



Opportunities in the Transition of our Food System

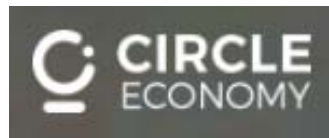
Wouter-Jan Schouten, AgroFoodTop Symposium, June 7 2017



About Wouter-Jan Schouten



THE BOSTON CONSULTING GROUP



Agenda

- **Why:** facing the brutal facts about food systems and the potential value of a transition
- **What:** systemic changes needed to build a sustainable food system
- **How:** a call for action to build coalitions around holistic transformation agendas

Agenda

- **Why:** facing the brutal facts about food systems and the potential value of a transition
- **What:** systemic changes needed to build a sustainable food system
- **How:** a call for action to build coalitions around holistic transformation agendas

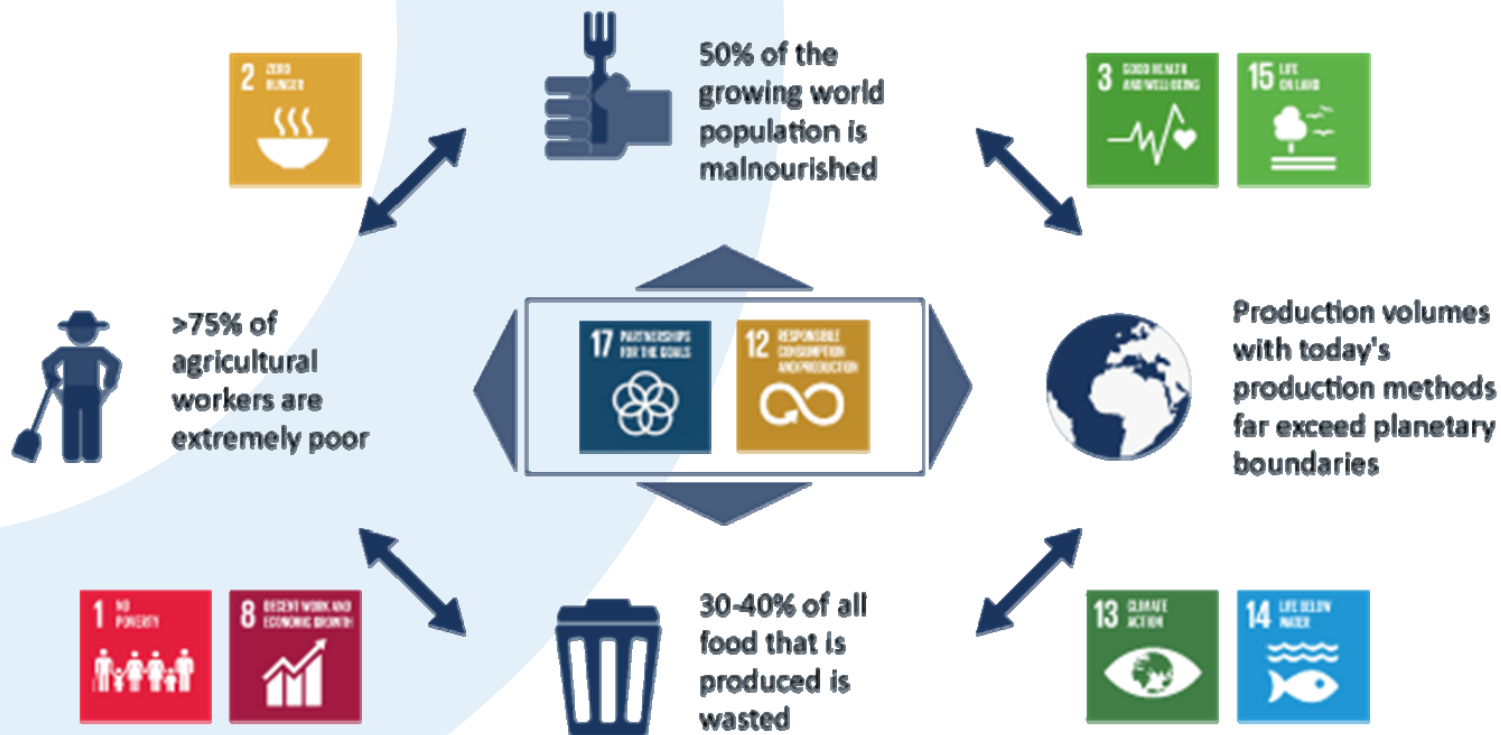
Nine (at least) of the SDGs can only be achieved if food systems become structurally sustainable

Remaining eight SDGs are also indirectly related to food systems



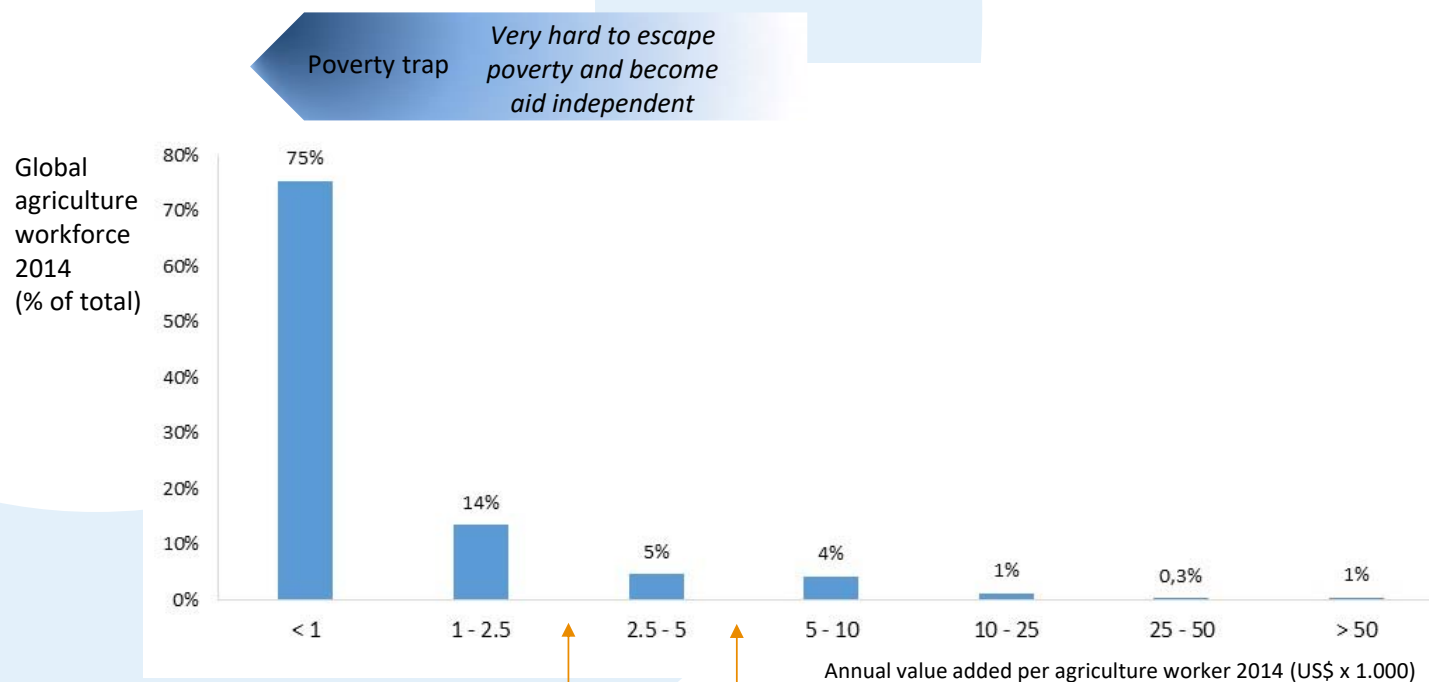
Source: Food Systems and Natural Resources (UNEP/IRP/PBL 2016)

