CARDIFF UNIVERSITY
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Sustainable Places Research Institute
Sefydliad Ymchwil Mannau Cynaliadwy

Sustainable place-making and sustainability science the new city region nexus: back to the biosphere.

Terry Marsden

Approach

- Global, regional and local agenda
- Key concepts in sustainable place-making
- Research implications: re-designing natures across urban- rural regions
- Health as integrator
- Planetary health (Horton, 2016)
- Biosensitivity
- All hinges in real transdisciplinarity (in and though places).

Sustain Sci
DOI 10.1007/s11625-014-0287-z

SPECIAL FEATURE: ORIGINAL ARTICLE

Pathways towards sustainable landscapes

Natural powers: from the bio-economy to the eco-economy and sustainable place-making

Terry Marsden · Francesca Farioli

Received: 20 October 2014 / Accepted: 16 December 2014

Abstract The current intensification of efforts to develop post-carbon solutions to the global food/energy security problems is developing a highly contested policy/technology/production/consumption arena. The paper examines how current attempts to resolve these new productivist priorities are embedded in combinations of sustainability, security, sovereignty and resource governance concerns. These con-

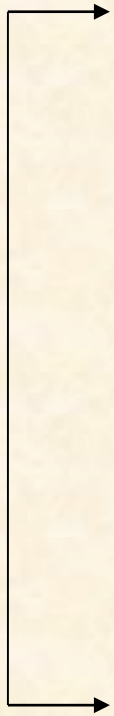
Keywords Bio-economy · Eco-economy · Post-normal science · Sustainable place-making · Agri-food · Security · Rural–urban development

Introduction: back to the bio-sphere

Approach

The Transition:

- Sustainability science
- Sustainable place making
- The framing and coproduction of science
- Governance models and Planning



L E N S E S

- Rural and Urban Communities
- Agri food systems and the bio economy

(Global, Regional, Local)

Goal 11: Make cities inclusive, safe, resilient and sustainable - facts

- more than 50% people (>3.5 billion people) live in cities now
- expected to rise to almost 60% by 2030
- 95% of urban expansion will take place in developing world
- 828 million people live in slums today, and rising
- cities occupy just 3% of the land, but account for 60-80% of energy consumption and 75% of carbon emissions
- pace of urbanization is exerting pressure on fresh water supplies, sewage, the living environment, and public health etc.
- *But* the high density of cities can bring efficiency gains and technological innovation while reducing resource and energy consumption

Goal 11 - targets

- ensure access for all to adequate, safe and affordable **housing** and basic services and upgrade slums
- provide access to safe, affordable, accessible and sustainable **transport** systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons
- enhance inclusive and sustainable **urbanization** and capacity for participatory, integrated and sustainable human settlement planning and management in all countries
- strengthen efforts to protect and safeguard the world's **cultural and natural heritage**
- significantly reduce the losses to life and economy caused by **disasters**, including water-related disasters, with a focus on protecting the poor and people in vulnerable situations
- reduce the adverse per capita **environmental** impact of cities, paying attention to air quality and waste management
- universal access to safe, inclusive and accessible, green and **public spaces**
- support positive economic, social and environmental links between urban, peri-urban and rural areas by strengthening national and regional **development planning**
- cities and human settlements should adopt and implement **integrated** policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change, resilience to disasters (Sendai Framework for Disaster Risk Reduction 2015-2030)
- support **least developed** countries in building sustainable and resilient buildings utilizing local materials

New Urban Agenda

offers guidelines on a range of *enablers* that can further cement the relationship between urbanization and sustainable development

- **development enablers** harness the multiple, often chaotic forces of urbanization in ways that can generate across-the-board growth: national urban policy; laws, institutions and systems of governance; and the broad urban economy.
- **operational enablers** bolster sustainable urban development — when implemented, they result in better outcomes for patterns of land use, how a city is formed and how resources are managed: the local fiscal systems, urban planning, and basic services and infrastructure.

Well-being and Future Generations (Wales) Act 2015.

- Public Bodies must apply the **Sustainable Development Principle**: 'to act in a manner which seeks to ensure that the needs of the present are met without compromising the ability of future generations to meet their own needs'.
- **Long term**: the importance of balancing short term needs with the need to safeguard the ability to also meet long-term needs.
- **Prevention**: How acting to prevent problems occurring or getting worse may help public bodies meet their objectives.
- **Integration**: consider how the public bodies well-being objectives impact upon each of the well being goals of: prosperous Wales, resilience, health, equality, social cohesion, vibrant culture and language, meeting global commitments .
- **Collaboration**: Acting in collaboration with others that can help the body meet its well-being objectives.
- **Involvement**: wide diverse involvement at an area level: area well being plans and public sector service boards, performance monitoring.

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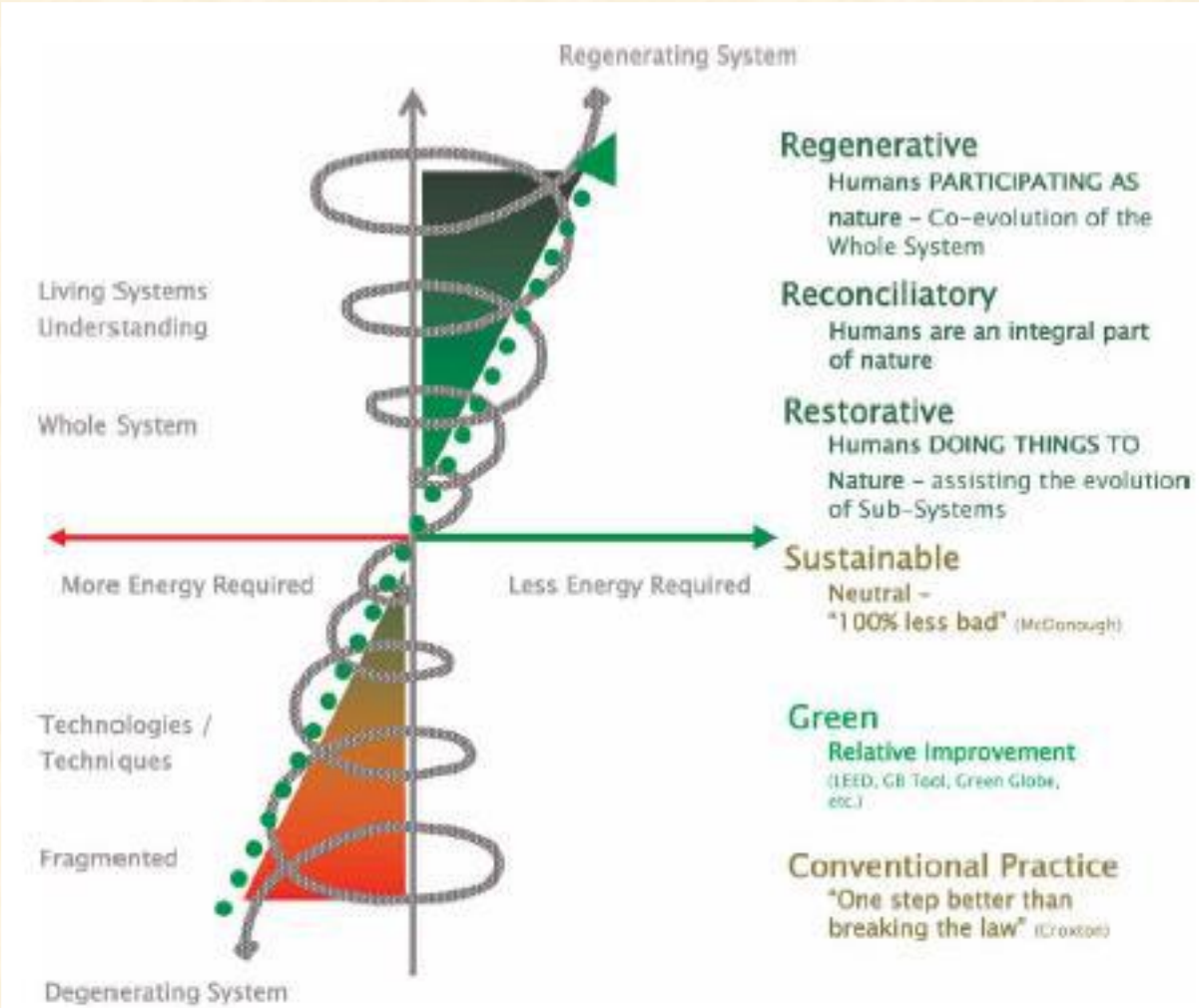
cities and sustainable places

