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INTERNATIONAL PANEL OF EXPERTS ON SUSTAINABLE FOOD SYSTEMS

An agro-ecological transition is crucial to tackle future climate challenges

EMILE A. FRISON

Our current food systems are not sustainable

Triple burden of malnutrition
- Hunger, micronutrient deficiencies, obesity &NCDs

Negative impact on health
- Pesticide poisoning, antibiotic resistance, nitrates in drinking water

Environmentally unsustainable
- Biodiversity losses, water pollution, soil degradation, GHG emissions, unsustainable use of natural resources, low resilience …

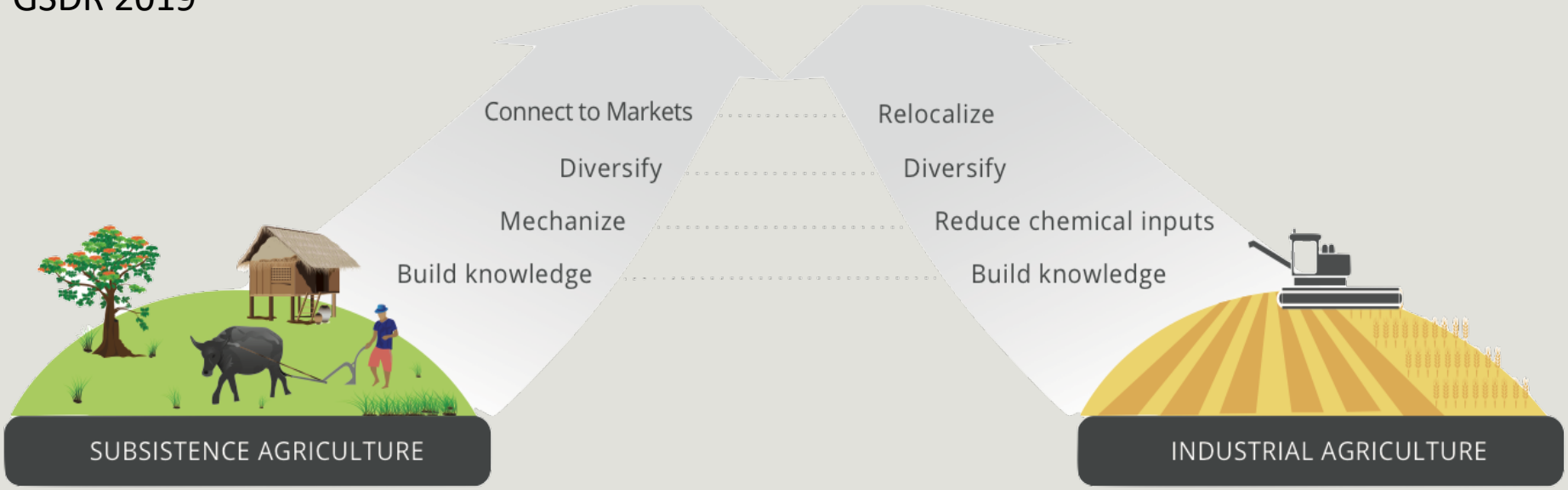
Social inequities
- Poverty, disempowerment …

Neglect of cultural values

→ Directly associated with current food systems based on industrial agriculture

We need transformational change

IPBES report on land degradation 2018
TEEB for Agriculture and Food 2018
IPBES report on Biodiversity 2019
HLPE report on Agroecology 2019
IDDRI report on Agroecology 2019
IPCC report on CC & land 2019
GCA climate adaptation 2019
GSDR 2019



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A different paradigm: diversified agroecological systems

- Economic
- Environmental
- Climate M & A
- Health
- Social
- Cultural

Agroecology is not just a set of agricultural practices, but is also about changing social relations, empowering farmers, adding value locally and privileging short value chains

Economic outcomes of diversified agroecological systems

- Total productivity → =
- Income → +
- Resilience and stability → +++

→ Agroecology: to achieve food security while addressing the climate challenges

Increased economic performance

Country	Indicator	Performance A Versus Conventional
Netherlands	Income/kg of milk	+ 110%
France	Income/family worker	+ 73%
Germany	Income/dairy cow	+ 60%
Italy	Income/hour	+ 15%
Ireland	Gross margins per hectare	+75-80%
Poland	Income/farmer	+ 53%
Spain	Gross Value Added	+ 35%

