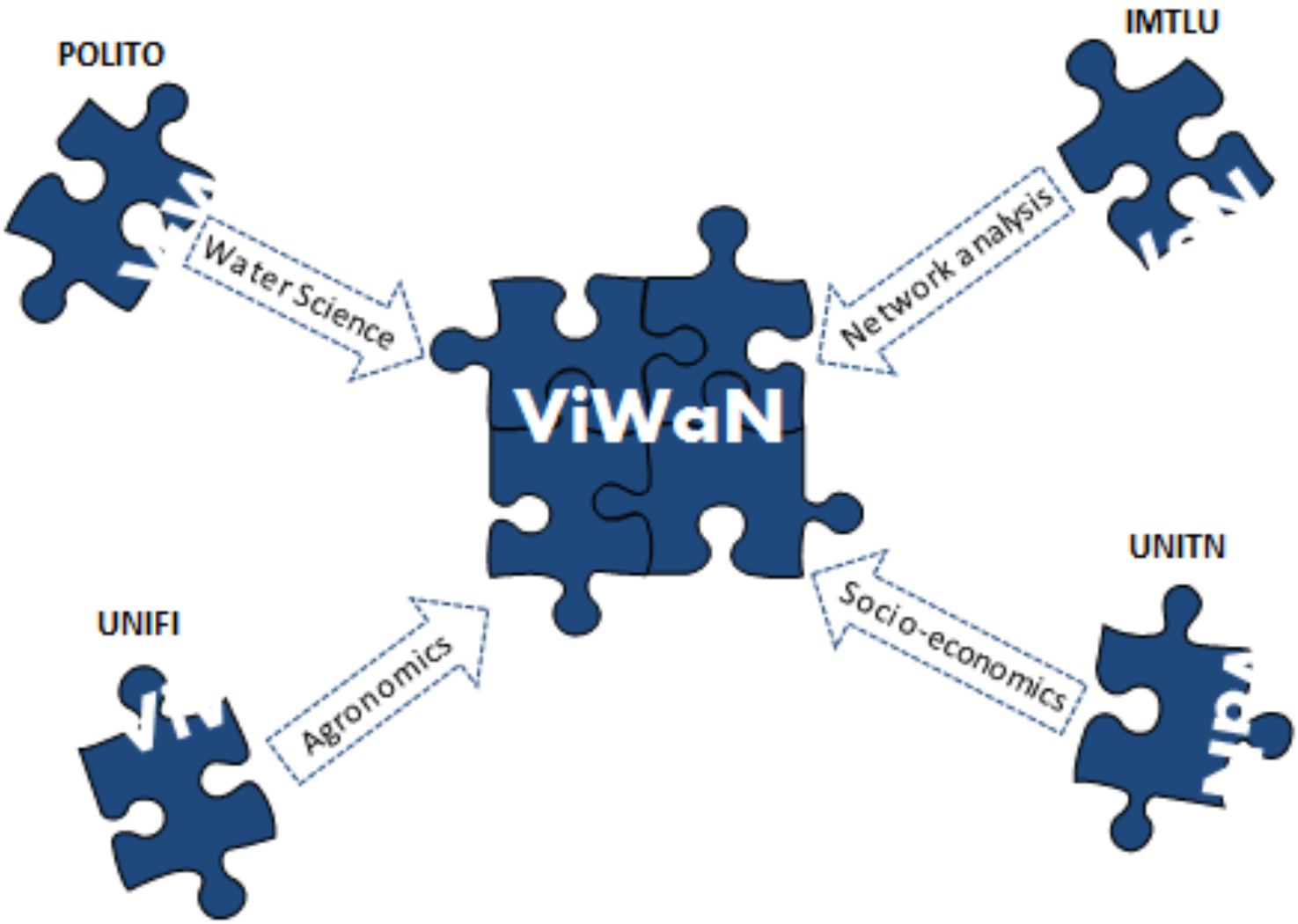
VIRTUAL WATER
and
INTERNATIONAL LAW

Presentation by **Marco Pertile** and **Paolo Turrini** (University of Trento)

Virtual Water Networks



OUR PRESENTATION

PURPOSE

Present the results of our investigation and test them before a competent audience

OUR PRESENTATION

OUTLINE

A) The concept of virtual water

B) Virtual water and international law

- international water law
- international environmental law
- international human rights law
- international trade law
- international investment law

