

Kongress „Gutes Leben für alle“
WU, Institute for Ecological Economics
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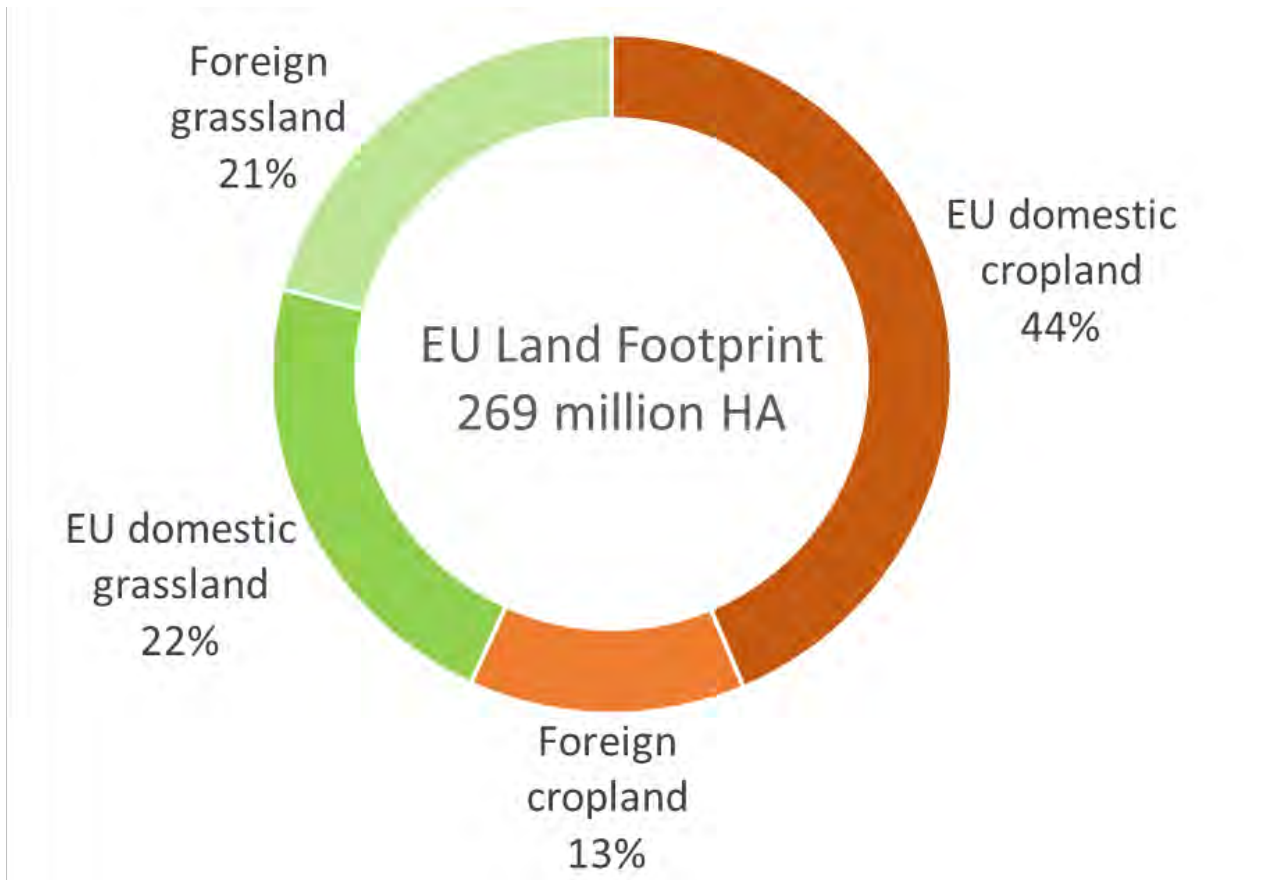
The Living Economy

And the social-ecological foundation for a good life for all

Evolution in agriculture



Land Footprint of the EU, 2010



Source: Fischer et al. (forthcoming)