Jan Douwe van der Ploeg, et al., Journal of Rural Studies, https://doi.org/10.1016/j.jrurstud.2019.09.003

Agroecology in India: Zero Budget Natural Farming

- 500,000 farmers in Andhra Pradesh
- 60,000 farmers in Karnathaka
- Productivity increased by 20% on average
- Net income increased by 50%

Zareen Pervez Bharucha, Sol Bermejo Mitjans & Jules Pretty, 2020

ZBNF includes the use of cow based microbial mixtures, mulching, improving functional on farm bio-diversity, enhancing soil microbial activity, agro-forestry systems, on-farm water conservation, cover cropping among others

Environmental outcomes of diversified agroecological systems

- Keep/put carbon in the soil: turns agriculture into a solution rather than a problem
- Boost biodiversity
- Restore degraded land
- Improve ecosystem services:
  - Water and nutrient cycling
  - Pollination
  - Pest and disease management

Nutrition and health outcomes

- Avoids the negative health outcomes of industrial agriculture: pesticides/antibiotics/nitrates
- Diverse, healthy diets
- Increased levels of beneficial nutrients, such as omega 3 fatty acids, and antioxidants such as polyphenols…
- http://www.ipes-food.org/images/Reports/Health_FullReport.pdf

Social and Cultural outcomes

- Social:
  - More employment
  - Employment throughout the year
  - Closer links with consumers

- Cultural:
  - Cultivation of diversity of traditional crops
  - Integration of traditional knowledge


1 NO POVERTY
2 ZERO HUNGER
3 GOOD HEALTH AND WELL-BEING
4 QUALITY EDUCATION
5 GENDER EQUALITY
6 CLEAN WATER AND SANITATION
7 AFFORDABLE AND CLEAN ENERGY
8 DECENT WORK AND ECONOMIC GROWTH
9 INDUSTRY, INNOVATION AND INFRASTRUCTURE
10 REDUCED INEQUALITIES
11 SUSTAINABLE CITIES AND COMMUNITIES
THE GLOBAL GOALS
For Sustainable Development
12 RESPONSIBLE CONSUMPTION AND PRODUCTION
13 CLIMATE ACTION
14 LIFE BELOW WATER
15 LIFE ON LAND
16 PEACE AND JUSTICE STRONG INSTITUTIONS
17 PARTNERSHIPS FOR THE GOALS

Agroecology for adaptation

"Adoption of agroecological practices could provide resilience for future shocks, spread farmer risk and mitigate the impact of droughts"

"In summary, increasing the resilience of the food system through agroecology and diversification is an effective way to achieve climate change adaptation (*robust evidence, high agreement*)."

IPCC, 2019: Special Report on Climate Change and Land (SRCCL), Ch5 p51

Agroecology for adaptation

Report of the Global Commission on Adaptation:

"Soil erosion and losses of soil carbon, among other threats to soil quality … can potentially be addressed with agroecological approaches"

"Governments to adopt measures to conserve land and water resources at the landscape scale, including agroecological approaches"

"Support expanded access to and use of adaptive technologies and agroecological practices that build resilience of farms and ecosystems"