WHAT IS VIRTUAL WATER

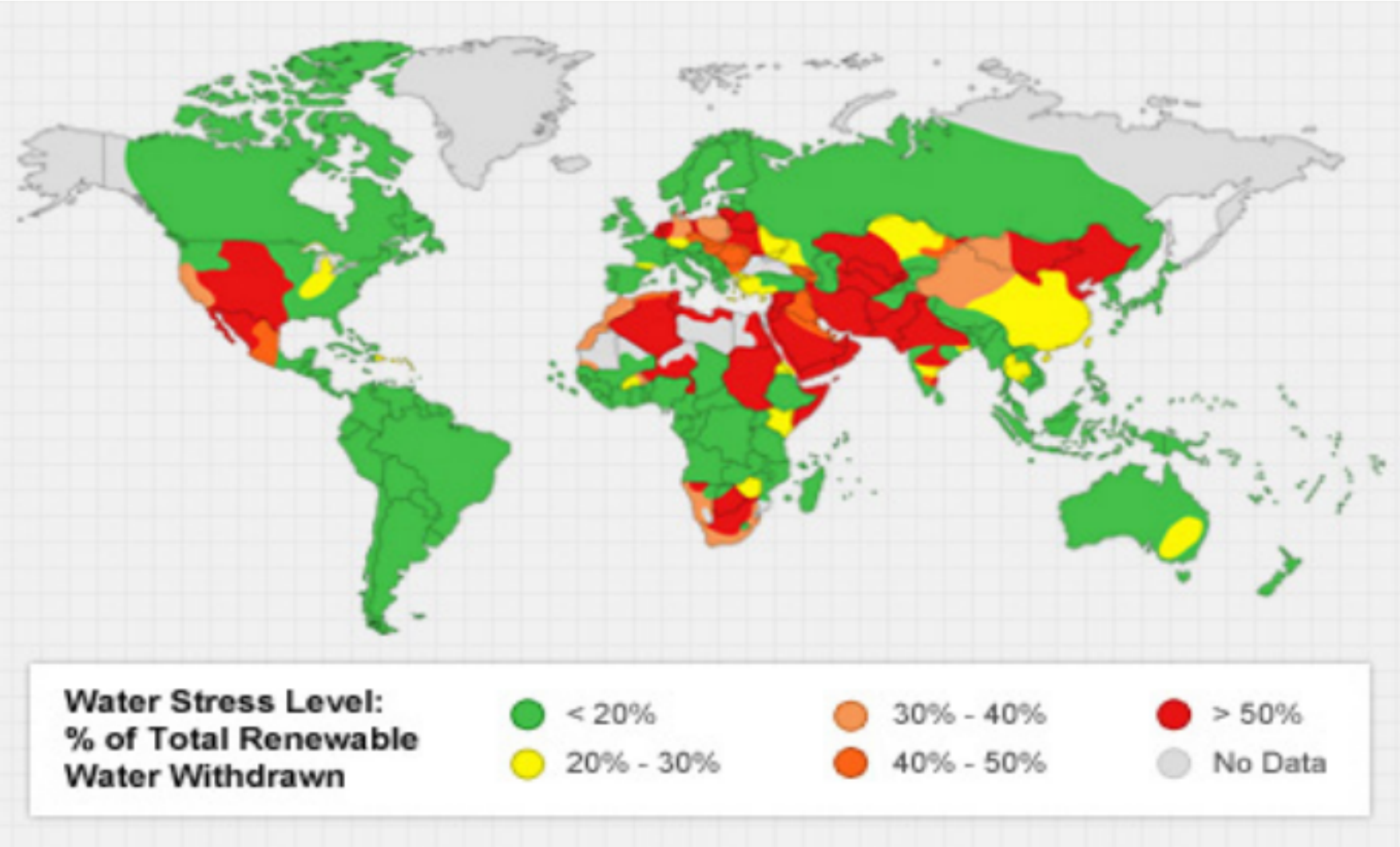
VIRTUAL WATER

Virtual water is a concept that

«**helps us realize how much water is needed to produce different goods and services**. In semi-arid and arid areas, knowing the virtual water value of a good or service can be useful towards determining how best to use the scarce water available».

(Allan, 1998)

Water scarcity in the world



WHAT IS THE **WATER FOOTPRINT**?

WATER FOOTPRINT

The water footprint is an indicator of freshwater use that looks at both direct and indirect water use of a consumer or producer. The water footprint […] is defined as the total volume of freshwater used to produce the goods and services consumed […]. Water use is measured in terms of water volumes consumed (evaporated or incorporated into a product) and/or polluted per unit of time. A water footprint can be calculated for a particular product, for any well-defined group of consumers (i.e., an individual […] or nation) or producers (i.e., a […] private enterprise or economic sector).

(www.waterfootprint.org)

WATER FOOTPRINT

The water footprint is an indicator of freshwater use that looks at both direct and indirect water use of a consumer or producer. The water footprint [...] is defined as the tot me of freshwater used to produce the goods and services co ed [...]. Water use is measured in terms of water volumes med (evaporated or incorporated into a product) and/or polluted per unit of time. A water footprint can be calculated for a particular product, for any well-defined group of consumers (i.e., an individual [...] or nation) or producers (i.e., a [...] private enterprise or economic sector).

(www.waterfootprint.org)

WATER FOOTPRINT

The water footprint is an indicator of freshwater use that looks at both direct and indirect water use of a consumer or producer. The water footprint [...] is defined as the total volume of freshwater used to produce the goods and services consumed [...]. Water use is measured in terms of water volumes consumed (evaporated or incorporated into a product) and/or polluted per unit of time. A water footprint can be calculated for a particular product, for any well-defined group of consumers (i.e., an individual [...] or nation) or producers (i.e., a [...] private enterprise or economic sector).

