FOOD 2030

SUSTAINABLE AND CIRCULAR FOOD SYSTEMS

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SYSTEMIQ

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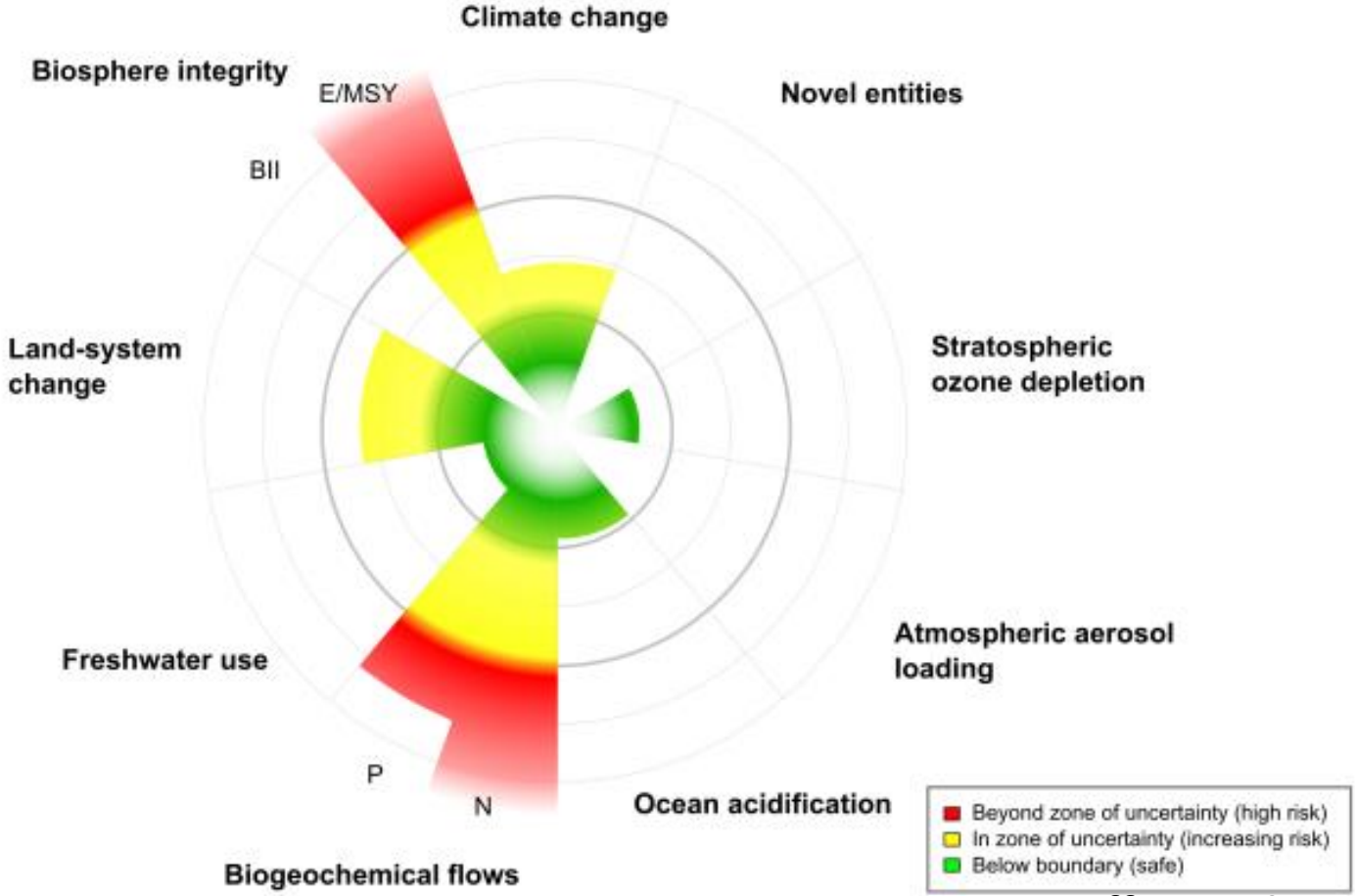
International Resource Panel