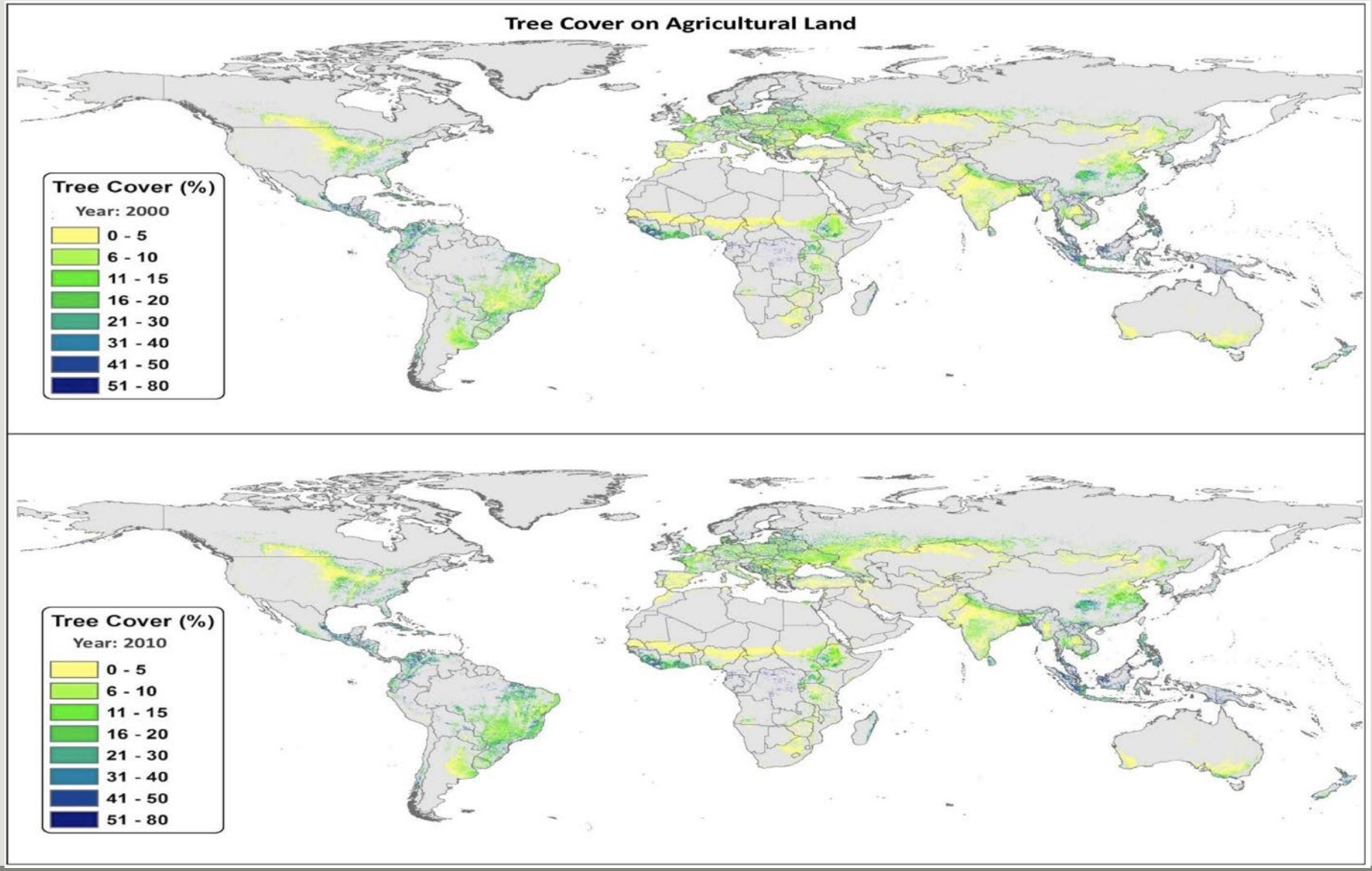
Agroecology for climate mitigation

IPPC: "*Biological approaches to carbon capture are the most promising prospects for negative emissions*"

- Protect current forests
- Restore degraded lands
- Increase tree cover on agricultural lands through agroforestry
- Increase the biomass production of pasturelands

→ This can be achieved through agroecology

Between 2000 to 2010, there was a 2% increase in tree cover on agricultural lands globally,



Potential of agroforestry

The current global annual increase in tree biomass is now over 0.74 billion tons CO2 equivalents.

Generalizing of agroforestry to:

- double the annual accumulation of carbon through agroforestry by 2035 to 1.5 billion tons/yr
- increase it to a rate of 3 billion tons by 2050

Agroforestry could then more than offset all other agricultural GHG emissions

Farmer-Managed Natural Regeneration of trees is being massively upscaled on the croplands in Niger & Mali & Senegal

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Gliricidia shrubs intercropping in crop production

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Agricultural soils as a sink: **the 4 per 1000 initiative**