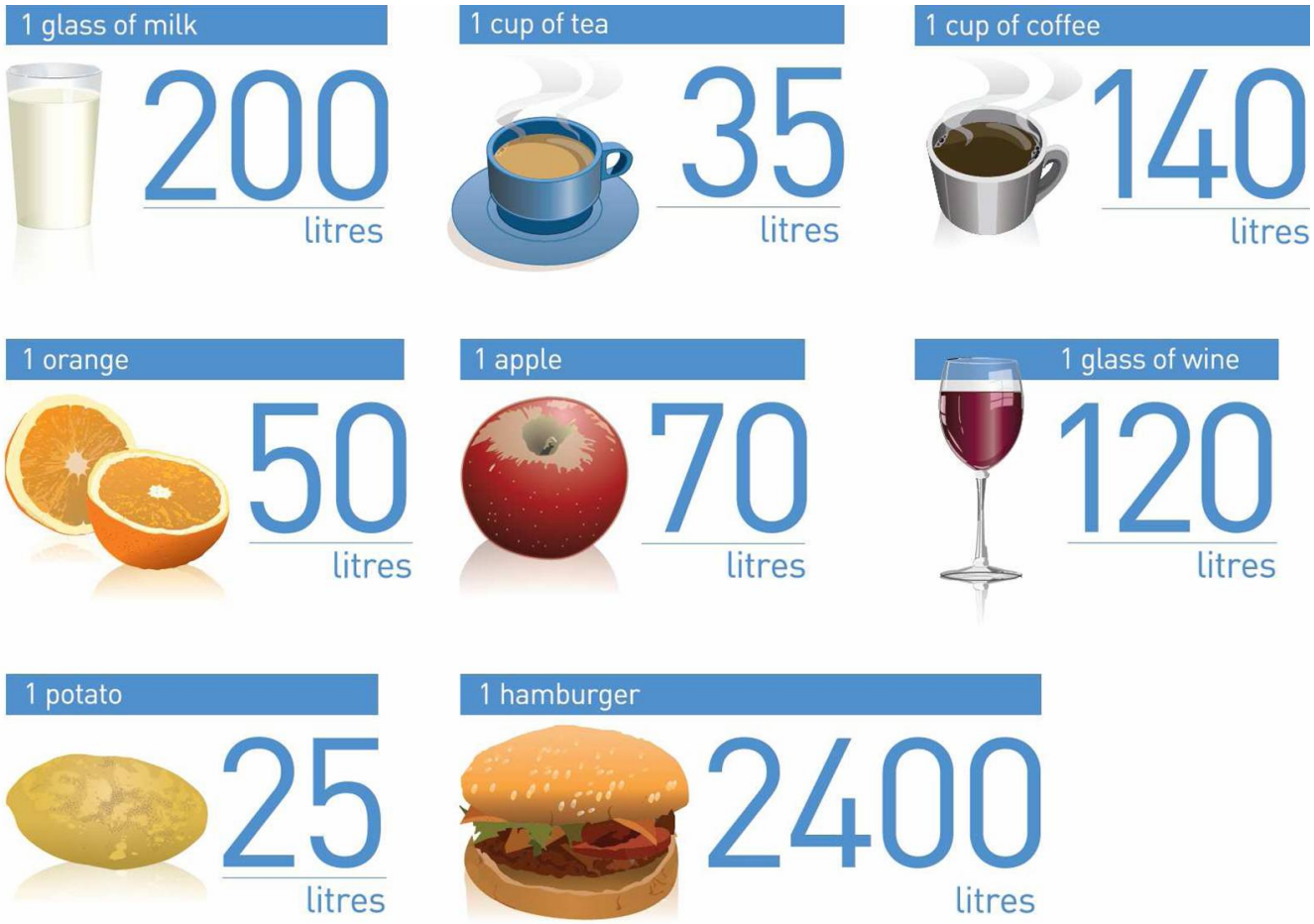
(www.waterfootprint.org)

WATER FOOTPRINT

The water footprint is an indicator of freshwater use that looks at both direct and indirect water use of a consumer or producer. The water footprint [...] is defined as the total volume of freshwater used to produce the goods and services consumed [...]. Water use is measured in terms of water volumes consumed (evaporated or incorporated into a product) and/or polluted per unit of time. A water footprint can be calculated for a particular product, for any well-defined group of consumers (i.e., an individual [...] or nation) or producers (i.e., a [...] private enterprise or economic sector).

(www.waterfootprint.org)