20th CENTURY
THE GREAT ACCELERATION

UNEP

- *Growth of population by a factor 3.7*
- *Annual extraction of construction materials grew by a factor of 34, ores and minerals by a factor of 27, fossil fuels by a factor of 12, biomass by a factor of 3.6*
- *Total material extraction grew by a factor of 8*
- *GHG emissions grew by a factor of 13*
- *Globalisation*

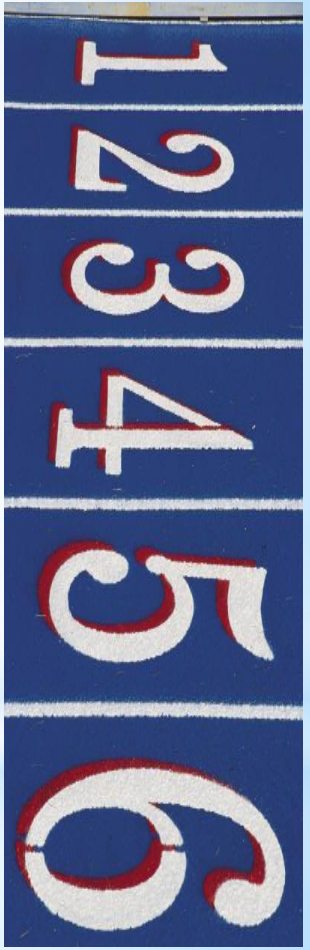
“PLANETARY BOUNDARIES”



Source: Steffen et al. 2015

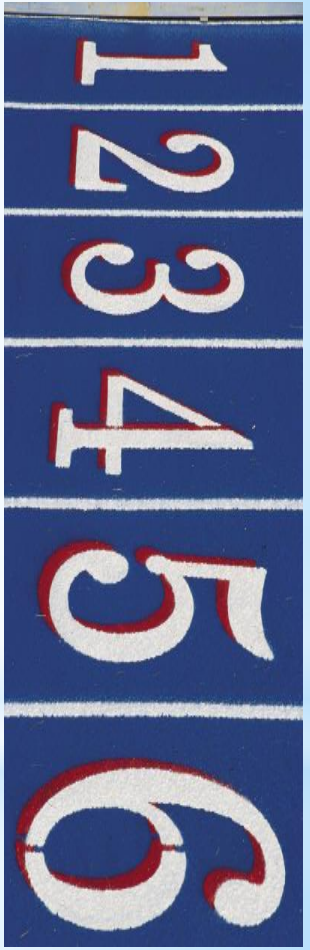
21th CENTURY
FACTS WE CAN NOT IGNORE

- *Population growth (2050 – 9.7 billion)*
- *Per capita consumption growth (McKinsey estimates 3 billion consumers moving from low to middle class consumption till 2030)*
- *Example: China used more cement in the three years 2011-2013 than the USA used in the whole 20th Century*



21th CENTURY
FACTS WE CAN NOT IGNORE

- *Poverty and social inequality (Oxfam Report: 62 people own the same as half of the world and the richest 1% is more wealthy than the rest of the world)*
- *60% of ecosystems already degraded or used unsustainably*
- *Increasing evidence of the climate change threat*



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Food systems are at the heart of the 2030 agenda for sustainable development.

The food we grow, harvest, process, trade, transport, store sell and consume is the essential connecting thread between people, prosperity, and planet.