Land use – a socio-ecological basis

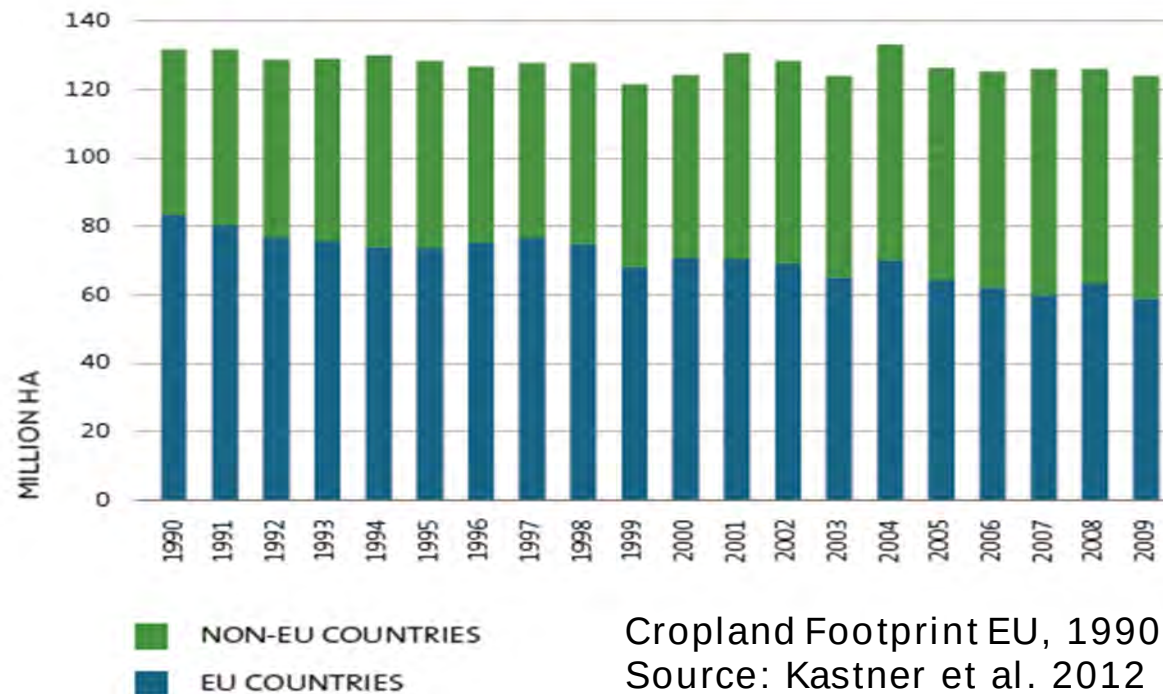
- Forest: 62% of original forest land cover
- Pre-industrialisation, mostly temperate forest loss as a result of cropland and grassland expansion
- Industrialisation: stabilization of forest loss, reforestation