Terry Marsden and Abid Mehmood

http://www.cardiff.ac.uk/sustainable-places/research/research-programmes/cities-and-sustainable-places

cities and sustainable places – overview

- An independent hub addressing specific urban issues and concerns related to **sustainable place-making**
- Cross-cutting research on **social innovation, future cities** and **place resilience**
- Wider research on **regenerative urbanism**, integrating **food security, urban metabolism, climate change, air quality,** and **fuel poverty**, etc.
- **Human-environment relationship** based on comprehensive, integrated and socio-ecological understanding of local resources.
- Cases of places including national parks, nature reserves, city-regions, urban and rural communities, and urban regeneration initiatives, to achieve the UN's **Sustainable Development Goals (SDGs)**


Regenerating System
Living Systems Understanding
Whole System
More Energy Required
Less Energy Required
Technologies / Techniques
Fragmented
Degenerating System
Regenerative
Humans PARTICIPATING AS nature – Co-evolution of the Whole System
Reconciliatory
Humans are an integral part of nature
Restorative
Humans DOING THINGS TO Nature – assisting the evolution of Sub-Systems
Sustainable
Neutral –
"100% less bad" (McDonough)
Green
Relative Improvement
(LEED, GB Tool, Green Globe, etc.)
Conventional Practice
"One step better than breaking the law" (Croxton)

cities and sustainable places – activities

- Research project on 'Information Models for Sharing Economy' funded by CUROP.

Ongoing

- Transforming City food systems : carbon reductions and health and wellbeing gains in London (With Greater London Authority)
- PhD research projects on 'Finical consumption patterns of Muslims in Wales' and 'Energy vulnerability in Welsh communities'
- Marie Curie ITN on Sustainable Place Shaping 'SUSPLACE': Place Ambassadorship; Sustainable City Regions; Connected Learning Spaces
- Collaborations with Welsh Government, Brecon Beacons National Park Authority and others
- 'Community Gateway' engagement work with **Grangetown** community in Cardiff

Organised

- 'community development, land tenure and social innovation' session at Habitat III, Quito
- special session on 'Transformative capacity of sustainable place shaping' at UK-Ireland Planning Research Conference

cities and sustainable places – research areas

Social innovation for sustainable urban living

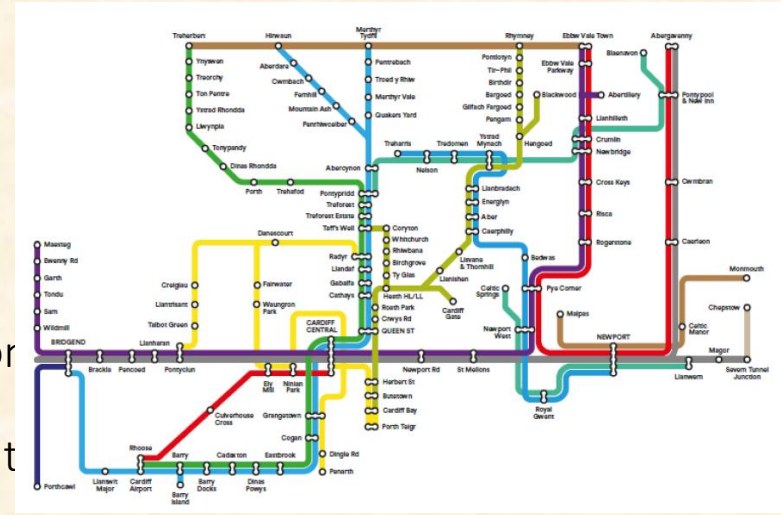
- The approach is based on satisfaction of basic needs of people, improvement of social relations and socio-political empowerment.
- Focus on improving the quality of life, liveability and resilience, it looks at diverse issues around: Sustainable mobility, environmental hazards, urban food systems, low-carbon futures, energy vulnerabilities, ethnicity, and entrepreneurship.

Governance for sustainable place making

- Policy and practices oriented towards building a sense of place among individuals and groups through inclusive deliberation, innovation and adaptation
- Promoting participatory planning, politics, policymaking and practice especially through interconnected and bottom-linked approaches.

case study - Cardiff

- Work with Welsh Government and City Regions Exchange on the creation and transition of two city Regions - Cardiff Capital Region & Swansea Bay City Region – in Wales
- Work with Welsh Government on a virtual ‘Place Makers’ Platform’ through social innovation in the public sector
- Work with Future Generations Commissioner and Natural Resource Wales (NRW) on advancing work on ‘Wellbeing of Future Generations Act’.
- Work with various stakeholders on the establishment of a comprehensive Metropolitan Transport System with a strong focus on sustainable place making in Cardiff Capital Region



cities and sustainable places – publications

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- Sonnino, R., Marsden, T. K. and Moragues Faus, A. 2016. Relationalities and convergences in food security narratives: towards a place based approach. *Transactions of the Institute of British Geographers*
- Marsden, T. K. 2016. Exploring the rural eco-economy: beyond neoliberalism. *Sociologia Ruralis*
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- Cheema, A., Mehmood, A. and Imran, M. 2016. Learning from the past: Analysis of disaster management structures, policies and institutions in Pakistan. *Disaster Prevention and Management* 25(4), pp. 449-463
- Mehmood, A. 2016. Institutional forms of social innovation. *International Journal of Innovation and Sustainable Development* 10(3), pp. 300-311
- Moulaert, F., Jessop, B. and Mehmood, A. 2016. Agency, structure, institutions, discourse (ASID) in urban and regional development. *International Journal of Urban Sciences* 20(2), pp. 167-187
- Mehmood, A. 2016. Of resilient places: planning for urban resilience. *European Planning Studies* 24(2)
- Baker, S. C. and Mehmood, A. 2015. Social innovation and the governance of sustainable places. *Local Environment: The International Journal of Justice and Sustainability* 20(3), pp. 321-334