Four brutal facts need to be addressed



>75% of agricultural workers are extremely poor

Global distribution of agricultural labor, by level of value added



- World Bank poverty line (\$2 p.d.) translates to app. \$2,500 p.a. per family
- Note that minimum income often is less than living income, and value added does not cover financing costs; arguably \$5,000 value added p.a. is minimum to escape poverty

Global food systems exceed planetary boundaries

Direct agriculture impacts



Soil depletion, pollution and degradation



Freshwater overexploitation and pollution



Nutrient + Novel entities overload



Timber, Fish & Wildlife over exploitation



GHG emissions

Impacts on planet



Deforestation and Land use change



Water scarcity



Ocean acidification

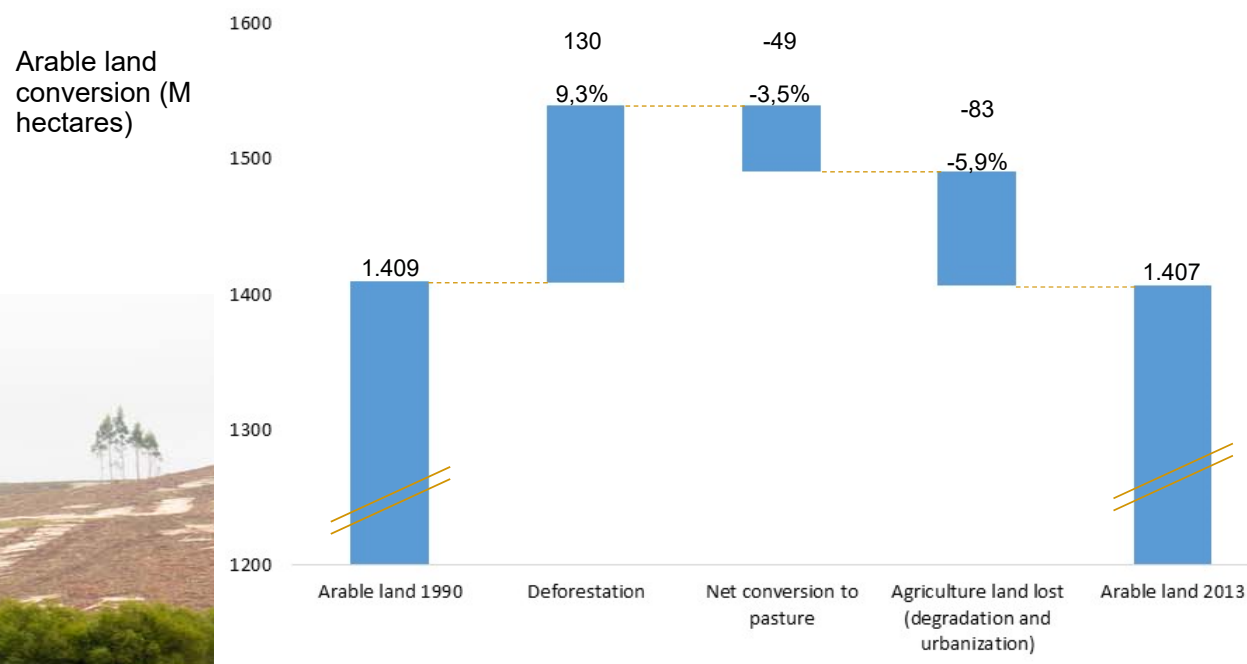



Biodiversity loss



Climate change

Despite deforestation the global amount of arable land is flat




We are losing arable land at an enormous speed, due to irresponsible farming practices

Source: NewForesight analysis of World development indicators (World Bank)

Some of the brutal facts in the Netherlands



Potential value of Food Transition is huge – some examples

Consumer end markets



- Better diets may lead to reduction in healthcare costs of up to 6%
- Increase consumer trust and engagement

Agri Value chains



- Responsible consumer products account for two thirds of market growth in groceries at an average price premium of 20-25%
- Frontrunner companies outperform on the stock market
- Economic value of new technologies and services that enable the transition

Production Landscapes



- Increase the economic value of ecosystems by up to 80%
- Economic development in rural areas; > 1 bln people to be lifted out of poverty

Loess Plateau (China)

1995



2009



2.5 million

people were lifted
out of poverty

Low-value agricultural
commodities were replaced with
high-value products

Farmers' incomes
doubled

Employment
diversified

Grain output increased from
365 kg to 591 kg
per capita per year

**Sediment flow into
the Yellow River**

reduced by over 100 million
tons per year

Opportunities for women
to work increased significantly

Perennial vegetation cover
increased from 17% to 34%

Employment rate
increased from
70% to 87%



Agenda

- **Why:** facing the brutal facts about food systems and the potential value of a transition
- **What:** systemic changes needed to build a sustainable food system
- **How:** a call for action to build coalitions around holistic transformation agendas

Root causes need to be addressed at three levels

Consumer end markets



Value chains



Production Landscapes



6 Distorting tax systems, subsidies and other regulations hamper systemic change

5 Consumers lack the knowledge and price- or quality incentives to make healthy and sustainable choices

4 Food supply chain actors compete primarily on standardization and lowest price of agricultural commodities

1 94% of farmers subscale and caught in poverty trap

2 5% of farmers incentivized to treat 42% of land as abundant resource

3 1% of farmers incentivized for over-intensification via externalized costs

Opportunities differ by landscape archetype...