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SOME WORRYING FACTS

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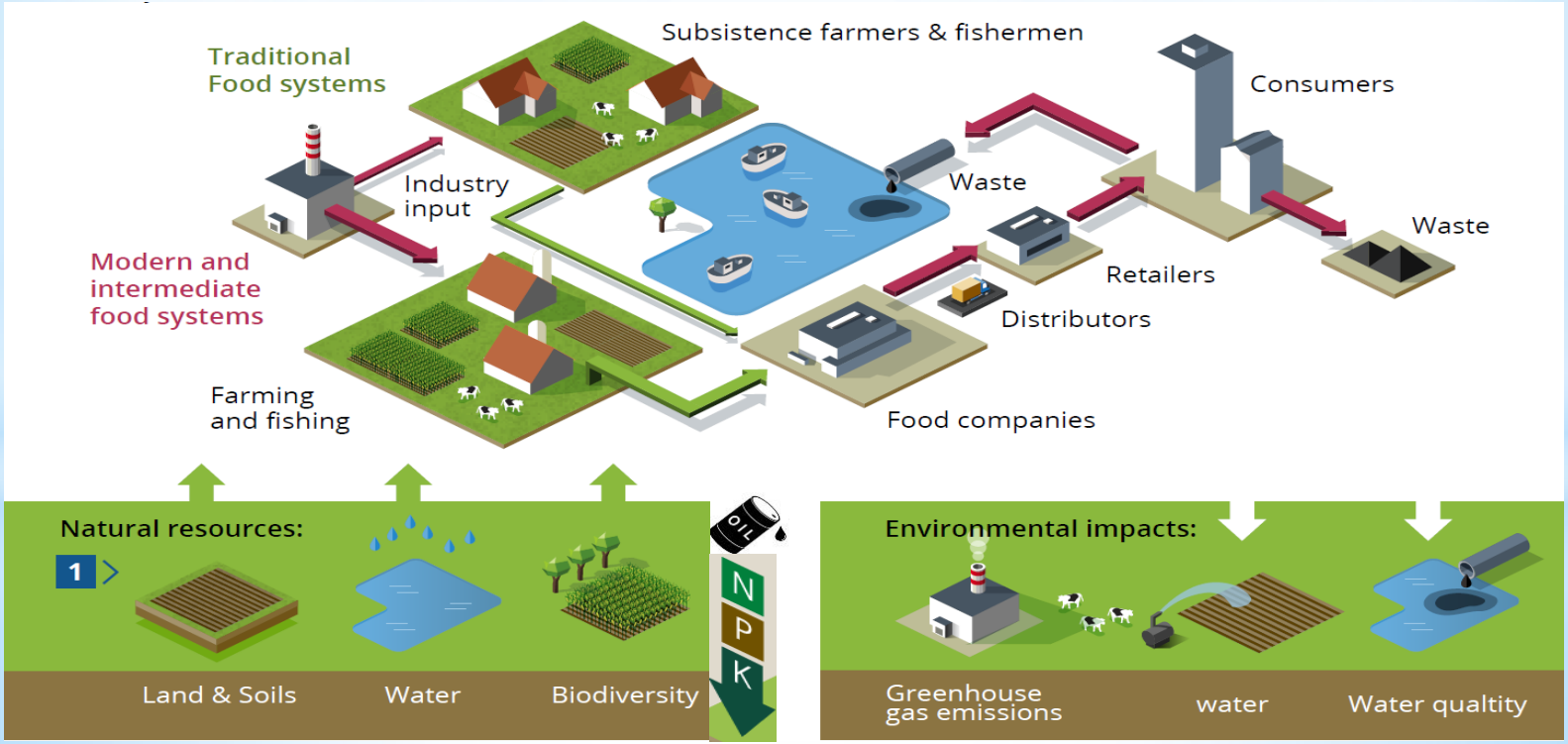
- *33% of soils is moderately to highly degraded due to erosion, nutrient depletion, acidification, salinization, compaction and chemical pollution;*
- *60% of global terrestrial biodiversity loss is related to food production, ecosystem services supporting food production are often under pressure;*
- *Of the total input in the form of nitrogen - and phosphorus fertilizers, only 15-20% actually reaches the consumers' plates.*
- *Globally, food systems account for around 24% of the global greenhouse gas emissions.*
- *Nearly 800 million people are hungry, over 2 billion suffer from micronutrient deficiencies … while over 2 billion people are obese*

FOOD SYSTEMS DIFFER WIDELY GLOBALLY

often interconnected – and depending on the same resources



WHERE

TO FOCUS RESEARH AND INNOVATION EFFORTS TO SUPPORT THE TRANSITION TO A SUSTAINABLE AND CIRCULAR FOOD SYSTEMS?