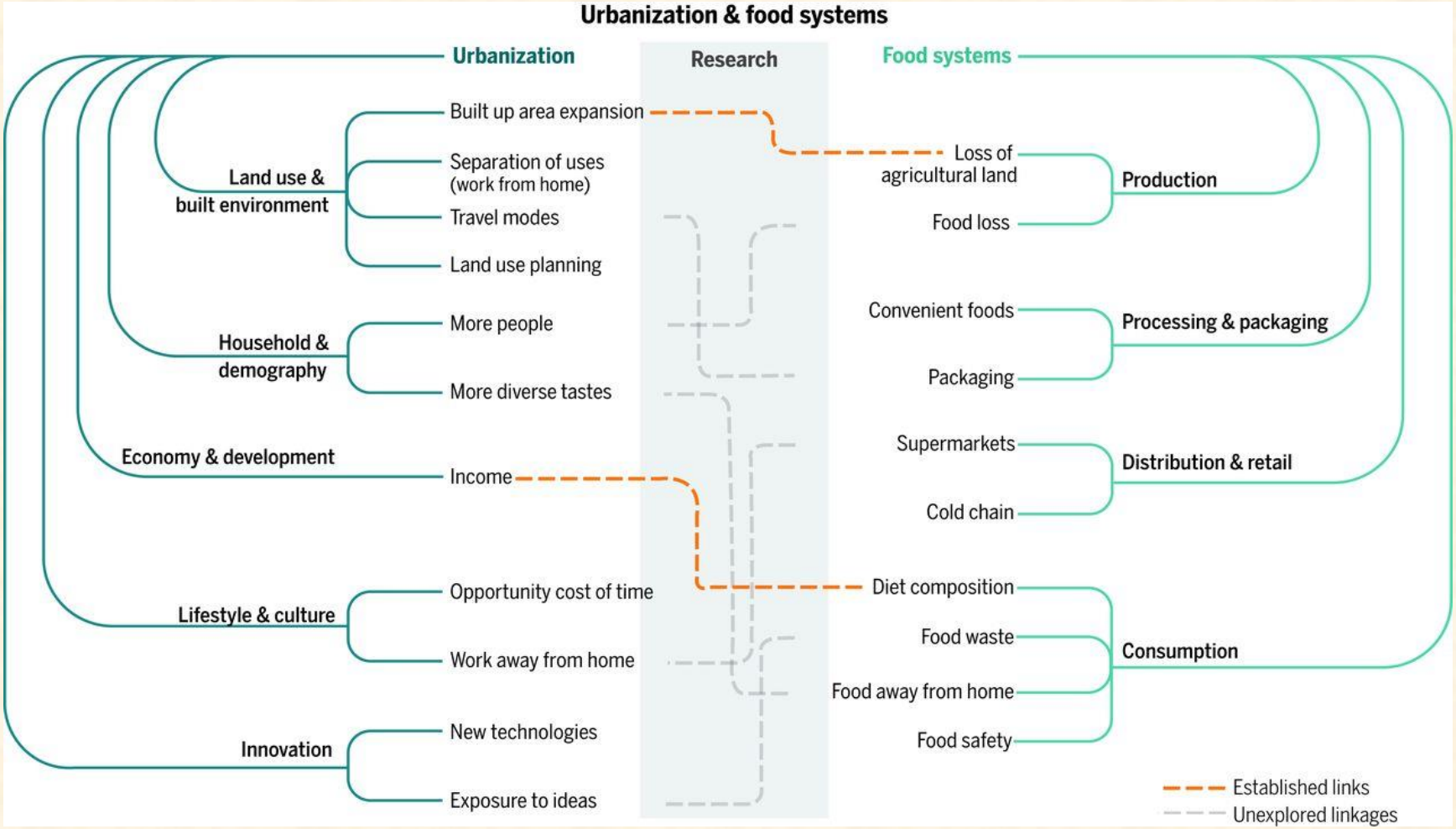
The global agenda for food supply

- Sustainable development goals:
- End Hunger, achieve food security and improved nutrition and promote sustainable agriculture by 2030.
- Ensure healthy lives and promote well-being for all
- Sustainable cities and communities
- Responsible consumption and production
- Improving livelihoods and capacities of small farmers
- Climate action

COP21:

- Limit global temperature rise to well below 2%, (1.5%)
- 196 nations to sign legally binding agreement by 2017
- Major stocktake 2023.
- Will need to be signed by at least 55 parties of UNFCCC that account for 55% of the total greenhouse gas: will need acceptance of at least one of the regional players: EU, US, Russia or China.

Food systems as part of city nexus



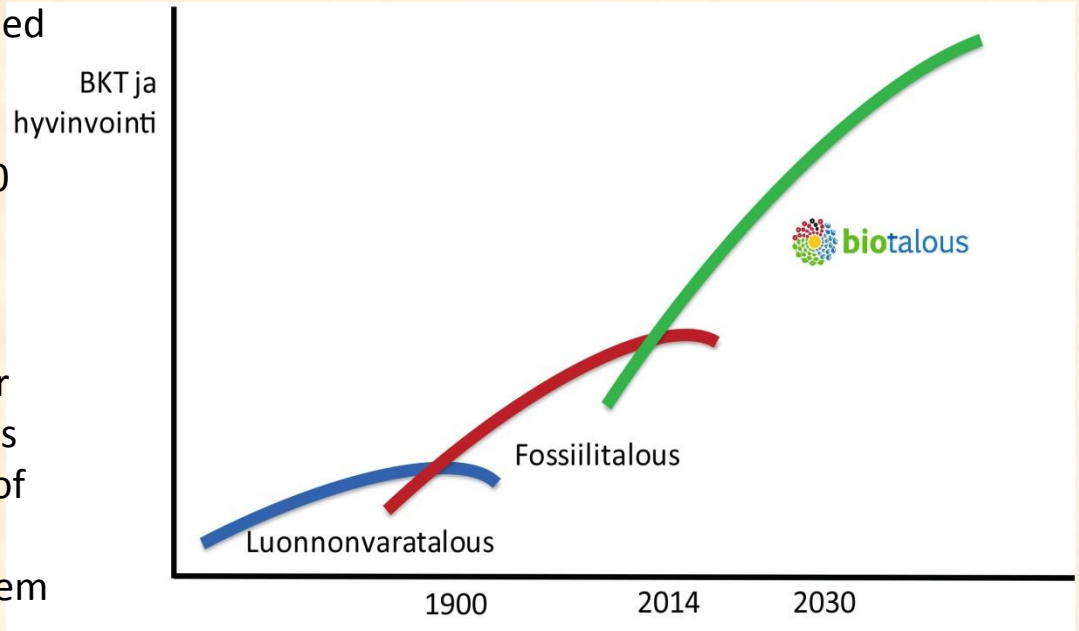
Defining the bioeconomy

- ‘That part of the economy which captures the latent value of biological processes and renewable bio-resources to produce improved health and sustainable growth and development.. An economy that uses renewable bio-resources and eco-industrial clusters to produce sustainable bio-products, jobs and income’ (OECD2011)
- By 2030 bio-technologies contributing 35% of outputs of chemicals (like bio-plastics); upto 80% pharmaceuticals and 50% agricultural outputs.
- ‘Spillover’ effects on energy, health and farming. EU turnover 2 trillion Euros;em]ploying 22 million and 9% of EU employment; exploiting the intersections between agriculture,forestry, fisheries, food, pulp, chemical and health and energy.
- Broader definitions of land and water-based eco-system services, including amenity; and rising significance of land rent from local provenance of products and services (Le Heron, Slee; 2012).

Bioeconomy is the next wave of economy

By the year 2030, the world's need for food will increase by 50 percent, need for energy by 45 percent and need of water by 30 percent.