Source: Steffen et al., 2015

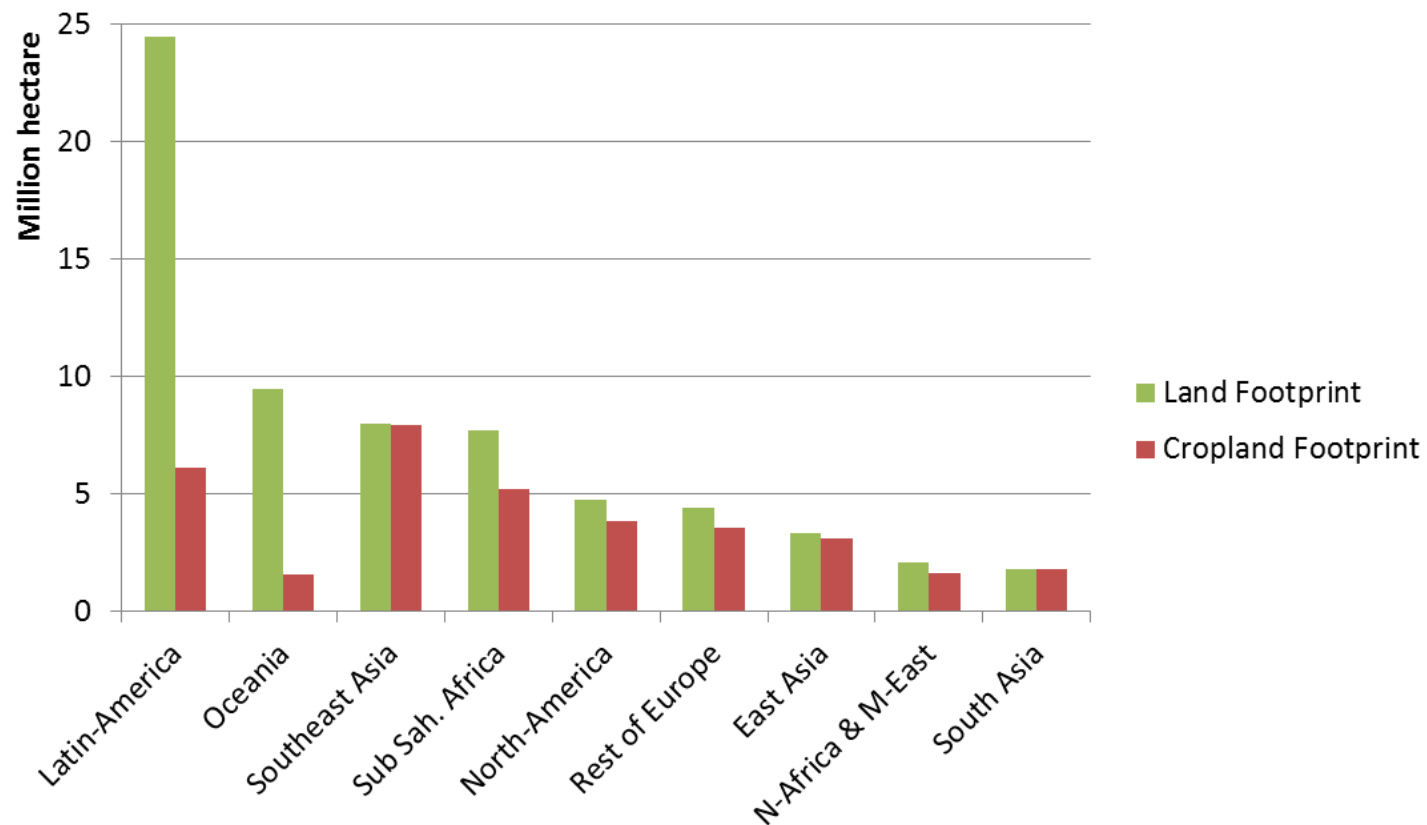
Globalisation and urbanisation: tropical forest loss

- With 36% of total deforestation, EU most important importer of deforested land between 1990 and 2008
- Imports of soy, palm oil, beef, coffee, ..
- Land use has become a globally connected system



Cropland Footprint EU, 1990-2009
Source: Kastner et al. 2012

Land Footprint EU, country of origin (excl. EU), 2010



Source: Fischer et al. (forthcoming)