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CRITICAL SHIFTS TOWARDS RESOURCE-SMART FOOD SYSTEMS

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1. *Reduce food loss and waste*.
2. *Reorient away from resource-intensive products such as meat, 'empty calories' and ultra-processed food; and rethink the 'food environment' (the physical and social surroundings that influence what people eat, especially relevant in urban areas) to facilitate consumers adopting more healthy and sustainable diets.*
3. *Reframe thinking by promoting 'resource-smart food systems' in which 'Climate-Smart Agriculture' (CSA) plays one part, and search for linkages to new dominant values such as 'wellbeing' and 'health'.*
4. *Reconnect rural and urban, especially in developing regions, where urban actors (e.g. supermarkets) could invest in regional supply chains and improve the position of smallholders.*

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CRITICAL SHIFTS TOWARDS RESOURCE-SMART FOOD SYSTEMS

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5. Revalue the pricing of environmental externalities, reinforce legislation to prevent pollution and other forms of environmental degradation and remove subsidies that provide disincentives for better resource efficiency.
6. Reconnect urban consumers with how their food is produced and how it reaches their plates, and inform them about both the health and environmental consequences of dietary choices, protect peri-urban zones around cities and use them for local food production.
7. Research the current functioning of the local, national or regional food systems and their impact on national resources.
8. Reconnect mineral flows between urban areas and rural areas, as well as between crop and livestock production.

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CRITICAL SHIFTS TOWARDS RESOURCE-SMART FOOD SYSTEMS

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9. Reform policies on land and water rights, develop and implement policies at all levels of governments (multilateral, national and local) to enable better resource management and encourage synergistic 'adaptive governance' by the wide range of non-state actors (i.e. businesses and civil society) within the food system.
10. Reinvigorate investment in rural infrastructure, education, training, technology, knowledge transfer and payments of environmental services.
11. Research and innovate, to decouple food production from resource use and environmental impacts, and to replace certain inputs (such as pesticides) with ecosystem services.
12. Rebuild feedback loops by functional and informative monitoring and reporting, at various levels, such as countries, cities and companies.