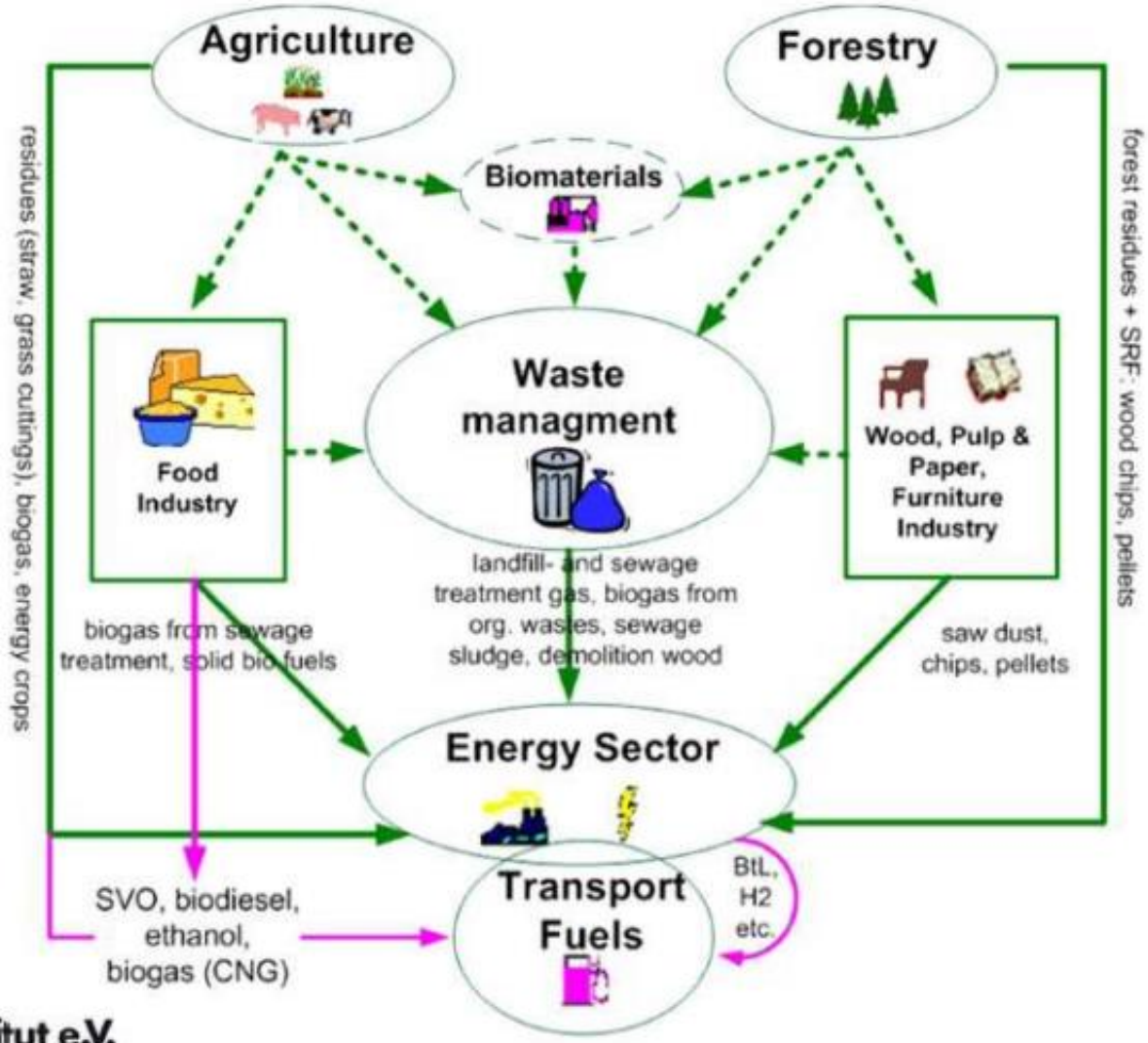
In bioeconomy, renewable resources will be used widely for producing food, energy, products and services. Efficient recycling of materials and securing the functionality of nature's ecosystem services are characteristic for bioeconomy. Bioeconomy decreases our dependence on the fossil natural resources.



*The most important renewable natural resources in Finland are the biomasses of forests, soils, fields, lakes and sea, as well as supplies of fresh water.

** Ecosystem services are ones provided by the nature, such as absorbing carbon dioxide and recreational use.

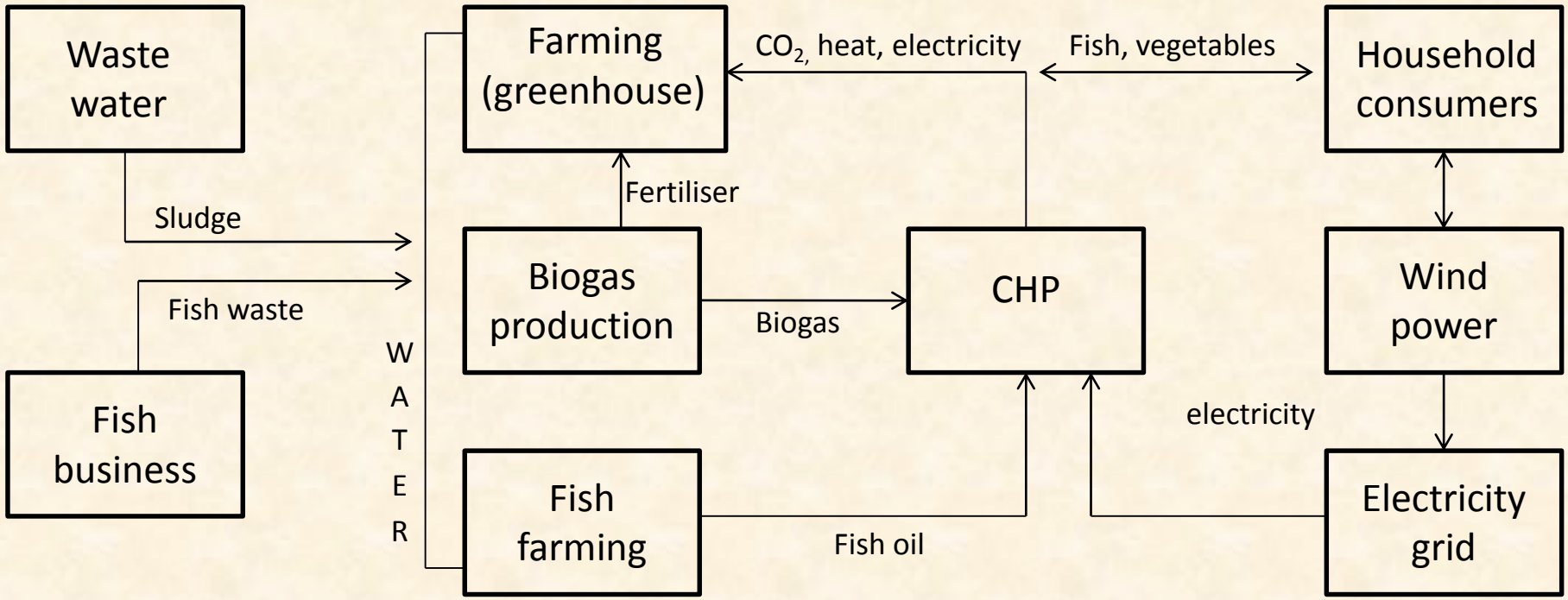
Consider all Biomass Flows



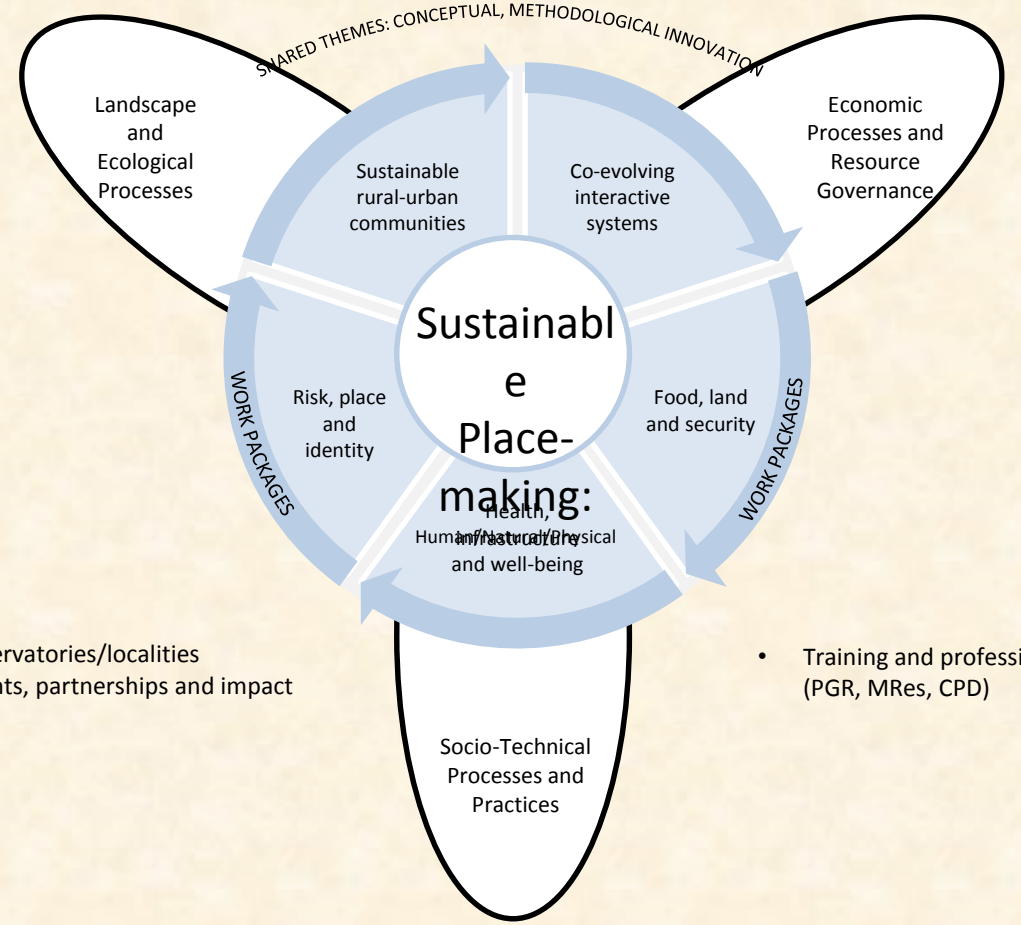
Öko-Institut e.V.
Institut für angewandte Ökologie
Institute for Applied Ecology