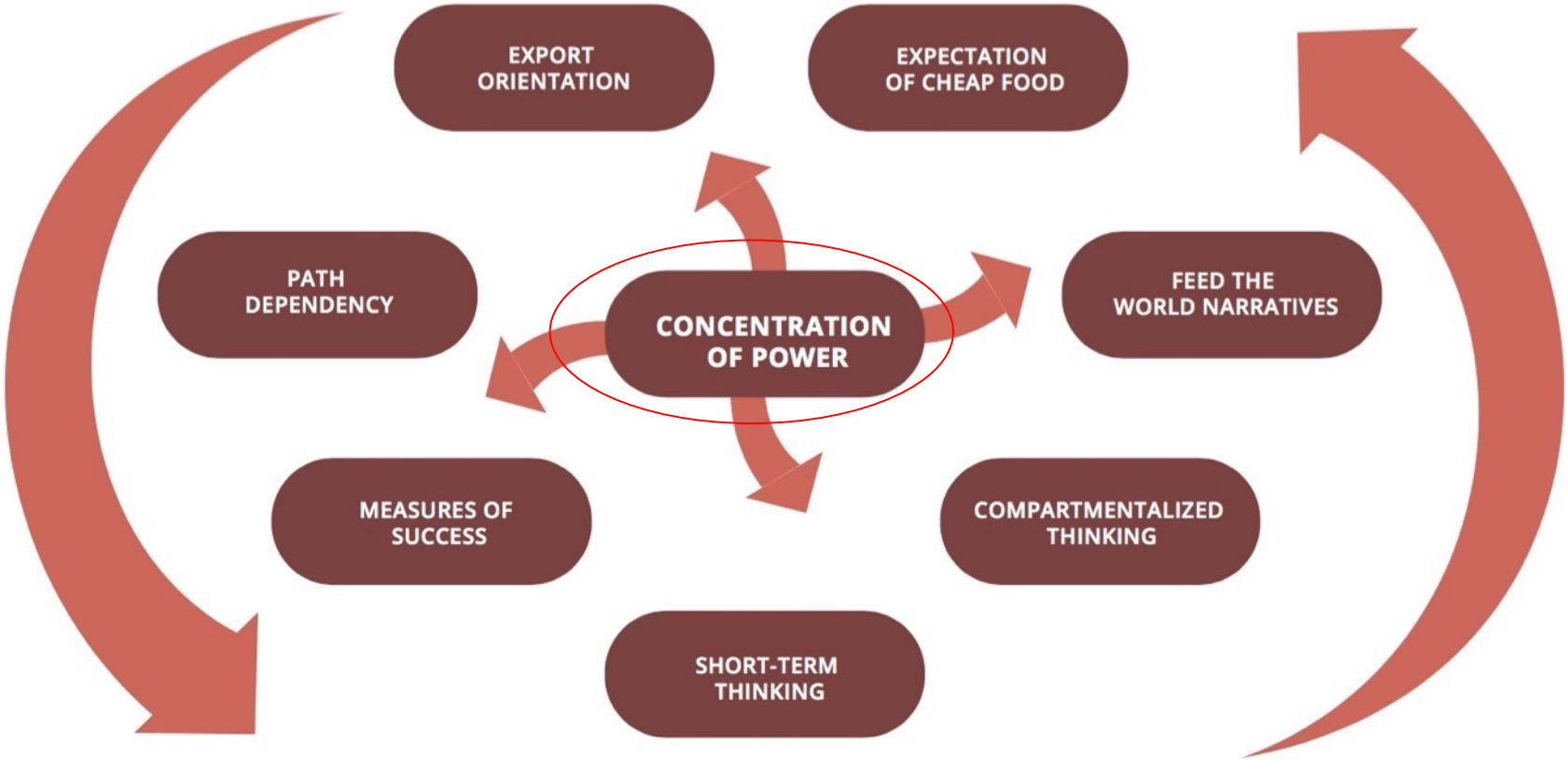
Global soils contain 2 to 3 times more carbon than the atmosphere.

"If this carbon level increased by 0.4%, or 4 ‰ per year, in the first 30-40 cm of soil, the annual increase of carbon dioxide (CO2) in the atmosphere would be significantly reduced"

"Encourage agro-ecological practices that increase the quantity of organic matter in soils"

(4 per 1000" Initiative at COP 21)