Poverty trap areas

Today's challenges

Poverty and poor farming practices, deforestation, soil degradation, water depletion



Land abundant areas

Underutilization of land, mono cultures, high deforestation and soil degradation



Intensive agriculture

High externalized costs from maximizing yields

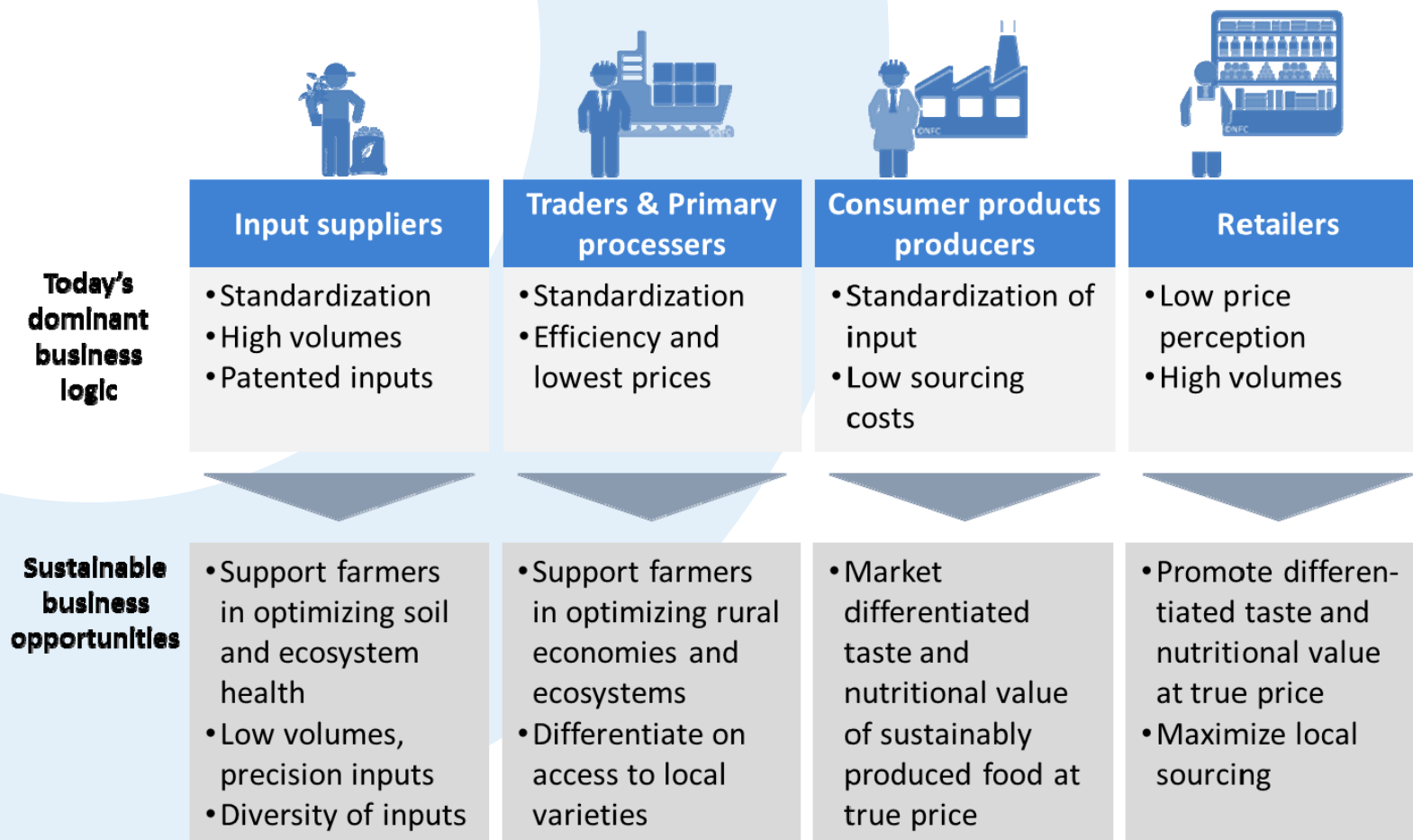
Required game change

- Ecologic intensification, land restoration
- 600 M farmers to professionalize
- 850 M alternative livelihoods

- Ecologic intensification and monetize ecosystem services
- Rewilding of land, incl. reforestation

- Ecologic optimization
- Value growth and monetize ecosystem services

...and for different players across the value chain



Systemic change opportunities in consumer behaviour can be turned into opportunities for consumer businesses

Today's consumers not in a position to demand sustainable food production



- Lack **awareness**
- Unsustainable choices are **cheaper**
- Sustainable healthy choices often **less attractive** than easy unsustainable ones
- **Mistrust and confusion** on multiple sustainability labels

Required changes in consumer behaviour

- Fewer **empty calories**, less meat
- More **vegetables**
- More **locally produced** food
- **Urban farming**
- Pay **true prices**
- Reduce **food waste**



Systemic change opportunities in tax systems, subsidies and other regulations

Distortive tax systems, subsidies and regulations hamper systemic change

- **Externalities** not taxed
- Many **subsidies** reward unsustainable practices and **distort competition**
- Too easy to obtain permits for **unsustainable practices**
- Regulations may hamper sustainable **innovations**

Required changes in government policies and regulations

Outlaw practices below minimum standards

Price in **externalities** through **taxes** and/or **monetize ecosystem services**

End **distortive subsidies**

Use the generated funds to:

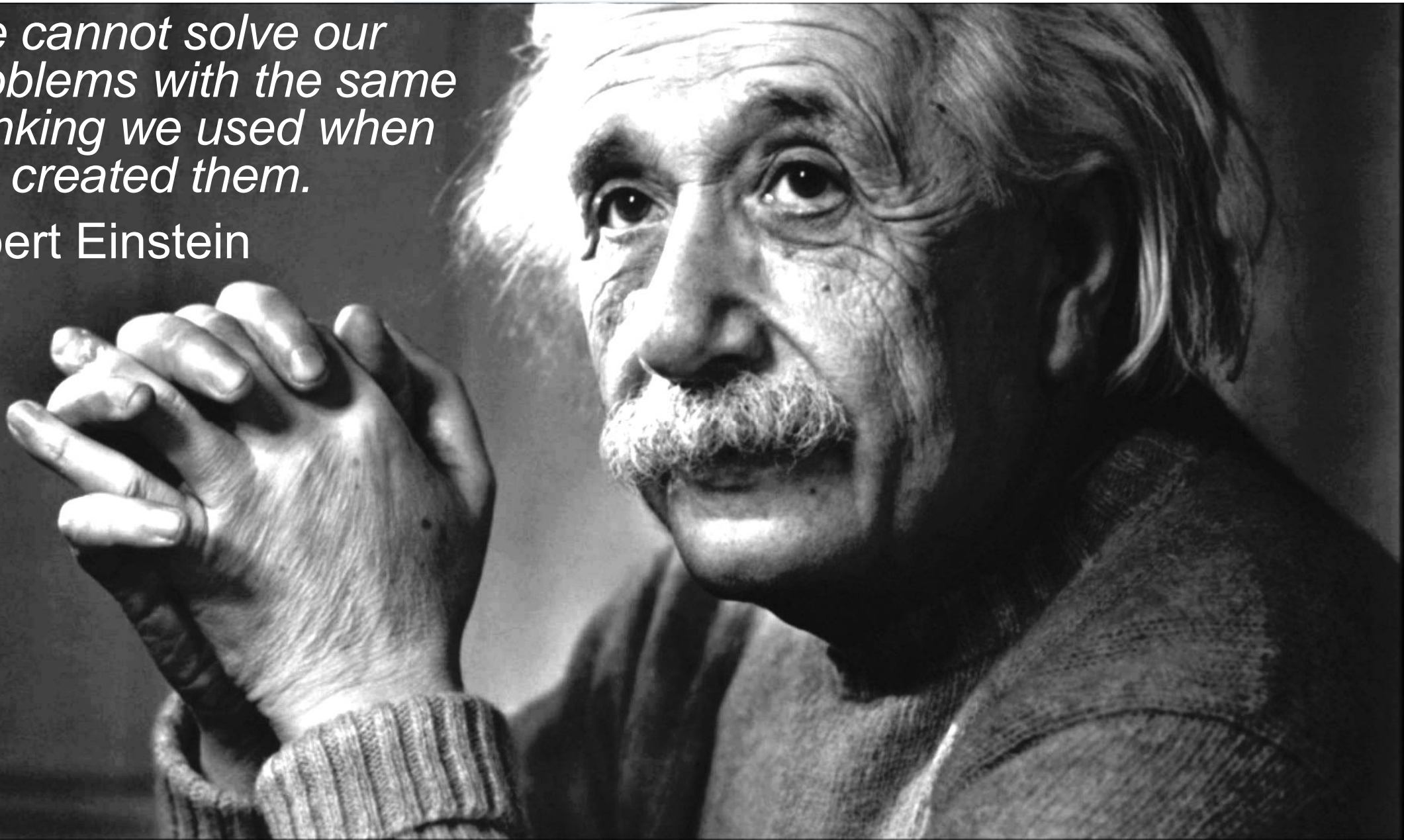
- **Co-invest with private sector** in landscape restoration, community development, R&D
- **Pay for ecosystem services** that lack a commercial market and/or
- **lower taxes** on labor

Agenda

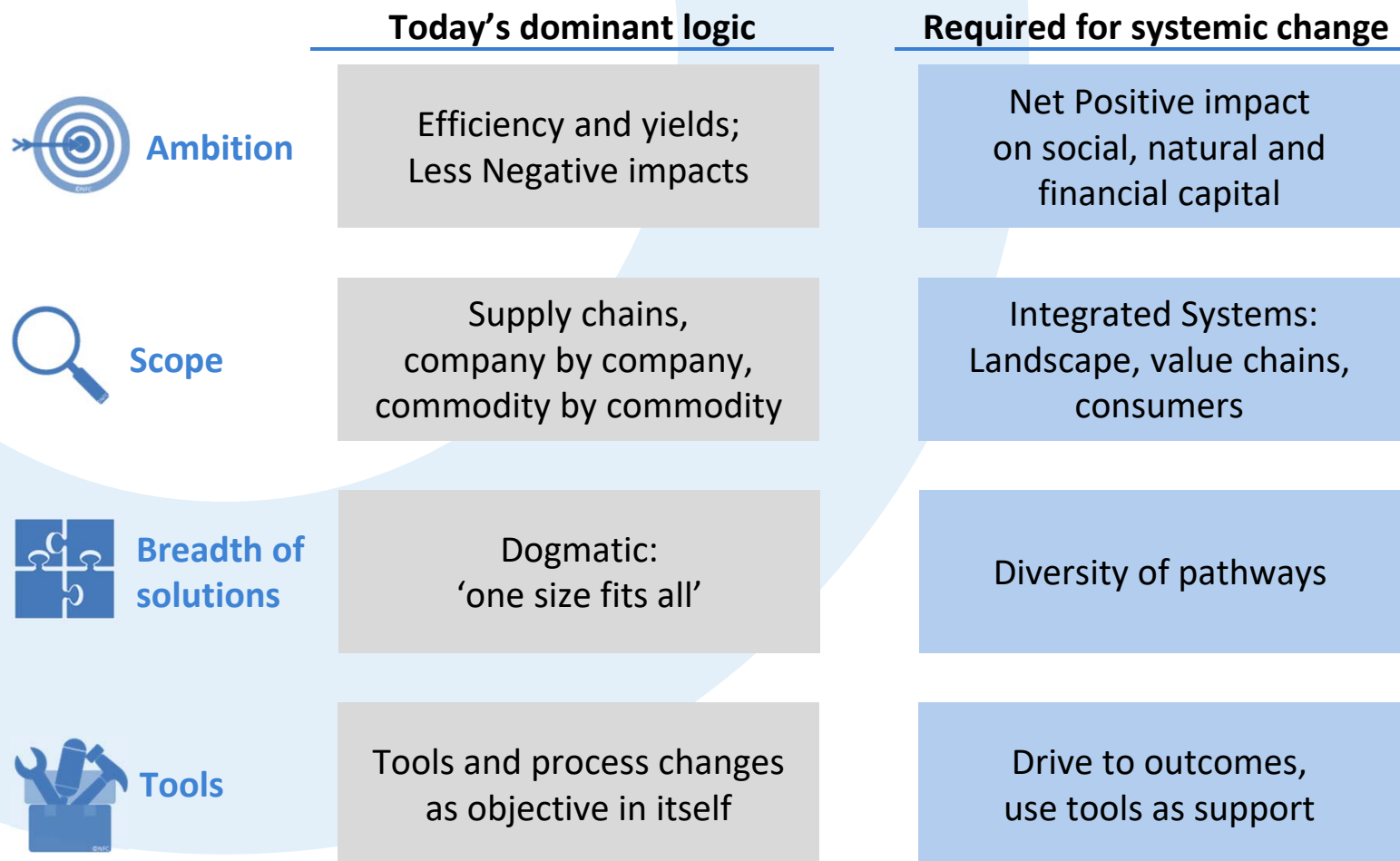
- **Why:** facing the brutal facts about food systems and the potential value of a transition
- **What:** systemic changes needed to build a sustainable food system
- **How:** a call for action to build coalitions around holistic transformation agendas