IINAS

A Bioeconomy Value Network



Sustainable Places Research Framework

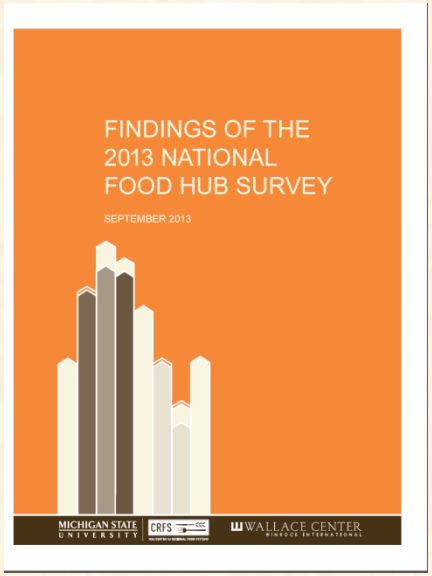


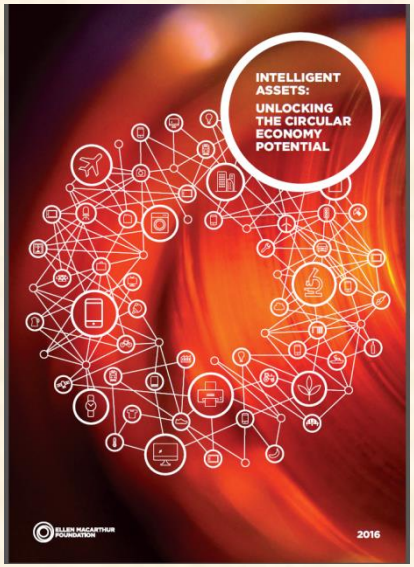
- PLACE observatories/localities
- Engagements, partnerships and impact cases

- Training and professional services (PGR, MRes, CPD)

The nexus

- Energy
- Food
- Water
- Air/biosphere
- Amenity
- Care
- Mobility
- Capital
- = PLACE (re)-making.


FINDINGS OF THE
2013 NATIONAL
FOOD HUB SURVEY
SEPTEMBER 2013
MICHIGAN STATE UNIVERSITY
CRFS
WALLACE CENTER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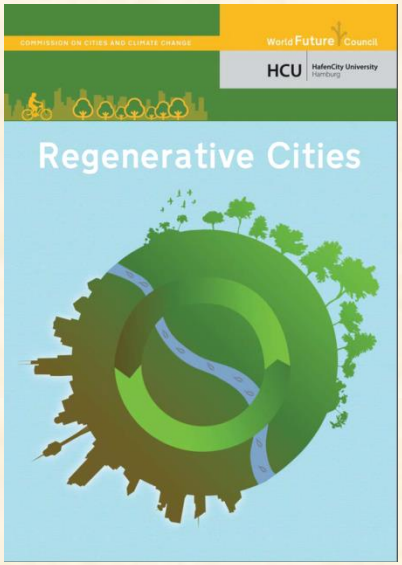
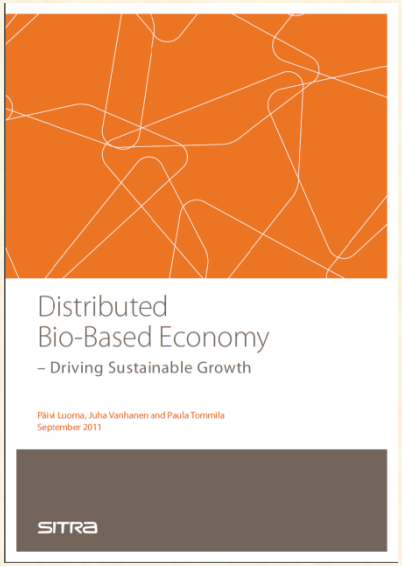
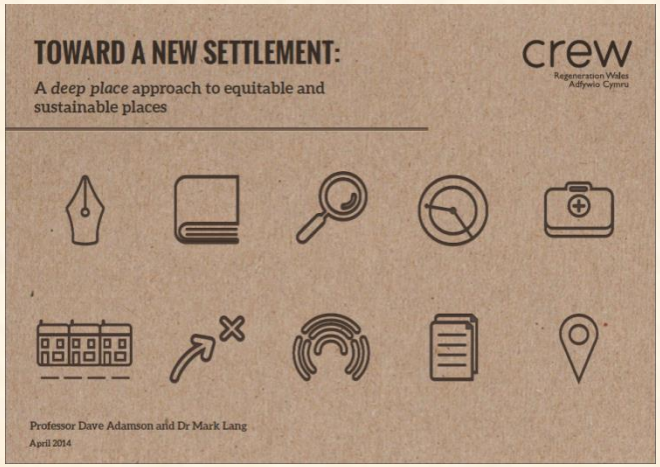
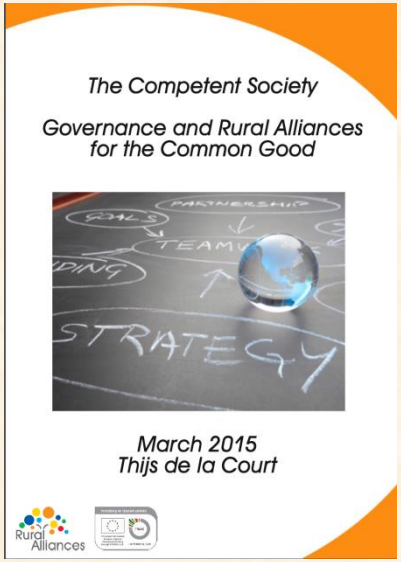

World Future Council
HCU
HafenCity University Hamburg
Regenerative Cities


Distributed
Bio-Based Economy
– Driving Sustainable Growth
Päivi Luoma, Juha Vanhanen and Paula Tommila
September 2011
SITRA


TOWARD A NEW SETTLEMENT:
A deep place approach to equitable and sustainable places
crew
Regeneration Wales
Adfywio Cymru
Professor Dave Adamson and Dr Mark Lang
April 2014


The Competent Society
Governance and Rural Alliances for the Common Good
STRATEGY
March 2015
Thijs de la Court
Rural Alliances