Some examples from everyday-life consumptions…

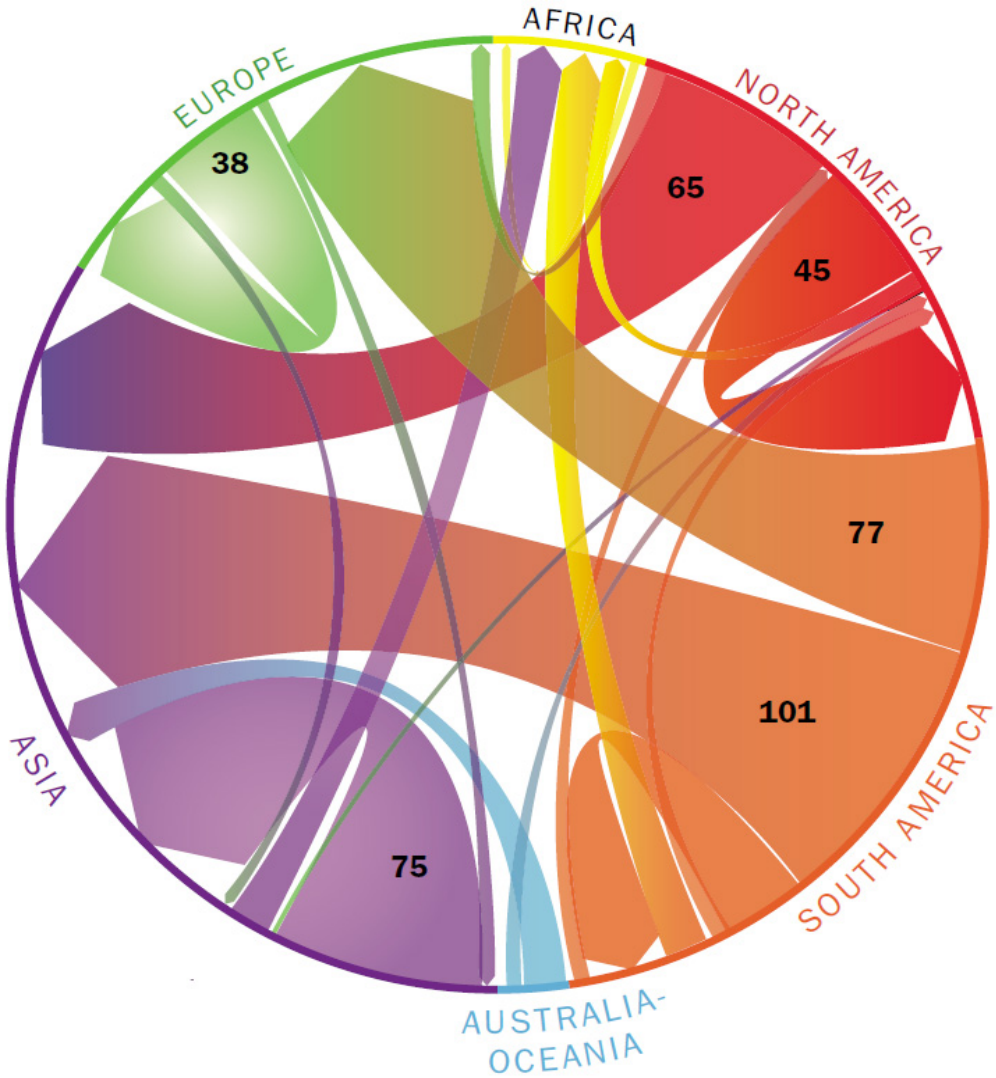


WATER FOOTPRINT

The water footprint is an indicator of freshwater use that looks at both direct and indirect water use of a consumer or producer. The water footprint [...] is defined as the total volume of freshwater used to produce the goods and services consumed [...]. Water use is measured in terms of water volumes consumed (evaporated or incorporated into a product) and/or polluted per unit of time. A water footprint can be calculated for a particular product, for any well-defined group of consumers (i.e., an individual [...] or nation) or producers (i.e., a [...] private enterprise or economic sector).

(www.waterfootprint.org)