Global environmental and social impacts

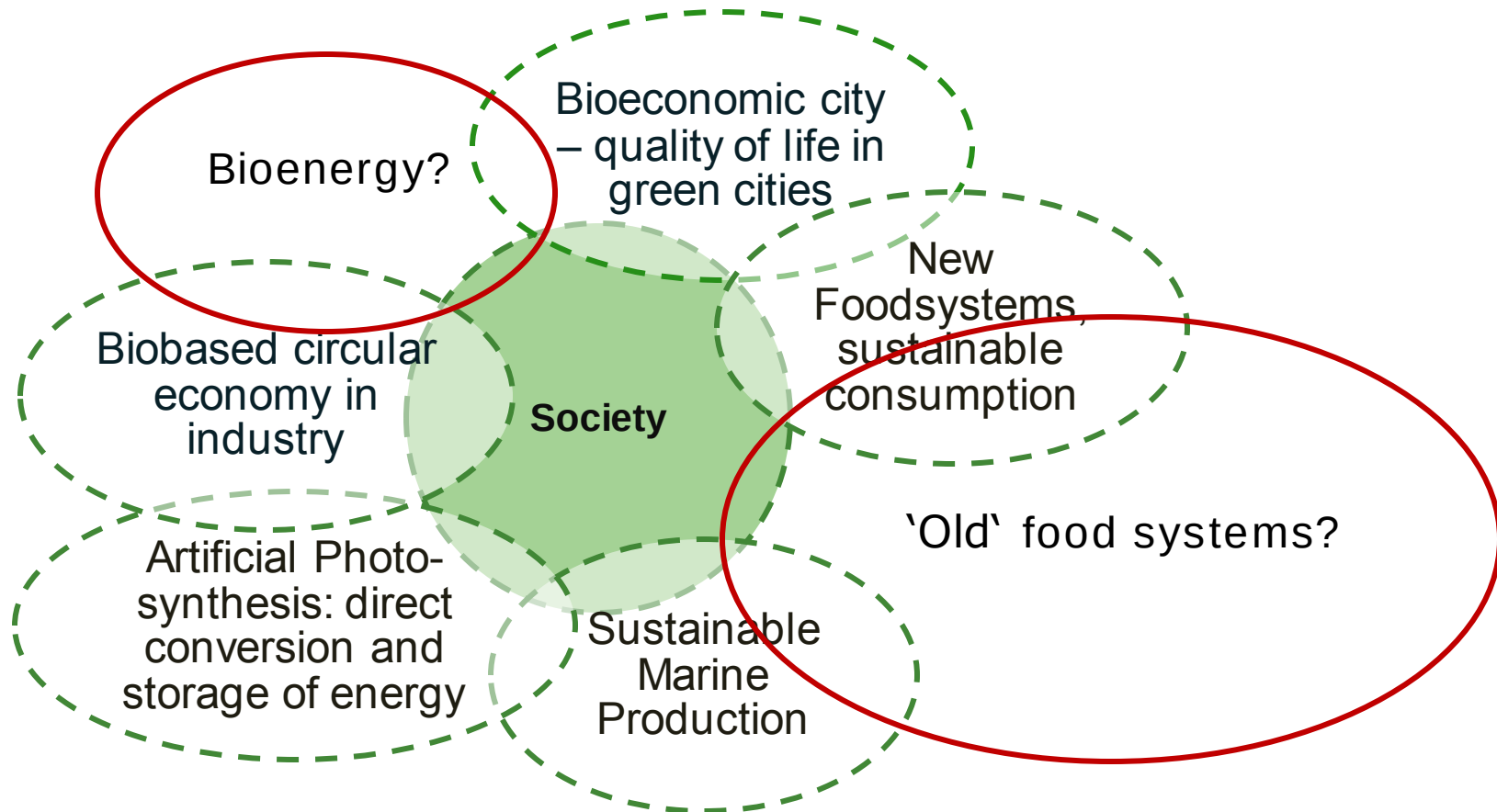
Dimension	Specification of impact
Environmental dimension	Deforestation
	Soil degradation
	Biodiversity loss
	Global warming
	Water scarcity
Social dimension	Water quality (including eutrophication)
	Food availability
	Working conditions
	Land conflicts



The Bioeconomy – a fuzzy concept?

- The set of economic activities relating to the **invention**, development, production and use of **biological products and processes** (OECD 2009).
- The production [and consumption] of renewable biological resources and their conversion into **food, feed, bio-based products and bioenergy** (EC 2012)
- The production and use of biologic resources, processes and principles **to provide products, processes and services for all economic sectors** (German Bioeconomy council, 2016)

How the bioeconomy may contribute to global societal challenges



Bioeconomy Policies around the World



Investments in the bioeconomy

- European players in commercial production of Biosuccinic acid (flavourings, plasticizer) and lactic acid (bioplastics)
- Alliances : **DuPont/ADM** and **BASF/Avantium** partnerships to produce furan dicarboxylic methyl ester
- Push from companies in FMCG:
 - US companies leading (**Coke, Pepsico, Heinz, airlines**, etc.)
 - Upcoming European activities: **Lego, Ikea, Tetra Pak, H&M**

A bioeconomy needs land, commodities and large scale farms

- Global deforestation estimates 100 to 500 Mn. Ha by 2050
- Land degradation, land sealing, reforestation in Europe, China
- Demand for food and non-food biomass



Sources: Canadell et al., 2007; Tilman et al., 2011; FAOSTAT, 2016

A good life for all...



...needs a systemic monitoring of social and ecological indicators

	Production	Consumption	Society
1. Scale	Global equity/ fairness resource use		
2. Intensity	Carrying capacity of ecosystems		
3. Direction	Towards a functional Bioeconomy?		
Social-ecological indicators	Ecosystem assessment	Sustainable consumption	Quality of life

A living economy for all!