*We cannot solve our
problems with the same
thinking we used when
we created them.*

Albert Einstein

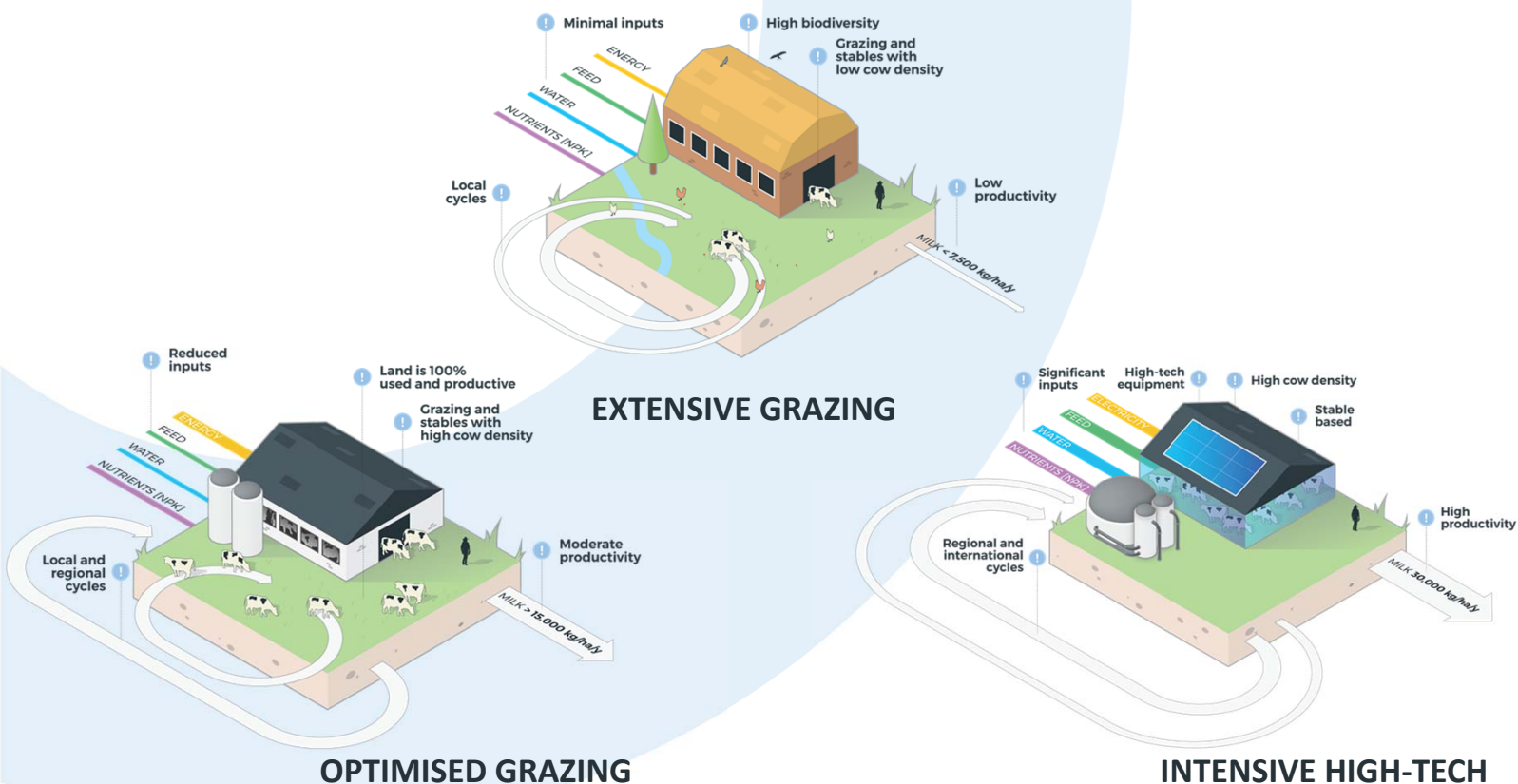


Need to move from piecemeal 'fighting of negative impacts' to holistic, business driven approaches for net positive impact



Diversity of Sustainability Pathways will be needed

Example: Three different pathways in Dutch Dairy sector



Source: Discussion report by Circle Economy, commissioned by FrieslandCampina, World Dairy Summit October 2016

Many initiatives to build upon

STACH
food

KROM
KOMMER



BLIJE
BOEN
Zakkergevend

Green
Protein
Alliance

Zeevaar

DE
VEGETARISCHE
SLAGER™



NO
FOOD
WASTED

NUTRIENT
PLATFORM
NL

DE
VERSPIJINGS
FABRIEK



GreenCHAIInge



Re:refresh
Taskforce
Circular Economy
in Food

NEDERLAND
CIRCULAIR!

SFI Sustainable Food Initiative

TiFN
FOOD & NUTRITION

Need holistic transition agenda at three levels

To be refined and detailed for each major landscape, supply chain and consumer market

Consumer end markets



Promote healthy and sustainable diets @ *true price*; moderate on animal protein; increase link between local diets and local agriculture production

Halve downstream food waste at retail and consumer

Market sustainable food production; generate willingness to pay *true price*

Agro Value chains



Clean and energy-efficient processing technologies; optimize biomass to food conversion rate

Ensure reliable supply chains for every farmer and eliminate upstream food waste

Agriculture Production Landscapes



Poverty trap areas:

- Professionalize farming
- Access to finance
- Less farmers; create alternative livelihoods

Land abundant areas:

- Ecological intensification
- better balanced inputs, more diverse cropping patterns
- Rewilding

Over intensified areas:

- Grow value, not volume
- End nutrient + novel entities overload

Develop and scale-up *net positive* farmer business models that provide sustainable livelihoods

Adapt regulations, subsidies and taxations to end externalities and enable growth of net positive business models

Land and water use planning towards *climate resilient and biodiverse* agro-productive landscapes, protected areas and ecological corridors

Different roles to play

Retailers in co-creation with governments and food producers, need to take on the challenges and opportunities in consumer end-markets.