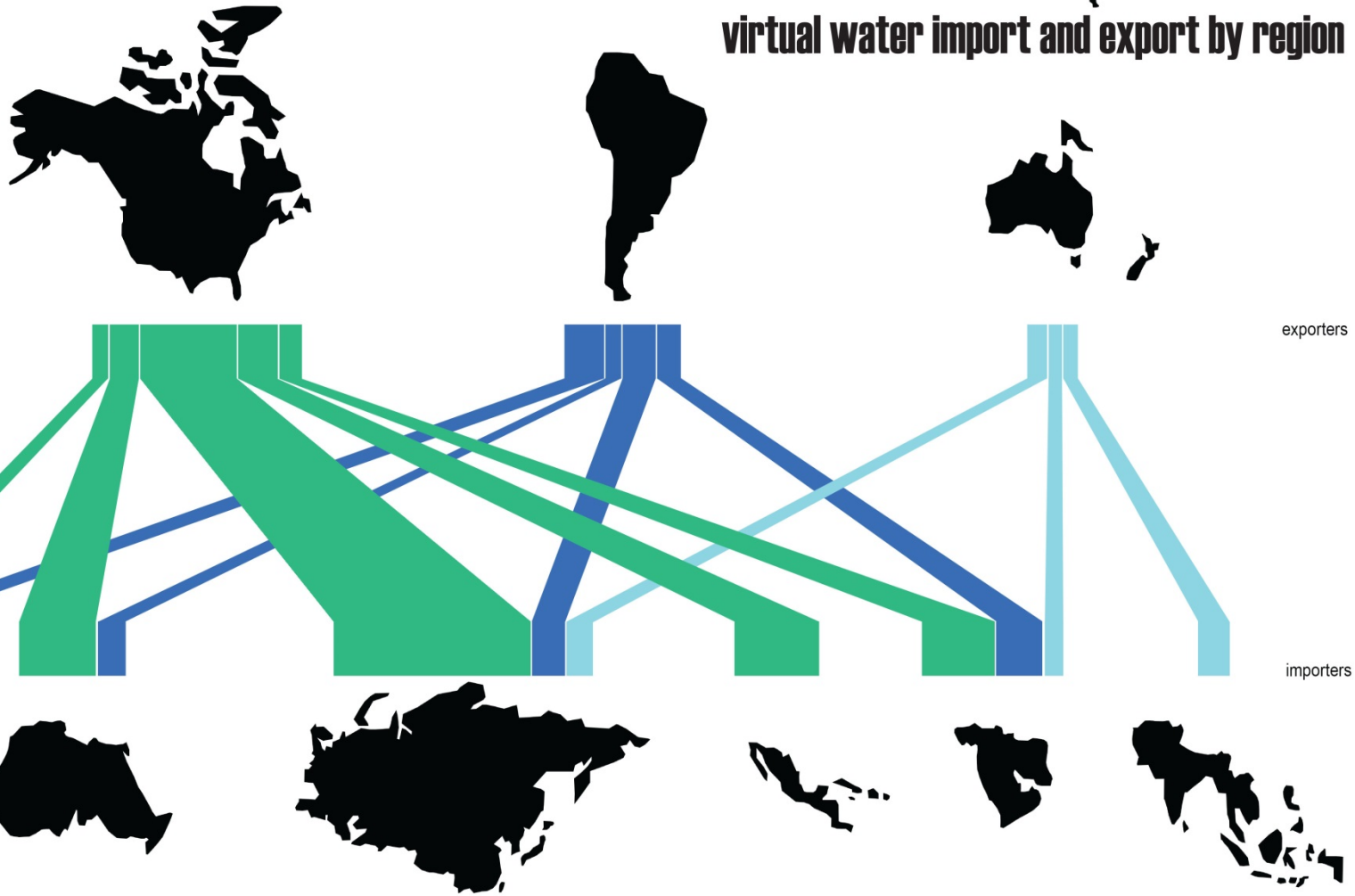
Virtual water flows around the world



barbara porada
section 106 / group 3

eastern europe and central+southern africa were not major exporters or importers of virtual water and are therefore not included in this study

virtual water import and export by region



Is the notion of Virtual Water useful?
Is it redundant or misleading?

It is not misleading because…

1. Water used to produce water-intensive goods cannot be used in more profitable ways

It is not misleading because…

1. Water used to produce water-intensive goods cannot be used in more profitable ways

2. Virtual water includes also «real» water!

Water content of agricultural goods

Fruits				Vegetables			
Item	*Food Weight (g)*	*Water Weight*	*Percent Water*	*Item*	*Food Weight (g)*	*Water Weight*	*Percent Water*
Apple	138	116	84	Broccoli	44	40	91
Apricot	106	92	86	Cabbage (green)	35	32	93
Banana	114	85	74	Cabbage (red)	35	32	92
Blueberries	145	123	85	Carrots	72	63	87
Cantaloupe	160	144	90	Cauliflower	50	46	92
Cherries	68	55	81	Celery	40	38	95
Cranberries	95	82	87	Cucumber	52	50	96
Grapes	92	75	81	Eggplant	41	38	92
Grapefruit	123	112	91	Lettuce (iceberg)	20	19	96
Orange	140	122	87	Peas (green)	72	57	79
Peach	87	76	88	Peppers (sweet)	50	46	92
Pear	166	139	84	Potato (white)	112	88	79
Pineapple	155	135	87	Radish	45	43	95
Plum	66	56	85	Spinach	28	26	92
Raspberries	123	106	87	Zucchini	65	62	95
Strawberries	149	136	92	Tomato (red)	123	115	94
Watermelon	160	146	92	Tomato (green)	123	114	93

Which purposes may be attached to Virtual Water?

From the point of view of the State

A nation can preserve its domestic freshwater resources by importing a water-intensive product instead of producing it domestically (national water saving through trade), thus becoming a virtual water net importer.

From the point of view of the State

From the point of view of the globe

The amount of water necessary to grow an agricultural good depends on many factors, and ultimately on the place of production.

From the point of view of the globe

The amount of water necessary to grow an agricultural good depends on many factors, and ultimately on the place of production.

How much water do we save if we import a product instead of producing it ourselves?

From the point of view of the globe

«According to [a] study, the global water use for producing agricultural products for export amounted to 1250 billion m^3/yr (in the period 1997-2001). If the importing countries were to have produced the imported products domestically they would have required a total of 1600 billion m^3/yr. This means that the global water saving by trade in agricultural products was 350 billion m^3/yr. So the average water saving accompanying international trade in agricultural products has been (350/1600=) 22 percent.

[…]

Without trade, supposing that all countries had to produce the products domestically, agricultural water use in the world would amount to 6750 instead of 6400 billion m^3/yr.»

International trade thus reduces global water use in agriculture by 5 percent

(Hoekstra, 2008)

From the point the view of the producer

Virtual Water content as the volume of water that was in reality used to produce the product.

(Hoekstra 2003)

From the point of view of the user

Virtual Water as the amount of water that would have been required to produce the product at the place where the product is needed.

(Hoekstra 2003)

SUMMING UP

The practical value of Virtual Water

A) Virtual water trade as an instrument to achieve water security and efficient water use at the global level.

SUMMING UP

The practical value of Virtual Water

B) Water Footprints: making the link between consumption patterns and the impacts on water.

The Water Footprint as a tool to show people their impact on natural resources.

International Law interacts with Virtual Water as a factor determining:

1) Allocation of Water

2) Use of Water (modalities)

Determining the allocation of water
(and the way it is used)

International law might be one of the factors determining the water endowment of:

- States
- Individuals
- Groups

It might also be a determinant of the water policies of States (as to the modalities of the use of water).