What prevents change: 8 Lock-ins

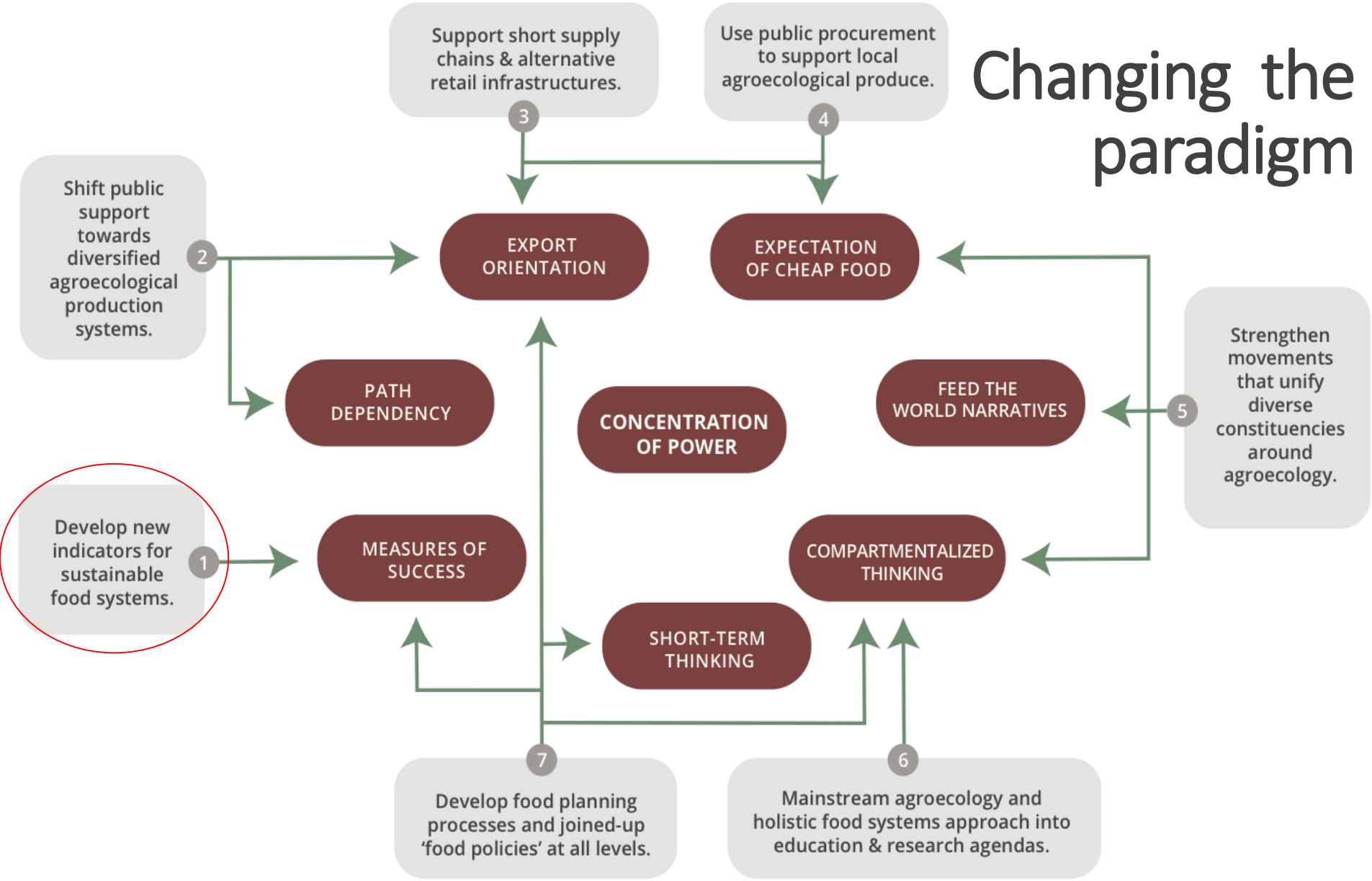


Market concentration in multiple sectors

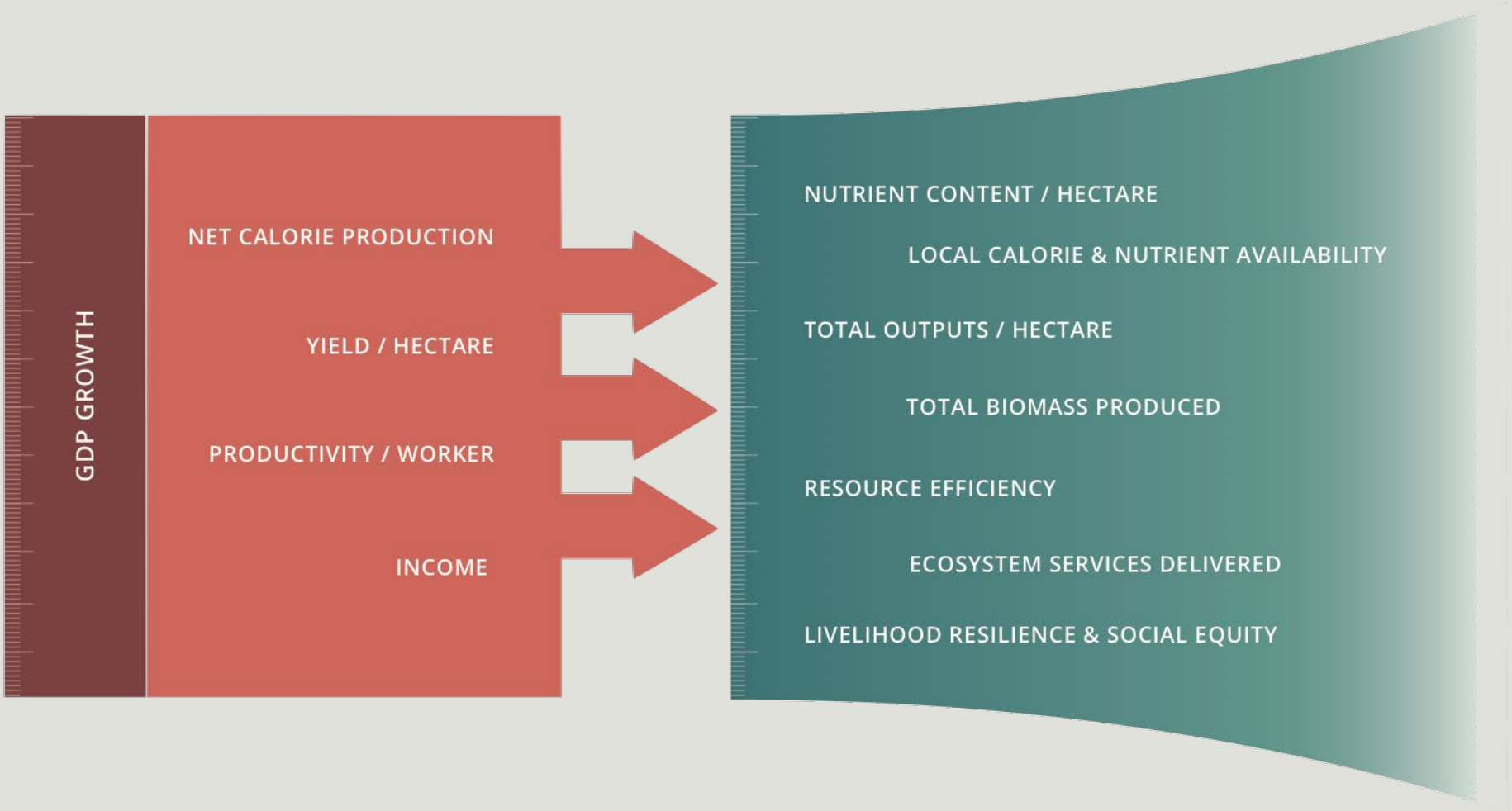
- **3 companies control 60% of commercial seed market.**
- **7 companies control majority of fertilizer sales.**
- **3 companies share 71% of agrochemical market.**
- **4 firms account for 97% of private R&D in poultry.**
- **4 firms control up to 90% of the global grain trade.**


Kraft
Spin-off
Mondelēz International
Coca-Cola
PEPSICO
Yum!
Spin-off
Kellogg's
MARS
WRIGLEY
Nestlé
L'OREAL
P&G
Johnson & Johnson
Unilever
© 2012 convergencealimentaire.info