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...needs a systemic monitoring of social and ecological indicators

Production related / territorial indicators

- Relate to domestic land use
- E.g. Land use, land cover, ecosystem assessments
- Discussed themes: Environmental impacts, rural development, farming styles, income

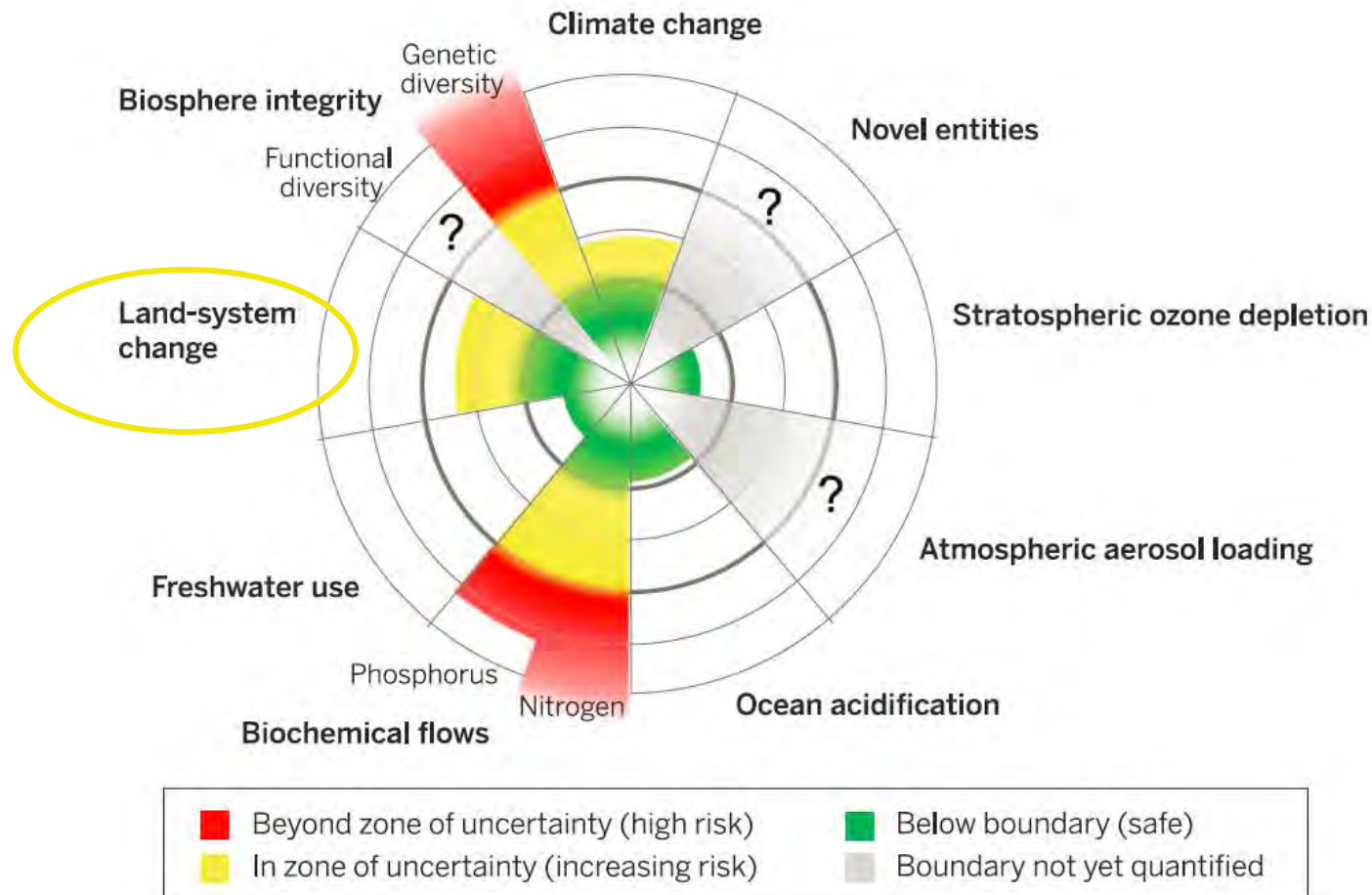
Consumption related / global indicators

- Relate to globally required areas that have been used to supply goods and services to be consumed in a certain country/region
- E.g. Land footprint, Material FP, Water FP, Energy FP
- Discussed themes: E.g. Land use & land use change, fair share, planetary boundaries

Wellfare / societal indicators

- Relate to e.g. food security, jobs, education, recreational areas, healthy ecosystems, quality of life
- Social-ecological indicators, e.g. land use/diet, nr. of jobs/unit GHG emission
- Discussed themes: UN SD goals, food price, markets, social responsibility, global monitoring agreements (eg climate agreement)