Food processors and retailers for their private label products, need to lead the way in transforming the value chains

Farmer cooperatives in co-creation with their customers need to lead the way creating net positive farmer business models that are based on differentiation rather than commoditization.

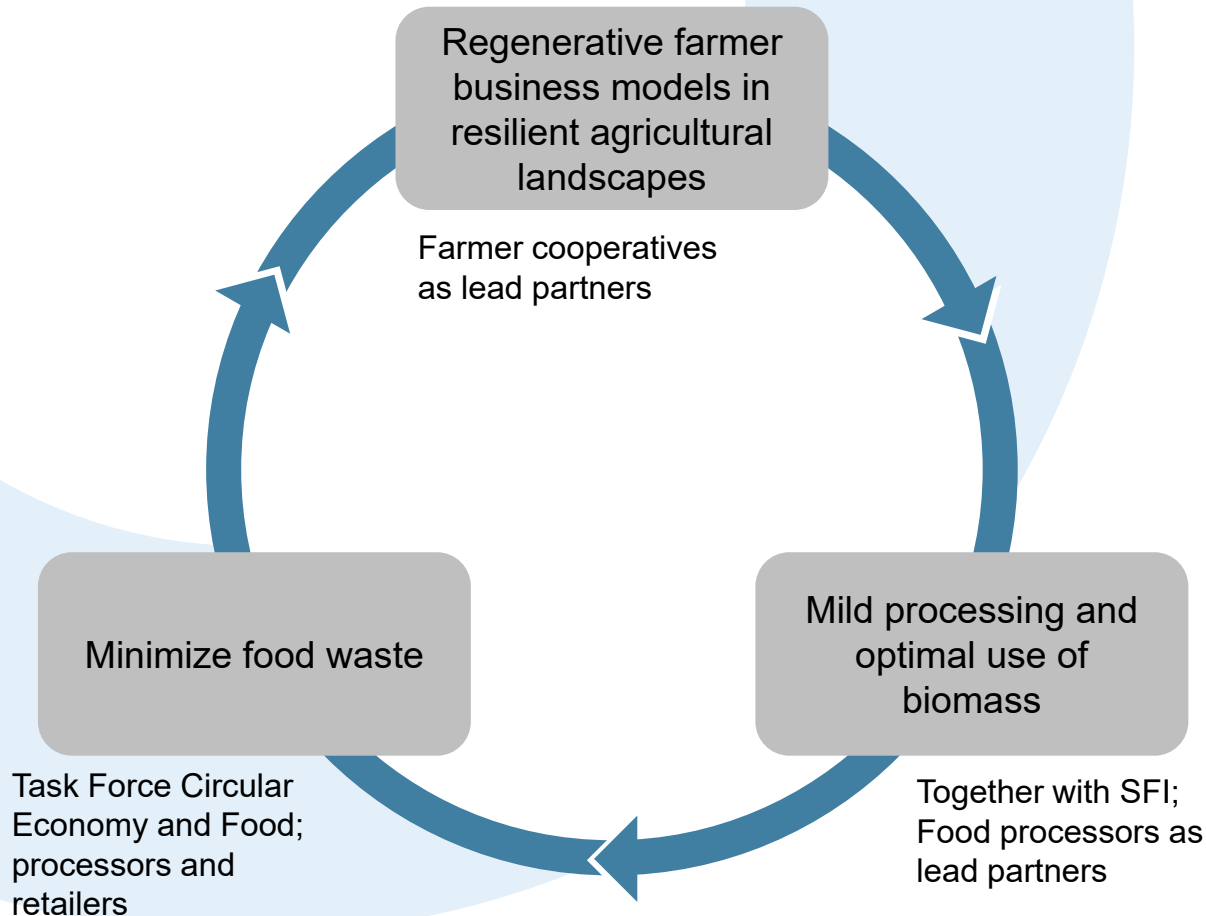
Governments in co-creation with businesses need to

- lead the way in land and water use planning towards *net* positive and climate resilient landscapes
- adapt regulations, subsidies and taxations to enable all the other parts of the agenda

Knowledge institutes and NGOs have crucial enabling roles to play in all areas.

TiFN aspires to be an enabler of the transition towards sustainable food systems

In partnership with and connecting existing policy and science initiatives



Connecting fundamental-strategic, applied and valorization research; multinationals, MKB and start-ups

Multidisciplinary research connecting natural, economic, social and consumer sciences

Holistic system approach connecting soil, ecosystems & landscape, value chains and consumers and involving multiple 'top sectors'

BACKUPS

Malnutrition affects more than half of today's population



In total around 4 billion people — more than half the population — are malnourished:

- Nearly 800 M people are hungry,
- Over 2 billion people suffer from micronutrient deficiencies
- 1.4 billion people worldwide struggle with overweight and obesity



...and world population is expected to grow to 10 billion by 2050:

30-40% (1.3B MT) of produced food is wasted every year

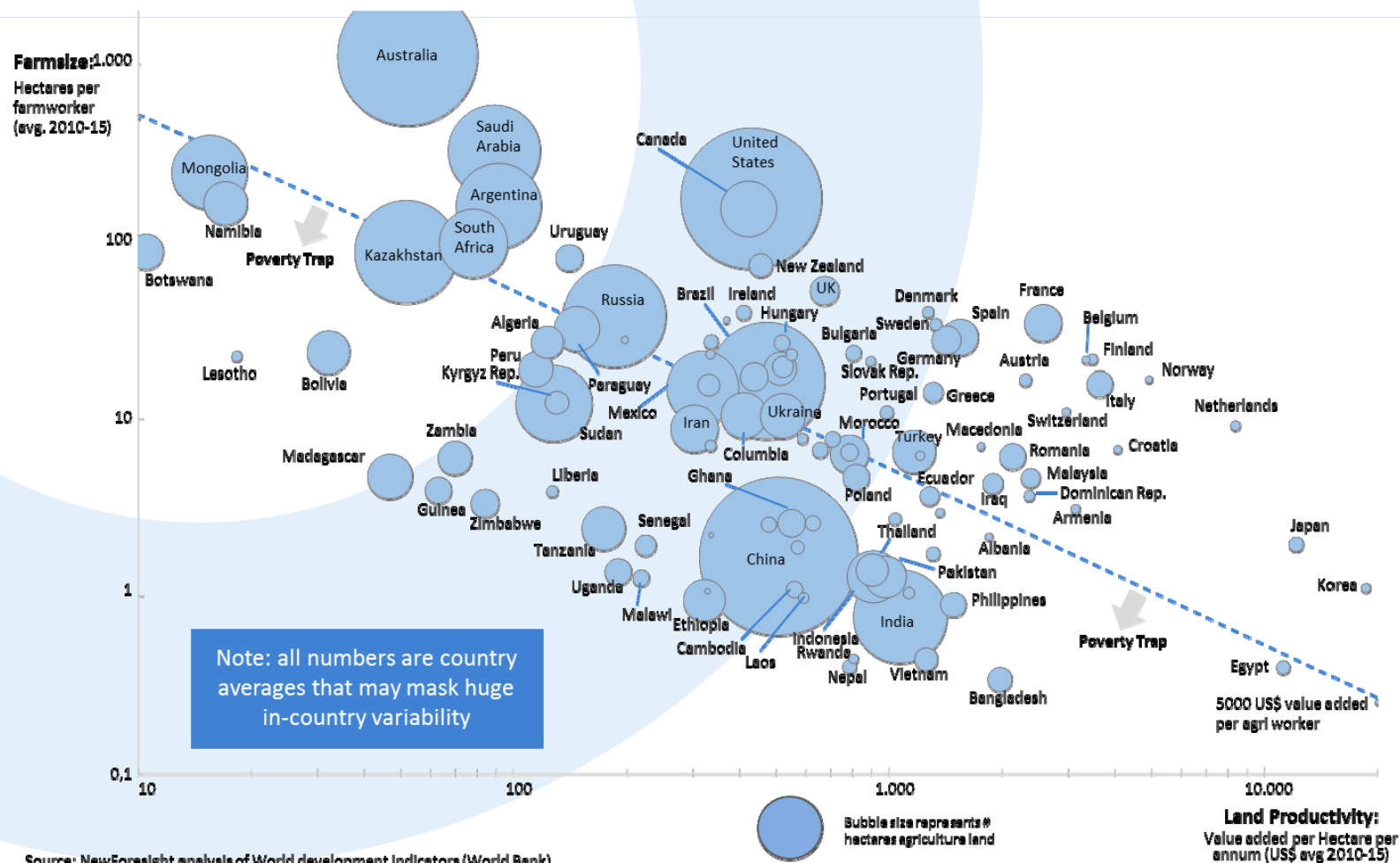


In developed countries, mostly by consumers and in foodservice

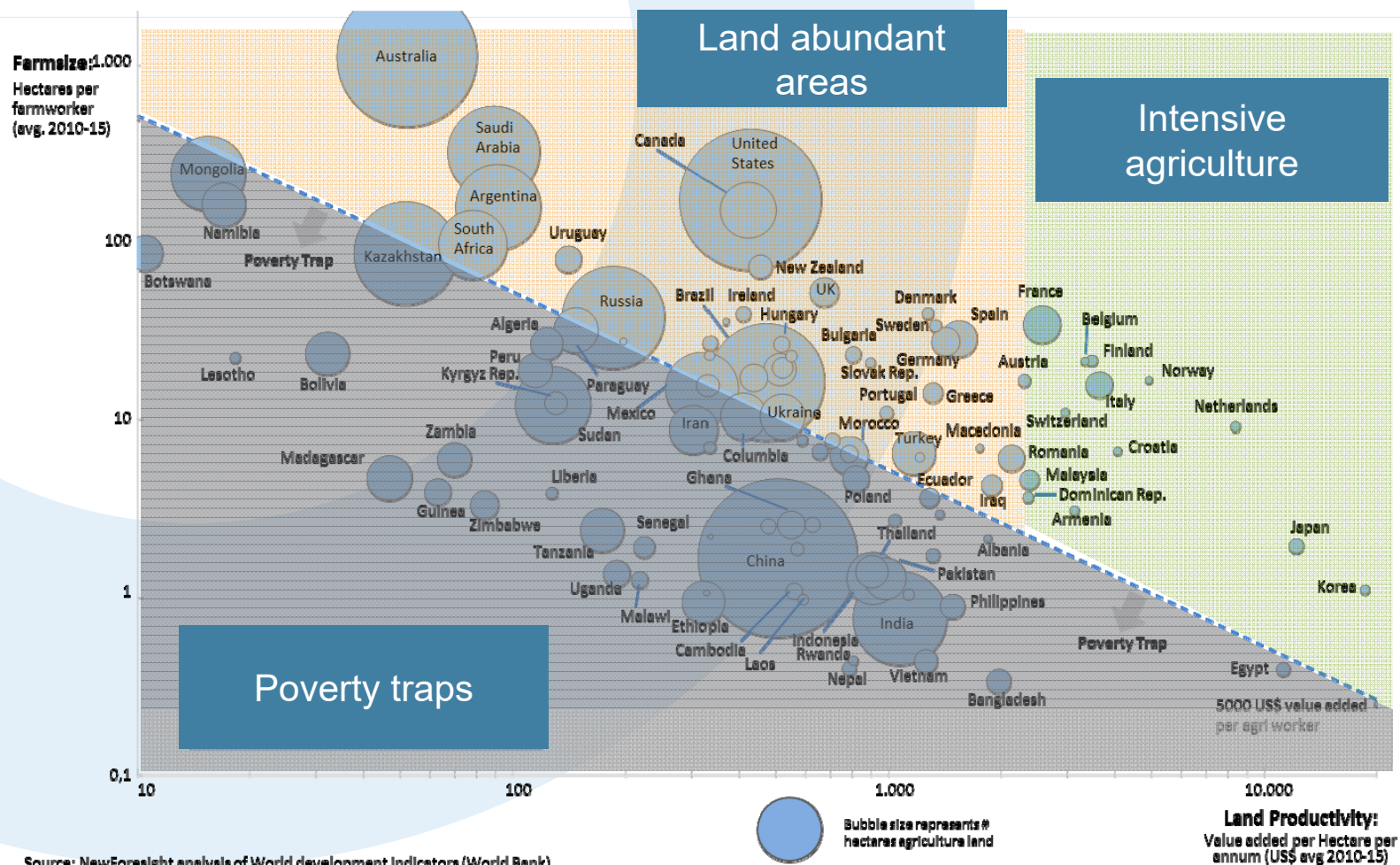
In developing countries, mostly upstream