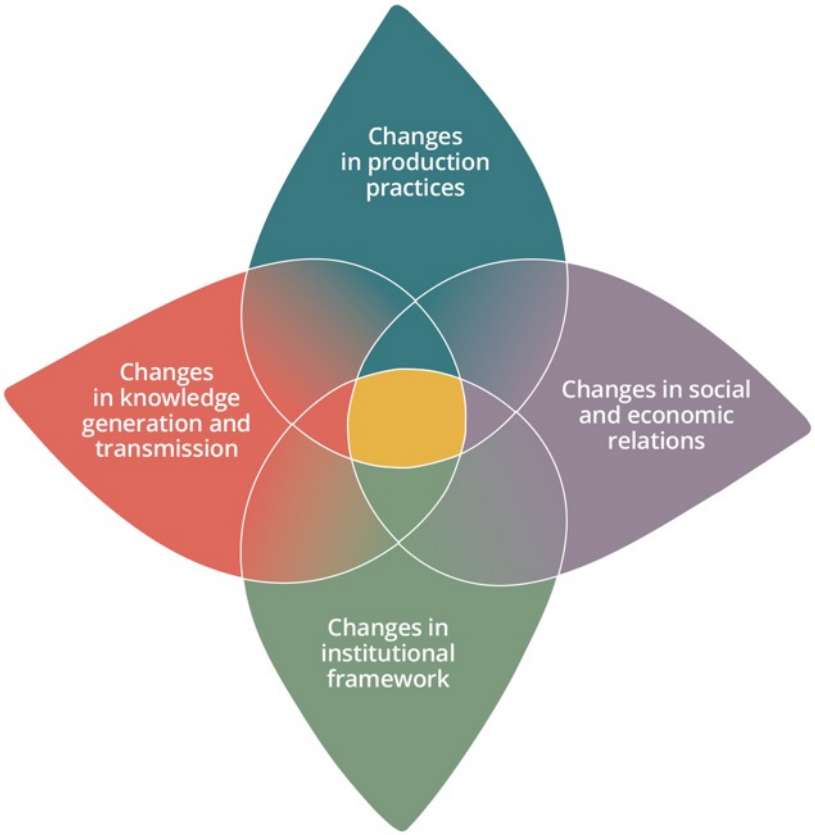
Changing the paradigm

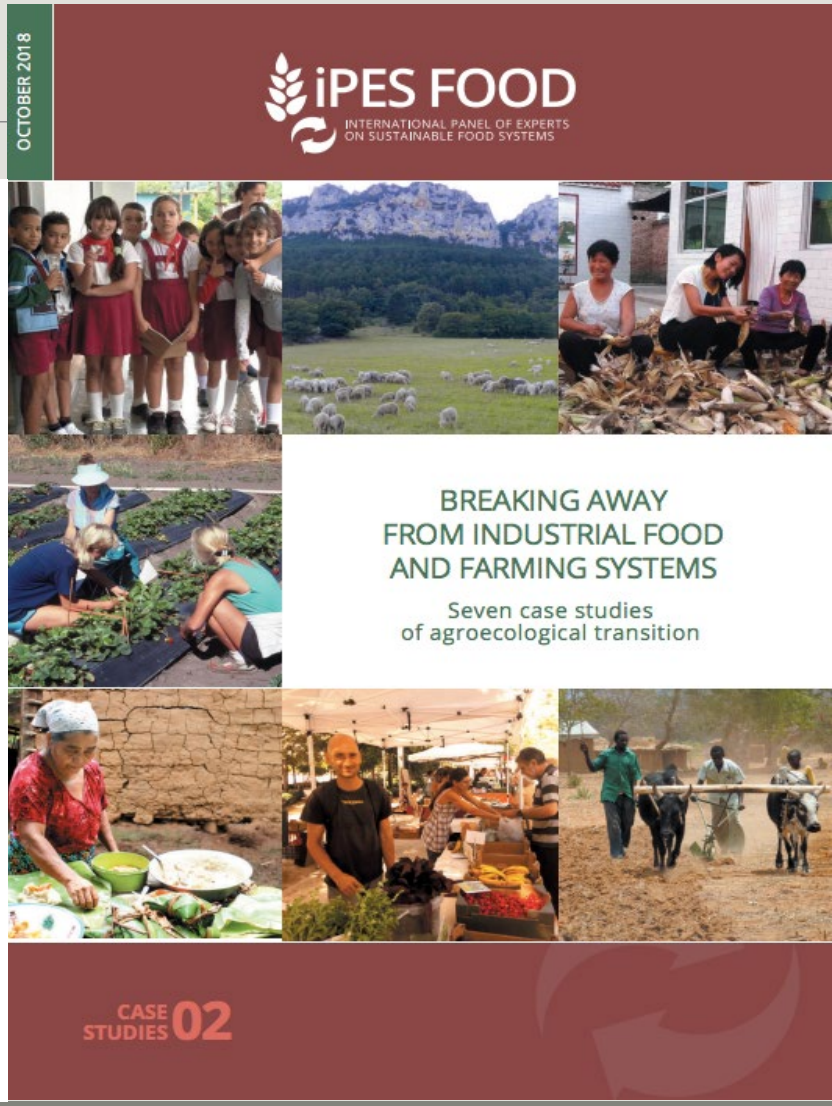


Measuring what matters

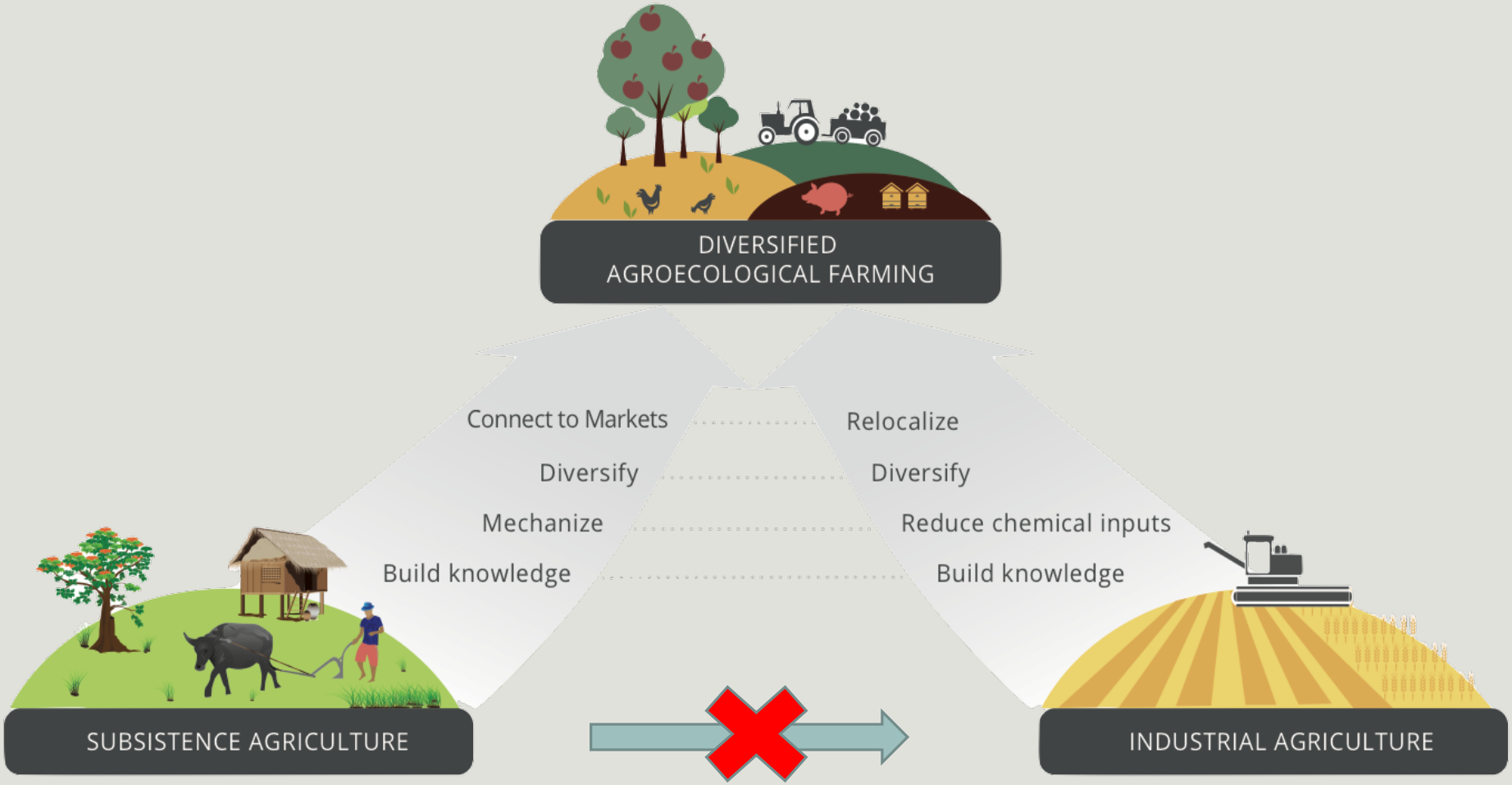


The transition is already underway…





Different pathways, common goal



Thank you!

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