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CONCENTRATION OF POWER IN THE WESTERN-TYPE FOOD CHAIN

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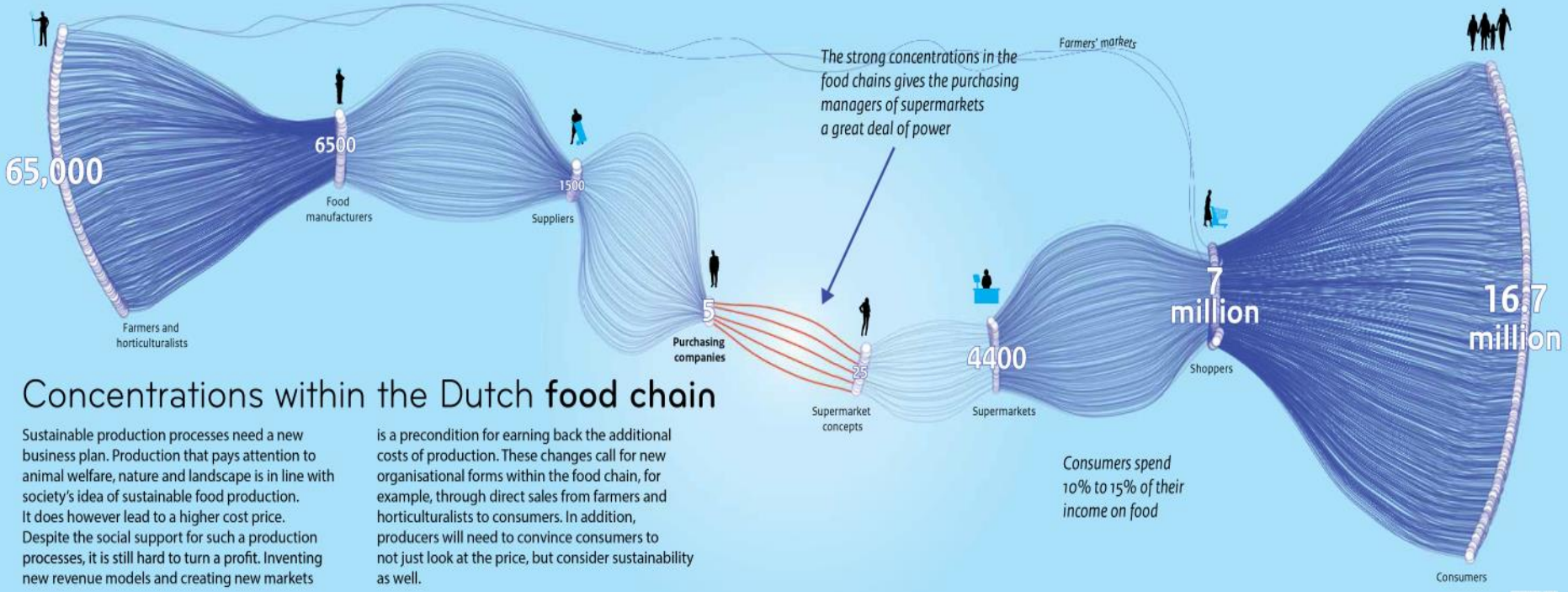
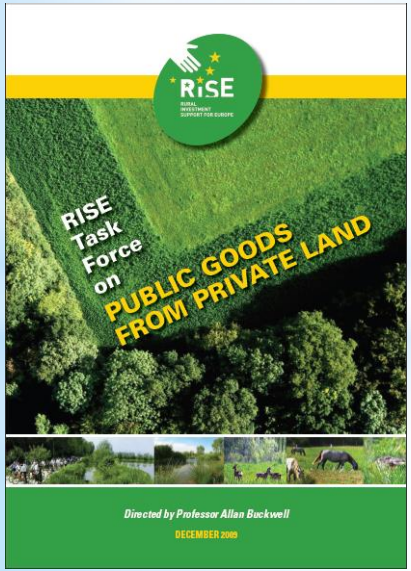


Concentrations within the Dutch **food chain**

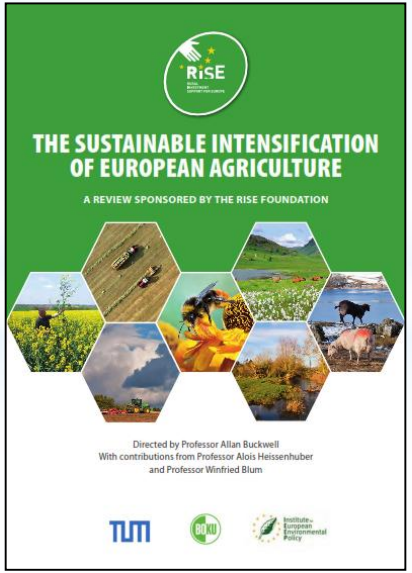
Sustainable production processes need a new business plan. Production that pays attention to animal welfare, nature and landscape is in line with society's idea of sustainable food production. It does however lead to a higher cost price. Despite the social support for such a production processes, it is still hard to turn a profit. Inventing new revenue models and creating new markets is a precondition for earning back the additional costs of production. These changes call for new organisational forms within the food chain, for example, through direct sales from farmers and horticulturalists to consumers. In addition, producers will need to convince consumers to not just look at the price, but consider sustainability as well.