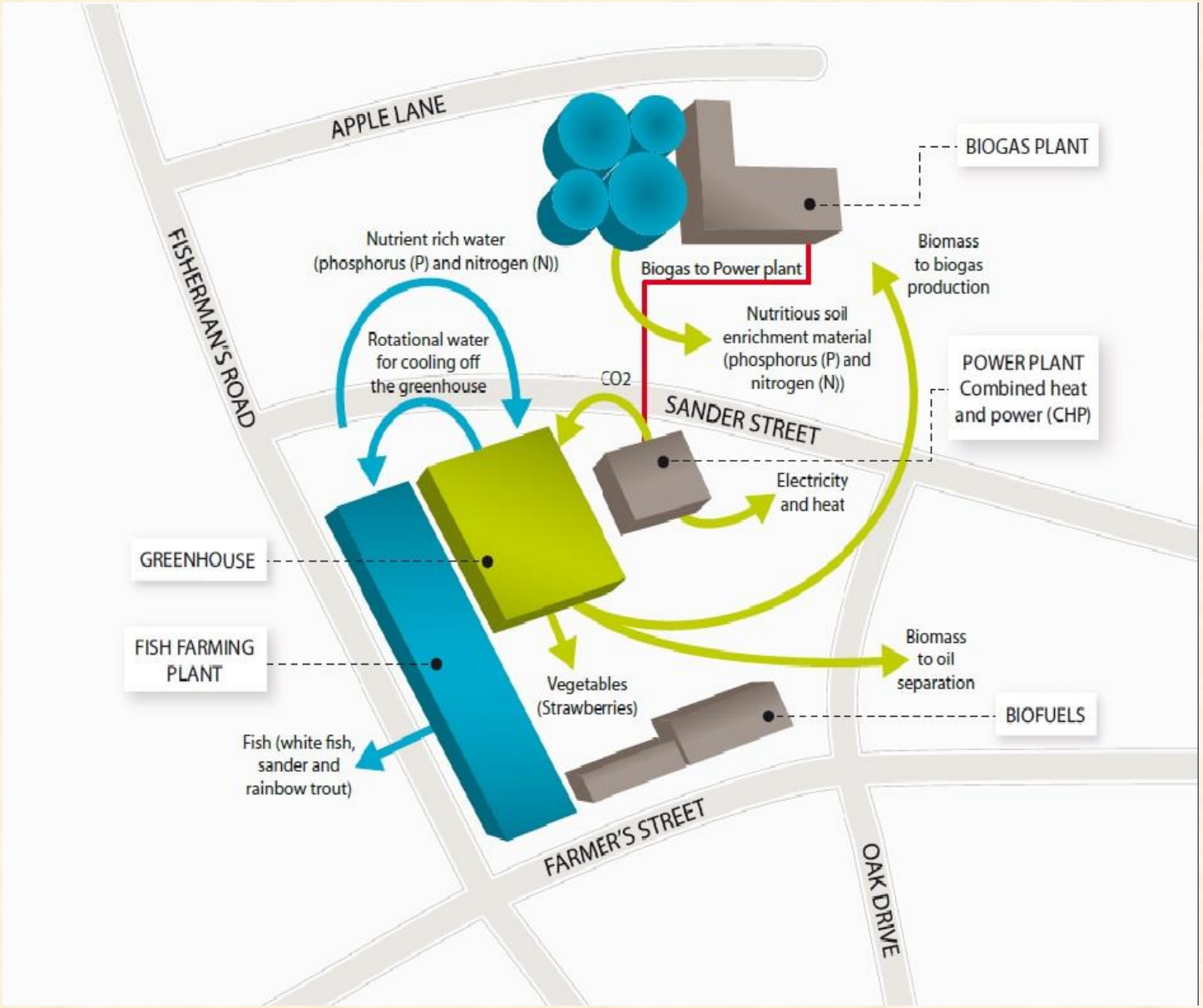
Distributed Bio-Based Economy

– Driving Sustainable Growth

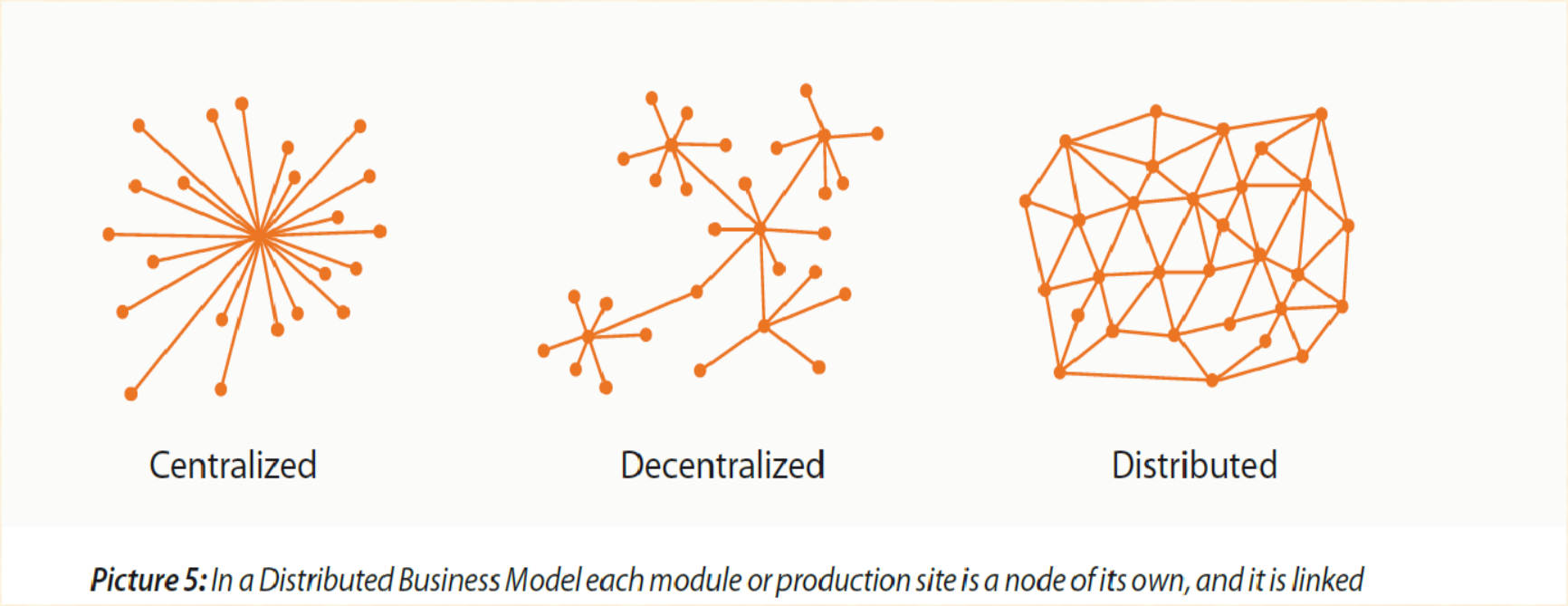
Päivi Luoma, Juha Vanhanen and Paula Tommila
September 2011

SITRA

A biogas plant utilizes wastes of the local greenhouse and fish farming as well as other wastes to produce heat and electricity as well as fertilizers to local farmers and greenhouses.



(Source: Distributed Bio-Based Economy – Driving Sustainable Growth. Päivi Luoma, Juha Vanhanen and Paula Tommila. September 2011)



Picture 5: *In a Distributed Business Model each module or production site is a node of its own, and it is linked*

(Source: Distributed Bio-Based Economy – Driving Sustainable GrowthPäivi Luoma, Juha Vanhanen and Paula Tommila. September 2011)

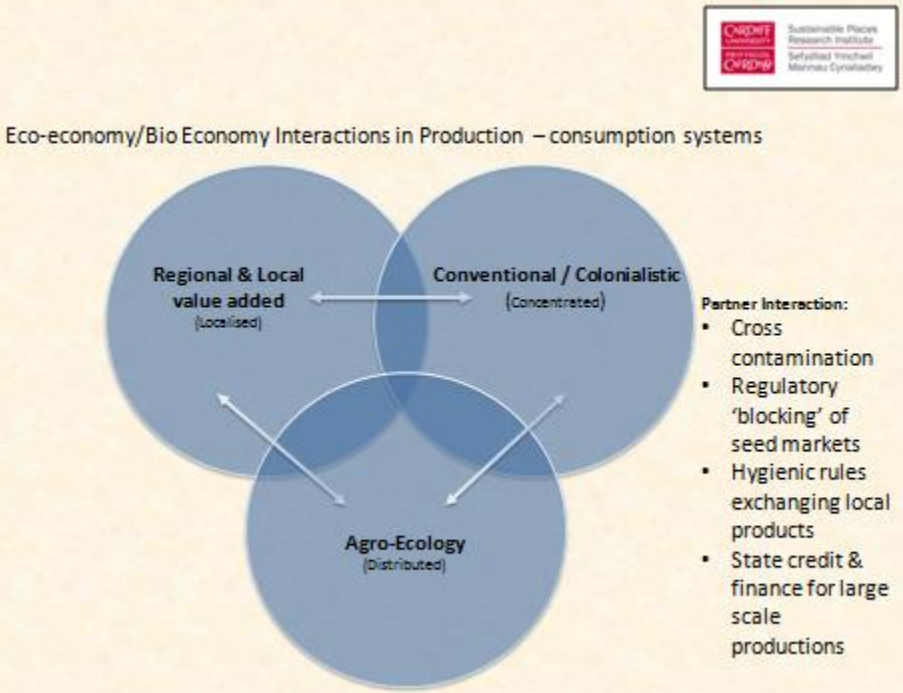
Beyond the urban rural divide: matrix approaches and cosmopolitan natures

- Greening of cities
- Re-structuring of nature areas into new functional zones based upon different eco-system functions.
- Further declines in ‘first natures’.
- Further rise in second and third natures: manicured spaces.