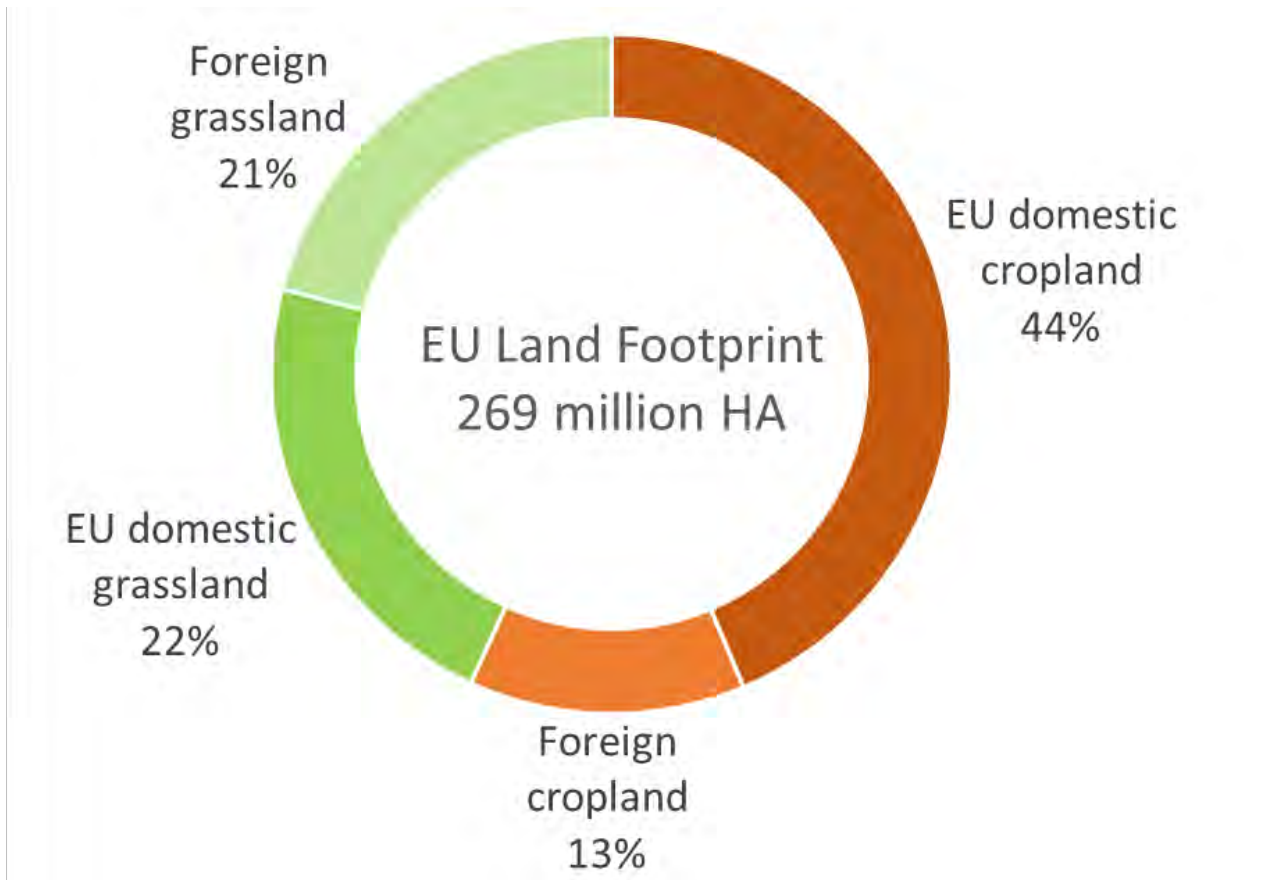
Planetary boundary: from cropland expansion to forest losses