THREE RISE REPORTS

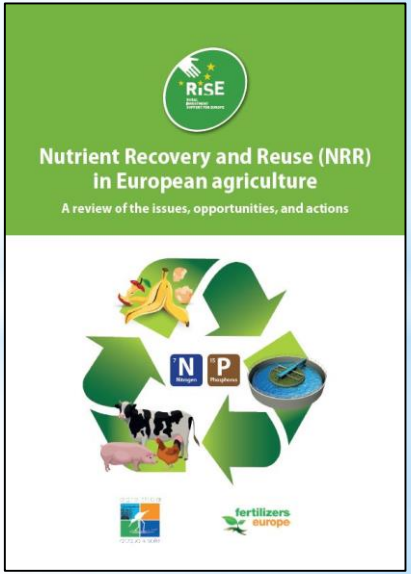
providing policy recommendations to address agricultural and environmental challenges in Europe



2009



2014



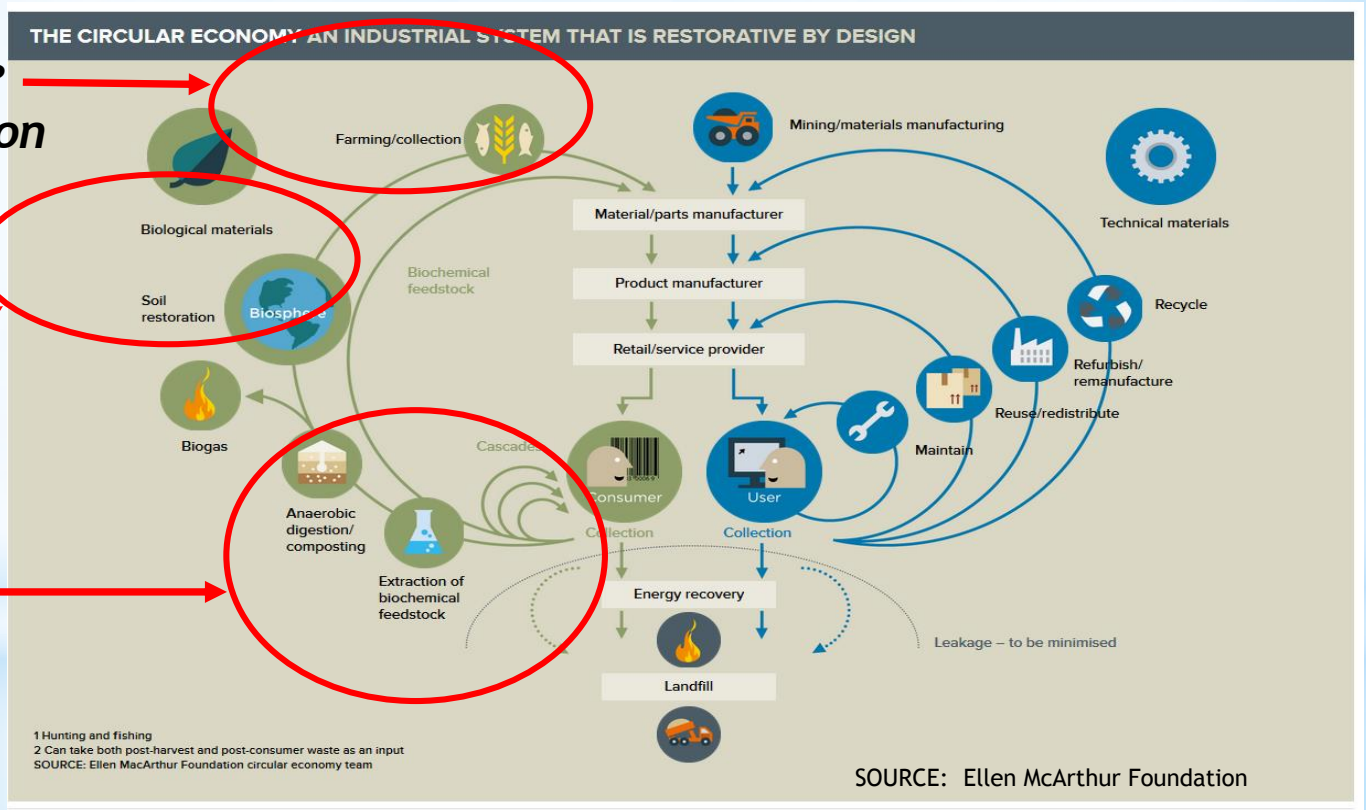
2016

AGRICULTURE AND THE CIRCULAR ECONOMY

Sustainable Intensification

Public goods

Nutrient Recovery and Reuse



SOURCE: Ellen McArthur Foundation

ACHIEVING ‘GROWTH WITHIN’

10 CE investment opportunities to accelerate Europe’s circular economy transition

Food CE
Investment
Opportunities

Description of next wave Circular Economy investment themes

Cross-cutting opportunity

		Description	Case examples
Mobility	Integrating mobility systems	• Fully integrate the public transport system with shared vehicles both digitally as well as through the upgrading of transport infrastructure	DriveNow, MAAS GLOBAL, switchh
	Designing and producing circular cars	• Design and produce cars made for looping with durable materials tracked E2E, that would also be made for sharing and/or using clean technologies	BMW, ZIPCAR, UBER
	Ramping up car remanufacturing	• Rollout remanufacturing of car components at scale	RENAULT, AUTOCRAFT, Li
Food	Scaling regenerative agriculture	• Shifting towards an EU agricultural system that regenerates the soil and revitalizes ecosystems	SLM, MilkFlex
	Closing nutrient loops	• Scaling nutrient and energy recovery from various waste streams, using anaerobic digestion, biorefinery and other technologies	HARVEST, CSS
	Scaling urban farms	• Scaling hydroponic, aquaponic and aeroponic farms in urban areas	AeroFarms, AGRICOOL
	Next-wave protein sources	• Provide options allowing for a dietary shift to more vegetable-based proteins, and to more efficient higher quality animal-based proteins	innova feed
Built Environ-ment	Designing and producing circular buildings	• Design and produce multi-usage highly modular and energy positive buildings made of durable non-toxic materials	PARK 20|20, Ministry of Environment and Food of Denmark