Nature's matrix

- Urban green spaces and corridors
- Water features, parks, urban gardening
- Cycle and walking corridors
- Peri urban parks, preservation and amenity sites.
- More urbanisation and suburbanisation envelopes.
- Eco-system services and transfers between rural and expanding cities.
- Restructuring of food provision systems.

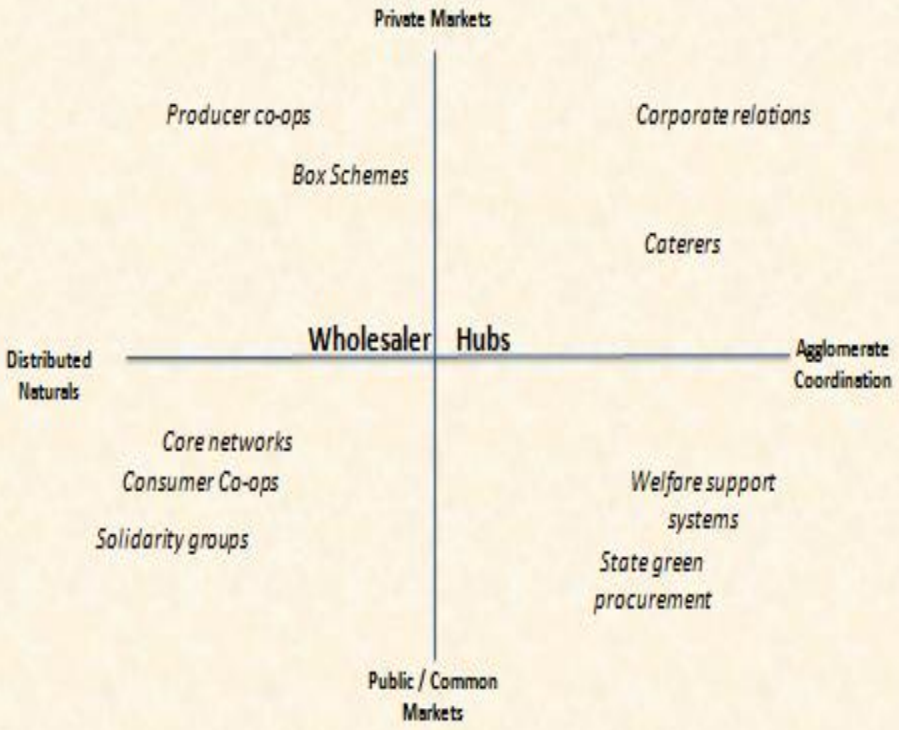
Rural infrastructures in Brazil



Bio-eco-economy relations in Rio-Grande Del Sol

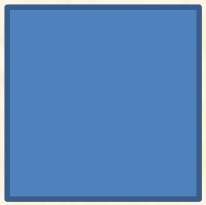
- Bio economy-Colonialist spaces
- Agro-ecological-urban nested markets and webs.
- Value-added producer and processing to local regions.
- Transformations within each of the systems
- Transformations between the systems.
- Market interactions and asymmetry in regulation.
- Need to build all into regional place-making.

The Food Infrastructure Dimension: Filling and rebuilding the 'missing middle'.

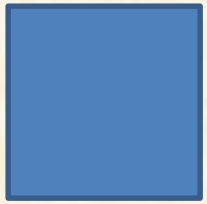


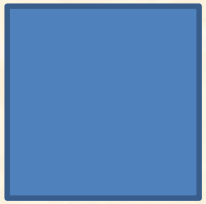
Restructuring green infrastructures in fast growing urbanising regions Brazil and SE Asia

- 5 nexus problems in context of rapid urbanisation, commodification and changing diets.
- 1. The (re) location problem



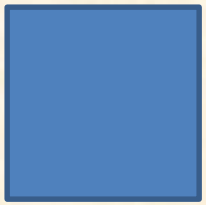
- 2. The connectivity/network problem

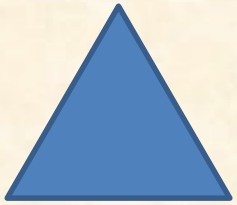




Problems of nature infrastuctures cont..