Huge variability in farmer scale and in value added per hectare



Three archetypes of agricultural landscapes



Source: NewForesight analysis of World development indicators (World Bank)

Three agricultural landuse archetypes

Farmsize:
Hectares per
farmworker
(avg. 2010-15)

Land abundant areas:

- 5% of global agri workers,
- using 42% of agricultural land,
- living near 58% of forested area
- need to feed 20% of world population,
- generate 30% of agriculture value added

Poverty Traps:

- 94% of global agri workers (> 1 B today growing to 1,5 B by 2050),
- 56% of agriculture land and 78% of freshwater for agriculture,
- need to feed 74% of world population,
- generate 55% of agriculture value added
- highest prevalence of child labor
- significant gender inequality
- significantly compounded by fragmentation of land through inheritance, as well as insecure land tenure rights

Intensive Agriculture:

- 1% of global agri workers,
- 2% of agriculture land,
- need to feed 6% of world population,
- generate 15% of agriculture value added

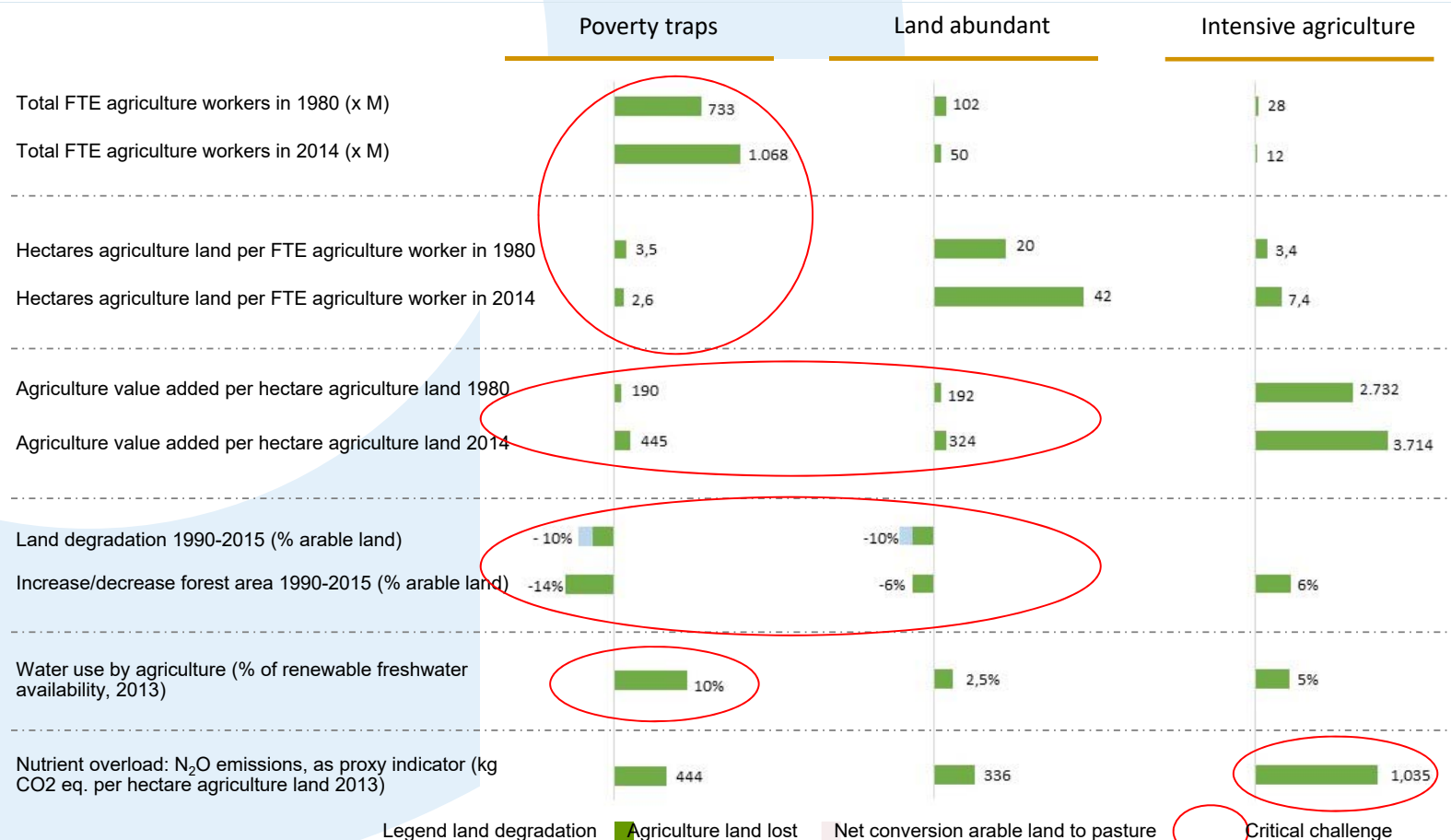
Note: all numbers are country averages that may mask huge in-country variability

Land Productivity:

Value added per Hectare per annum (US\$ avg 2010-15)

Source: NewForesight analysis of World development indicators (World Bank)

Challenges differ substantially between archetypes



In recent years, many strong initiatives have taken shape



Need to design credible pathways to resilient landscapes with restorative agriculture methods

example: 4 Returns®, 3 Zones, 20 Years model developed by Commonland



Return of Inspiration

Giving people hope and a sense of purpose.



Return of Social Capital

Bringing back jobs, business activity, education and security.



Return of Natural Capital

Restoring biodiversity, soil and water quality.

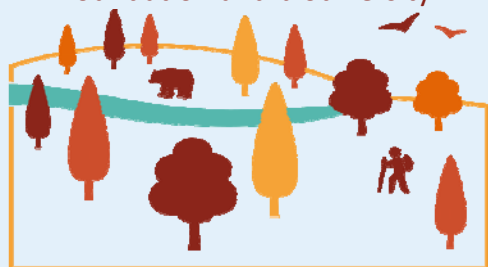


Return of Financial Capital

Realizing long-term sustainable profit.

NATURAL ZONE

Designed for restoring the ecological foundation and biodiversity



COMBINED ZONE

Designed for restoring the topsoil and delivering sustainable productivity



ECONOMIC ZONE

Designed for delivering high and sustainable economic productivity