	Looping buildings	• Ramp up recycling and remanufacturing of building materials	GYPSUM RECYCLING, danogips
	Scaling circular urban built environment	• Scale circular management of energy, waste, water and the open space using urban planning, information sharing and innovative technologies	EcoDistricts

Digital innovations (IoT, applications, analytics)

Material tracking system through secondary material market

Source: SystemiQ

SYSTEMIQ

SUSTAINABLE BUSINESS COMMISSION: QUANTIFYING THE SDG PRIZE

Business opportunities in food system linked to the SDGs (draft)

Challenge	Business opportunities	Relevant SDGs	Societal outcomes
Food security	▪ Sustainable aquaculture ▪ Bottom of the pyramid ▪ Technology in large scale farms ▪ Urban agriculture		▪ Ensure food security ▪ **Zero** malnutrition impacting over **800 million** people that are hungry
Poverty alleviation	▪ Technology in smallholder farms ▪ Restoring degraded land		▪ Potential to **double** incomes of **1.5 billion** smallholder farmers
Addressing climate change	▪ Dietary switch ▪ Cattle intensification		▪ Reduction in the **24%** of GHG emissions that come from the food system ▪ **Zero** deforestation
Reducing waste	▪ Micro irrigation ▪ Reducing food waste in the value chain ▪ Reducing consumer food waste ▪ Reducing packaging waste ▪ Dietary switch ▪ Restoring degraded land		▪ Agricultural water consumption falling by **15%** ▪ **Halving** of consumer food waste ▪ Reduction of food wasted in the supply chain ▪ Plastic waste reduced in the oceans ▪ **Zero** further degradation of cropland
Better health & well-being	▪ Product reformulation ▪ Dietary switch		▪ Global obesity in 2030 falls from projected 41% of population to Japanese levels (5%), implying over **3 billion** less people that are obese