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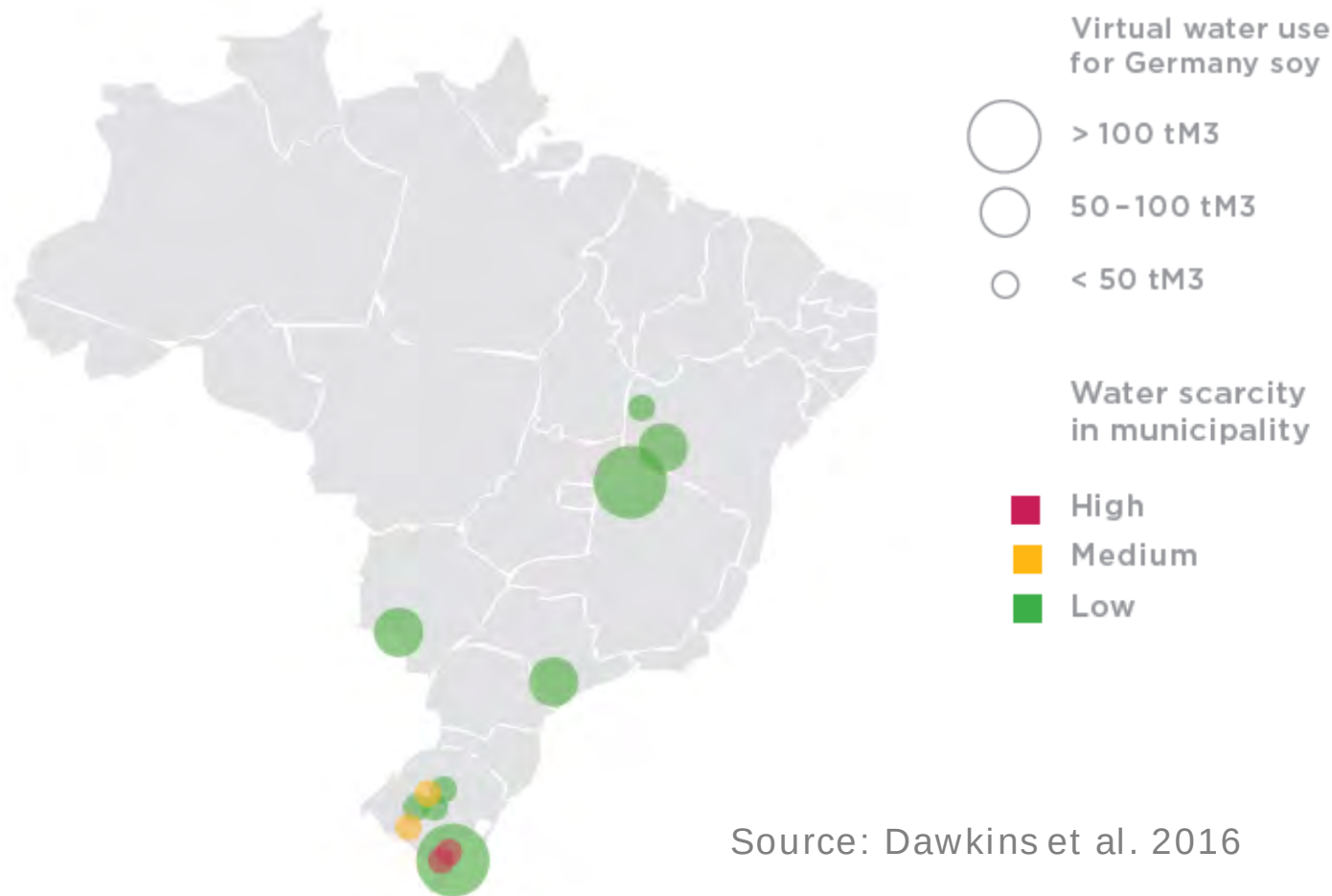
Source: Rockström et al. 2009; Steffen et al. 2015

Land Footprint of the EU, 2010



Source: Fischer et al. (forthcoming)

Spatially explicit water footprint of Germany in Brazil



Source: Dawkins et al. 2016

- Urban agriculture: Structurally embedded in the urban fabric, some are community oriented, organic, low tech, some are high tech, `organic`, differentiated
- Organic agriculture & Agroecology: mainly family farms, often multifunctional and diverse product range, mainly western Europe
- Industrial agriculture: mainly agricultural entrepreneurs, productivity oriented, high tech, commodities, often monocultures, mainly eastern Europe and outside the EU
- Conventional farming: Mainly family farms, specialised, many in intensive animal production

Latest Developments in Bioeconomy Policy

- Spain: dedicated BE strategy & action plan adopted in March 2016
- France, Norway: dedicated BE strategy expected in the coming months
- Germany: evaluation of BE research strategy in 2016
- Italy, Austria, Estonia, Ireland: strategy development in progress
- Regions:
 - o smart specialisation, cross-border reach (e.g. BIG-C in NL, Flanders & NRW)
 - o structural innovation, combining different (funding) resources (Italy, Poland)
- Macro-regions:
 - o West Nordic Countries BE strategy in 2015
 - o Baltic Sea Region formation of Bioeconomy Council in February 2016