The allocation of water to States

- Natural resources are allocated through the principle of sovereignty (title to territory)
- A State exercises full rights over natural resources within territory
- Territorial delimitation is not based on a substantive equitable sharing of natural resources (El Salvador v Honduras, 1992, ICJ)
- When waters are transboundary the legal framework is significantly different

When waters are transboundary

- Principle of equitable and reasonable utilization
- Obligation not to cause significant harm
- Prior notification of planned measures
- Protection and preservation of the ecosystem

(UN Watercourses Convention 1997; ILC Articles on Transboundary Aquifers)

Obligations as to how water shall be used

International Environmental Law

Principle 2

The natural resources of the earth, including the air, water, land, flora and fauna and especially representative samples of natural ecosystems, must be safeguarded for the benefit of present and future generations through careful planning or management, as appropriate.

Principle 3

The capacity of the earth to produce vital renewable resources must be maintained and, wherever practicable, restored or improved.

(Stockholm Declaration)

The Allocation of Water to Individuals and Groups

- The Human Right to Water and the Human Right to Food

- The Human Right to Water: its collective dimension

The human right to water

«The human right to water entitles everyone to sufficient, safe, acceptable, physically accessible and affordable water for personal and domestic uses»

General Comment 15 on the right to water

The right to water vs. economic efficiency?

- The GC focuses on the obligation of States at the national level: the State as duty-bearer.
- The objective of accessibility (affordable water) can be reached *inter alia* by «(b) appropriate pricing policies such as free or low-cost water» (par. 27).
- The GC prioritize domestic uses as opposed to agricultural ones
- The GC makes it clear that: 'Agreements concerning trade liberalization should not curtail or inhibit a country's capacity to ensure the full realization of the right to water (par. 35).

As a matter of policy..

- Allocation of water to States is to some extent casual and takes into account equitable sharing only to a limited extent.
- Under Human Rights protection the State is duty bearer primarily with respect to the community under its jurisdiction.
- Trade shocks might make recourse to the market progressivley difficult.
- Water allocation is a political good for the elites (Roth & Warner, 2007).
- IEL sets some general standards of intergenerational equity and protection of the environment.

A fundamental distinction?

- Against this background, one should perhaps distinguish between policies aimed at self-sufficiency as to the right to food and policies aimed at exporting agricultural products from an arid country.

- The first option would seem to be reasonable.

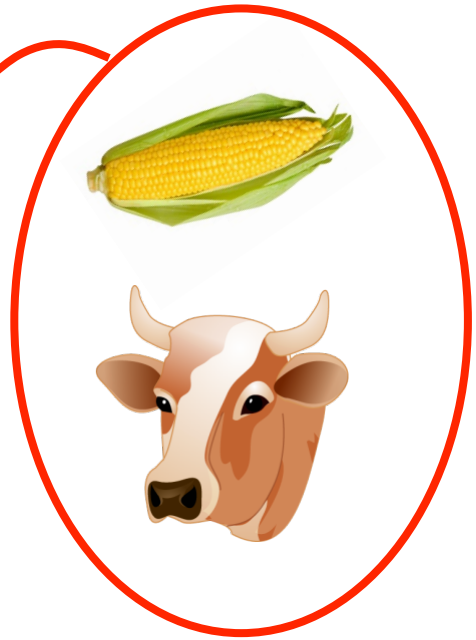
International Trade Law

The rules governing water-intensive goods

- General Agreement on Tariffs and Trade
- Agreement on Agriculture

The rules governing water-intensive goods

- General Agreement on Tariffs and Trade
- Agreement on Agriculture

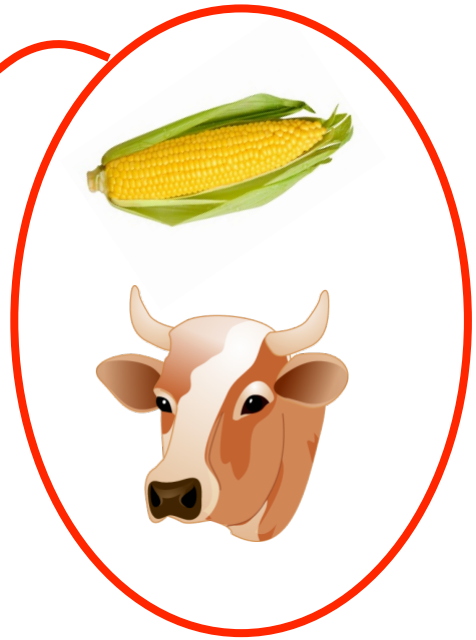


The rules governing water-intensive goods

- General Agreement on Tariffs and Trade

Art. 21 AoA

- Agreement on Agriculture



Two functions of int'l trade law

1. It influences the international flows of agricultural goods

Two functions of int'l trade law

1. It influences the international flows of agricultural goods

2. It influences the leeway of States in adopting virtual water policies

Adopting a virtual water policy

Becoming a virtual water net importer:

- Subsidies to farmers
- Diversification of food providers
- Preservation of one's own resources (Art. XX)

Promoting water efficiency abroad:

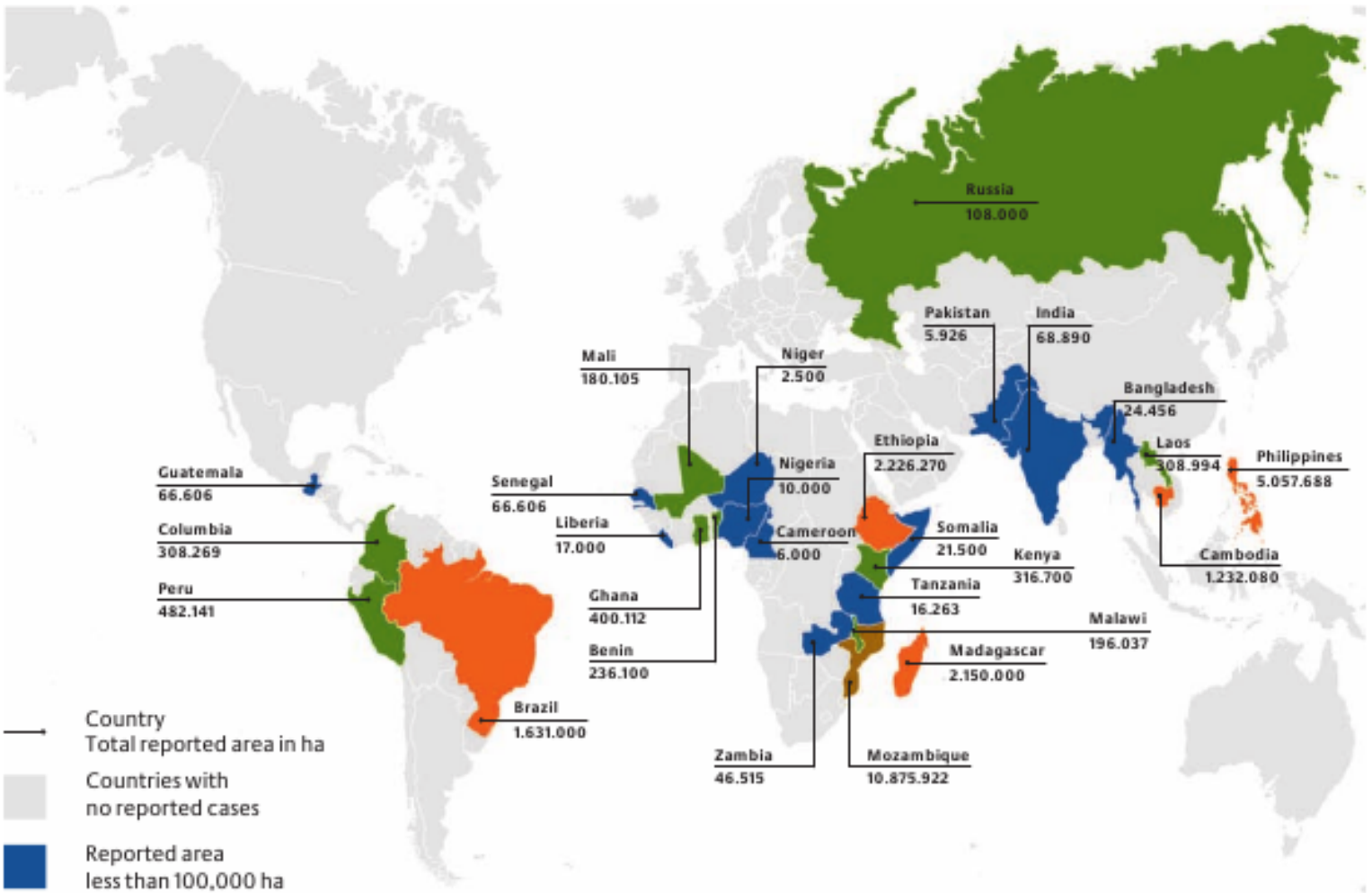
- Exceptions (Art. XX)
- Labelling

International Investment Law

Land Grabbing

Land Grabbing

Large-scale land acquisitions: Reported areas



Country
Total reported area in ha

Countries with
no reported cases

Reported area
less than 100,000 ha

Reported area
between 100,000 and 1,000,000 ha

Reported area
between 1,000,000 and 10,000,000 ha

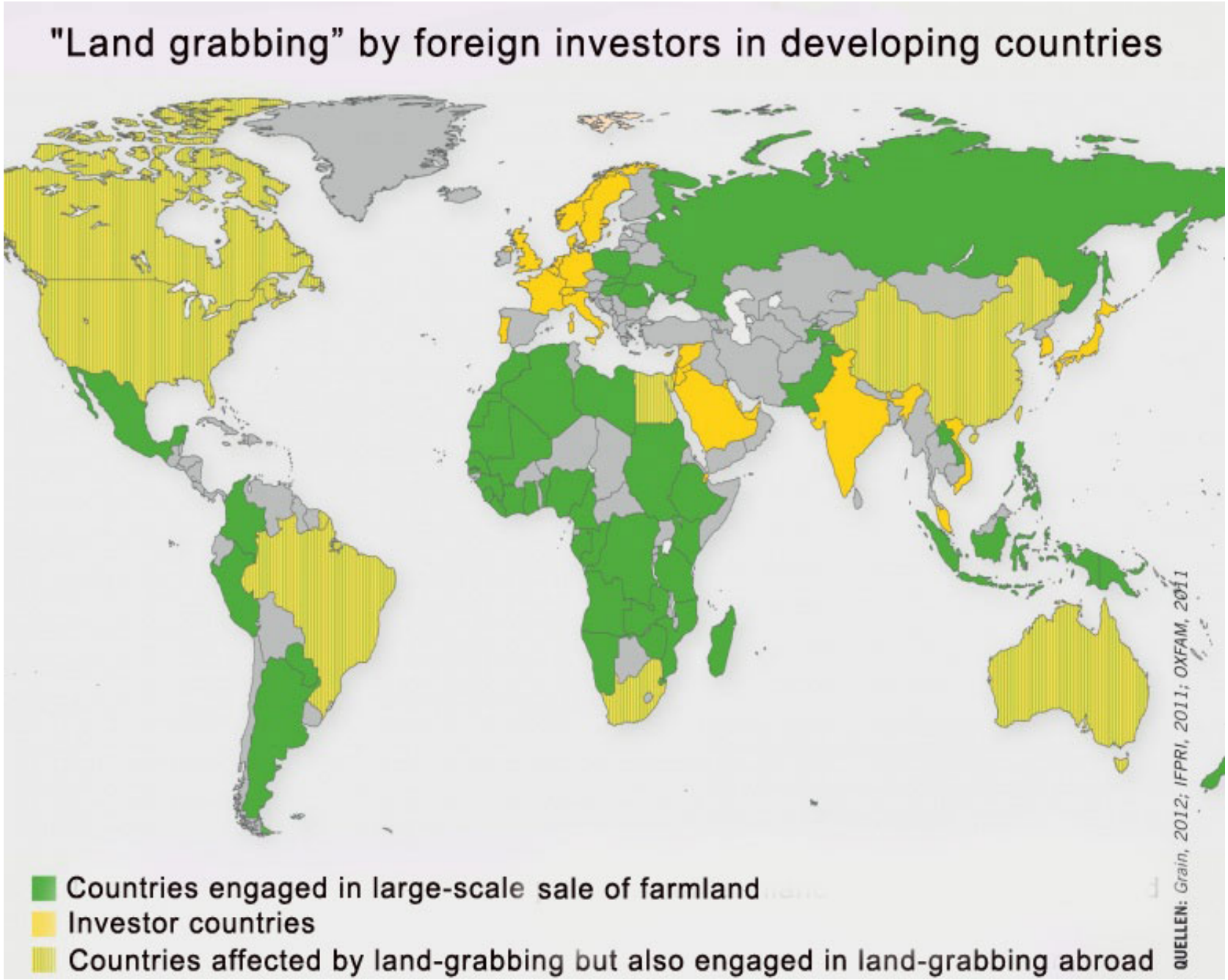
Reported area
more than 10,000,000 ha

Sources

Data: International Land Coalition

Imprint

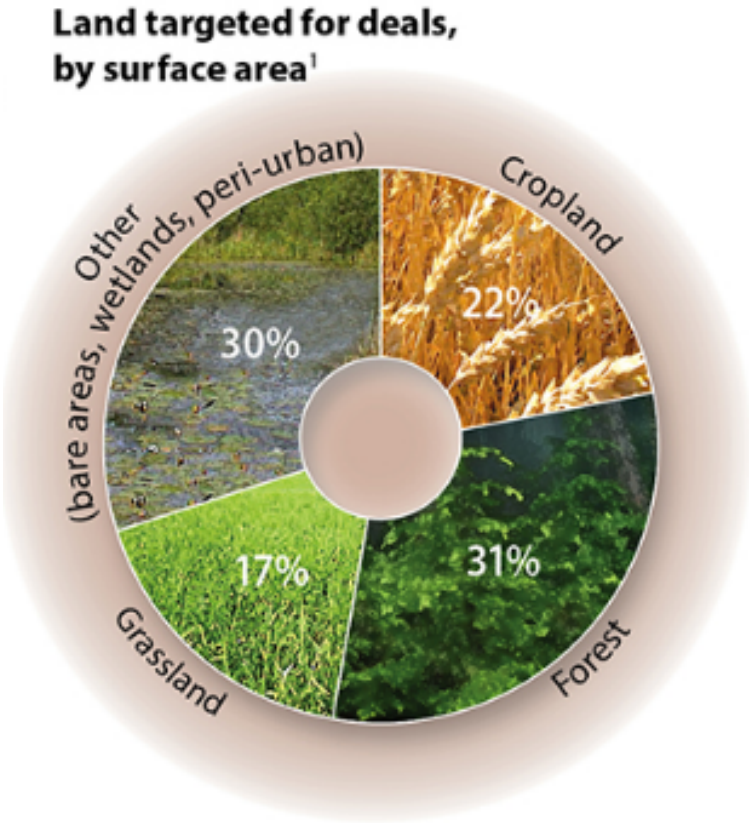
Authors: Elias Hodel, Kurt Geber
Organisation: CDE Centre for Development and Environment
November 2010


"Land grabbing" by foreign investors in developing countries
Countries engaged in large-scale sale of farmland
Investor countries
Countries affected by land-grabbing but also engaged in land-grabbing abroad
QUELLEN: Grain, 2012; IFPRI, 2011; OXFAM, 2011

Land Grabbing: some facts

What grabbed land is used for (by%)

Food crops	28
Biofuels	19
Wood and fibre	11
Tourism	10
Land speculation	10
Mining	8
No information	5
Other agricultural commodities	3
Livestock	2
Industry	2
Renewable energy	1
Carbon sequestration	1



CONCLUSION

The added value of **VIRTUAL WATER** in international legal studies