Source: McKinsey Global Institute; FAO; WHO; Ellen MacArthur Foundation; AlphaBeta Team analysis

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TO CONCLUDE …

WE HAVE TO FIX A BROKEN COMPASS

(PAVAN SUKHDEV)

NEW ECONOMIC MODEL BASED ON SCP INTEGRATING ALL THREE PILLARS OF SUSTAINABILITY IS

NECESSARY AND UNAVOIDABLE

POLICY APPROCH

ALL POLICIES SHOULD BE SYSTEMATICALLY ADJUSTED

Beyond GDP, natural capital accounting, corporate sustainability reporting, tax policy, state aid, public procurement, product design, use of banking potential, R and D and innovation, investments in infrastructure, education, consumers awareness, new business models, support to SMS, …

ACTIVE DIALOGUE WITH ALL STAKEHOLDERS IS NECESSARY

Transition is only possible if we actively involve those loosing in the process of transition

GOVERNANCE

Marco Steinberg

GOVERNEMENTS SHOULD BE STRUCTURED ARROUND THE PROBLEMS
(Integration of policies, for example sustainable food chain)

WE NEED TO MOVE POLICY FROM INNOVATIVE PARTS TO INNOVATIVE WHOLES
(Many innovative parts do not create innovative wholes and no one in the government is looking at the big picture)

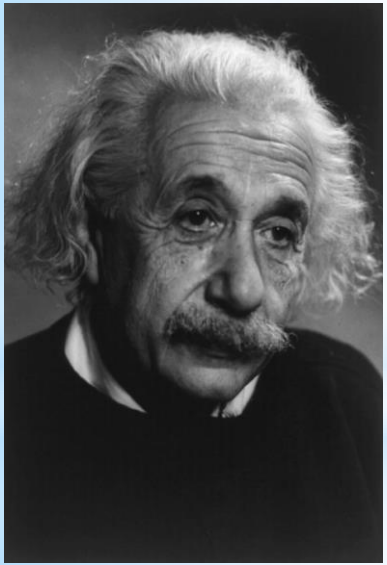
ADMINISTRATIVE ENDEAVOUR SHOULD BE CHANGED TO A CREATIVE ENDEAVOUR
(Danger of administrative approach is that one might improve the wrong things)

EMBEDDING A NEW CAPABILITY, ENGAGING EVERYBODY AND THE OWNERSHIP
(We should replace the complaints box with ideas box, we should aim at ”impossible” projects and force ourselves to rethink the principles)

A NEW STRUCTURE, A NEW LOGIC, A NEW CULTURE, A NEW SOCIAL CONTRACT

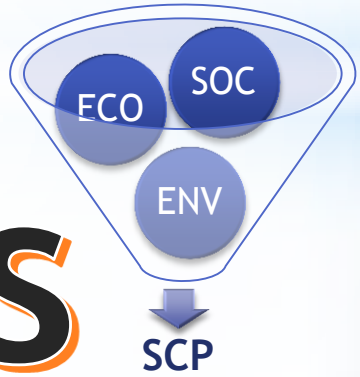
ABOUT INNOVATIVE AND ALTERNATIVE DELIVERY MECHANISMS …

ALBERT EINSTEIN



WE CAN NOT SOLVE OUR PROBLEMS WITH THE SAME THINKING WE USED WHEN WE HAVE CREATED THEM

INSANITY – DOING THE SAME THINGS OVER AND OVER AGAIN AND EXPECTING DIFFERENT RESULTS



SDGs

GIUSEPPE TOMASI DI LAMPEDUSA

EVERYTHING HAS TO CHANGE TO REMAIN THE SAME

THANK YOU