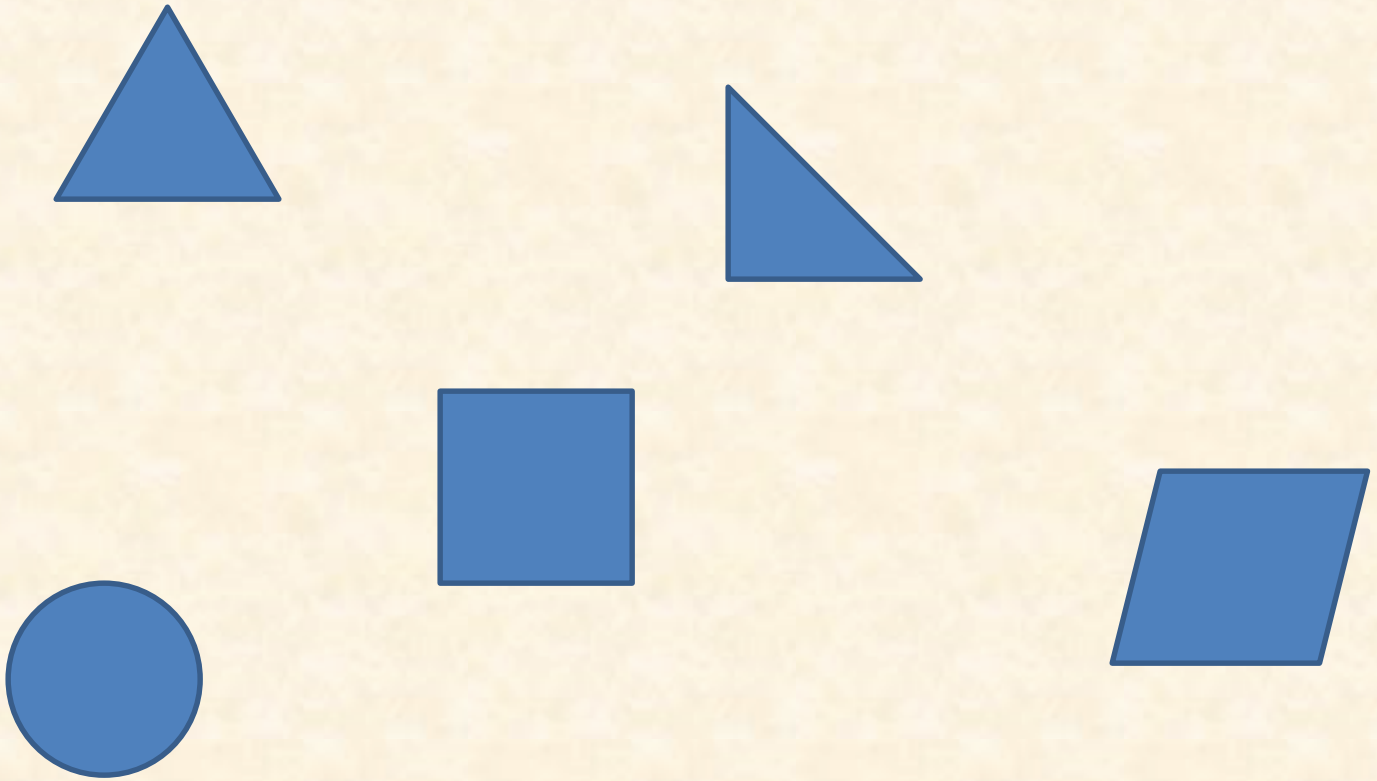
- 3. The functional synergy problem





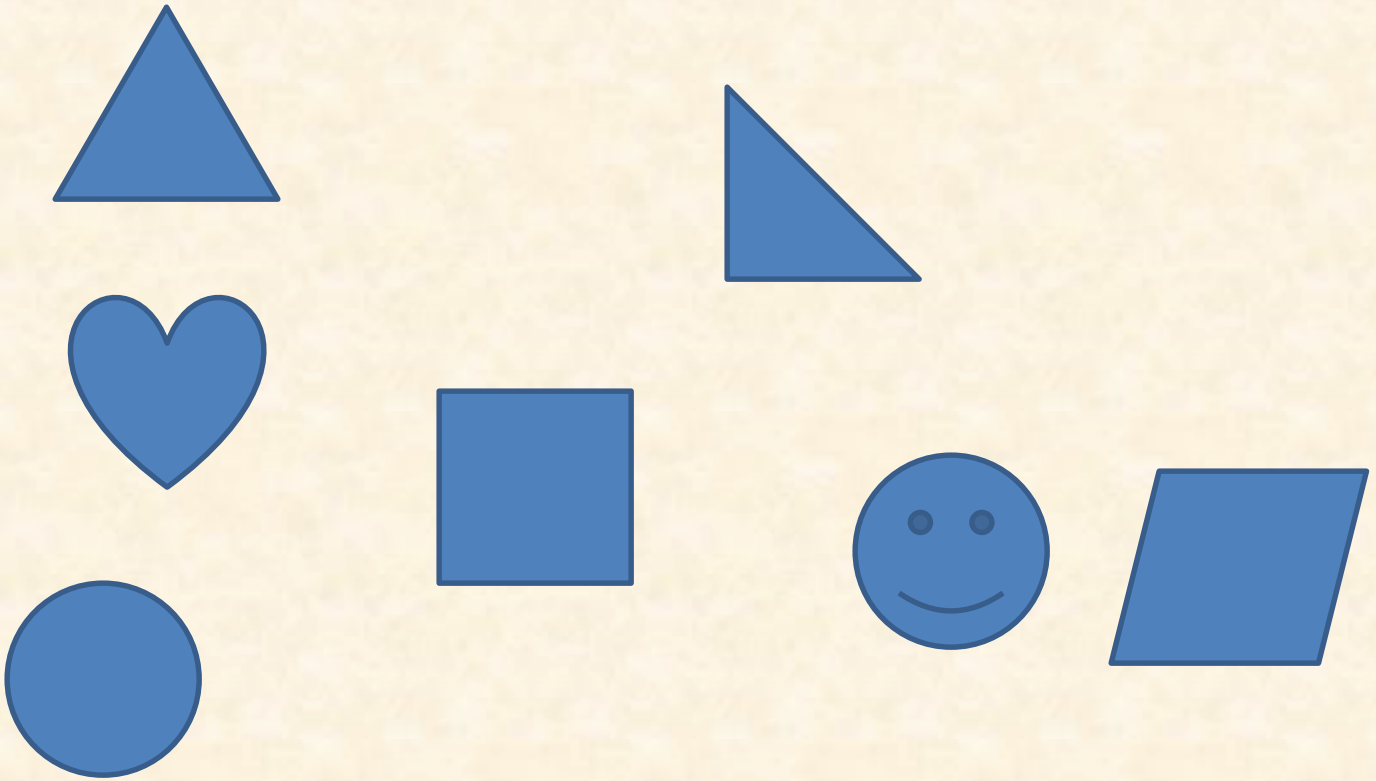
4. Eco-systems/nexus problem

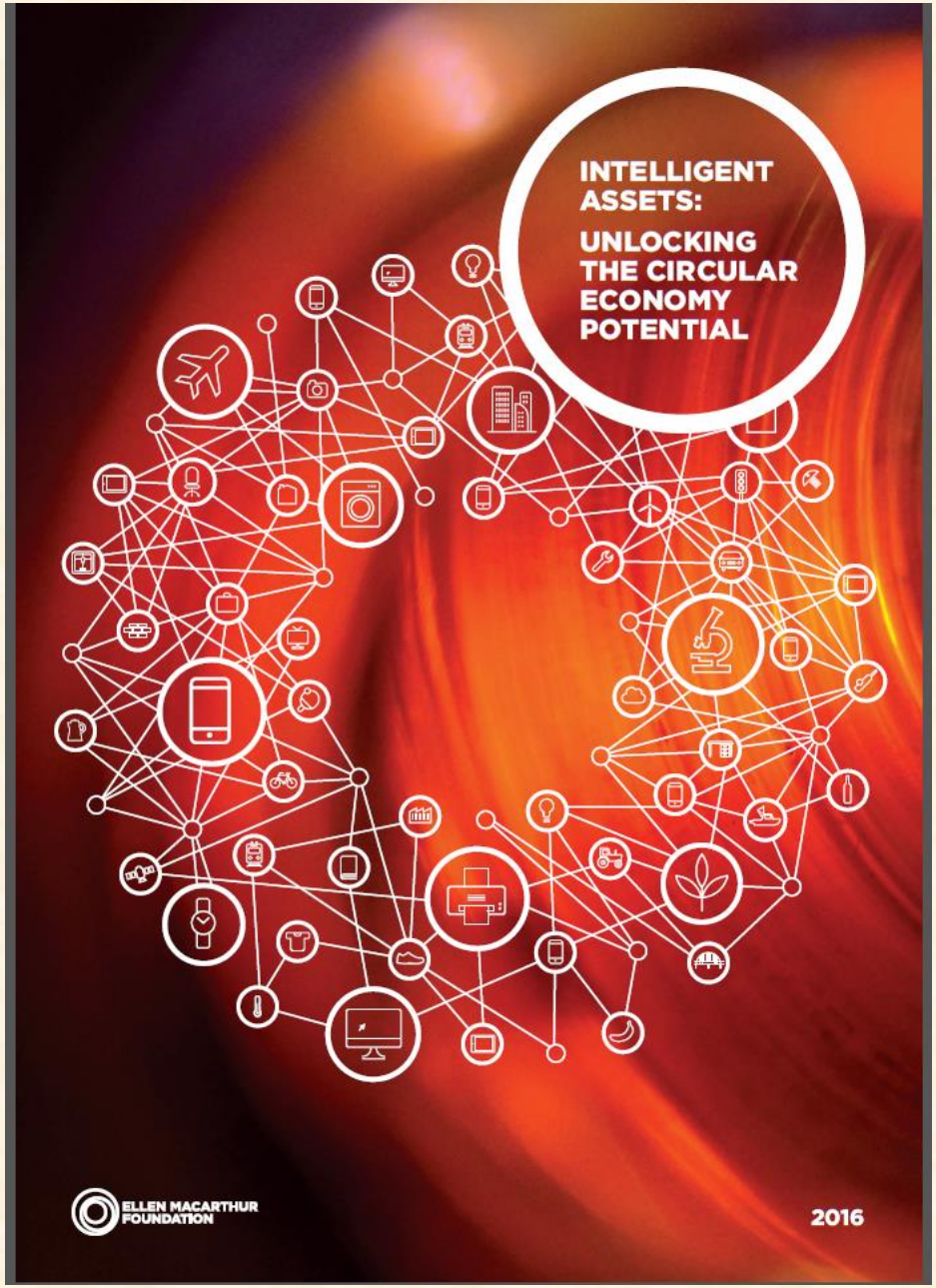
- Connecting natures in the nexus (circularity)



The bio-sensitivity problem

- Connecting natures in the nexus (circularity)

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2016

The Circular Economy – an industrial system that is restorative by design

PRINCIPLES

1

Preserve and enhance natural capital by controlling finite stocks and balancing renewable resource flows – for example, replacing fossil fuels with renewable energy or using the maximum sustainable yield method to preserve fish stocks.

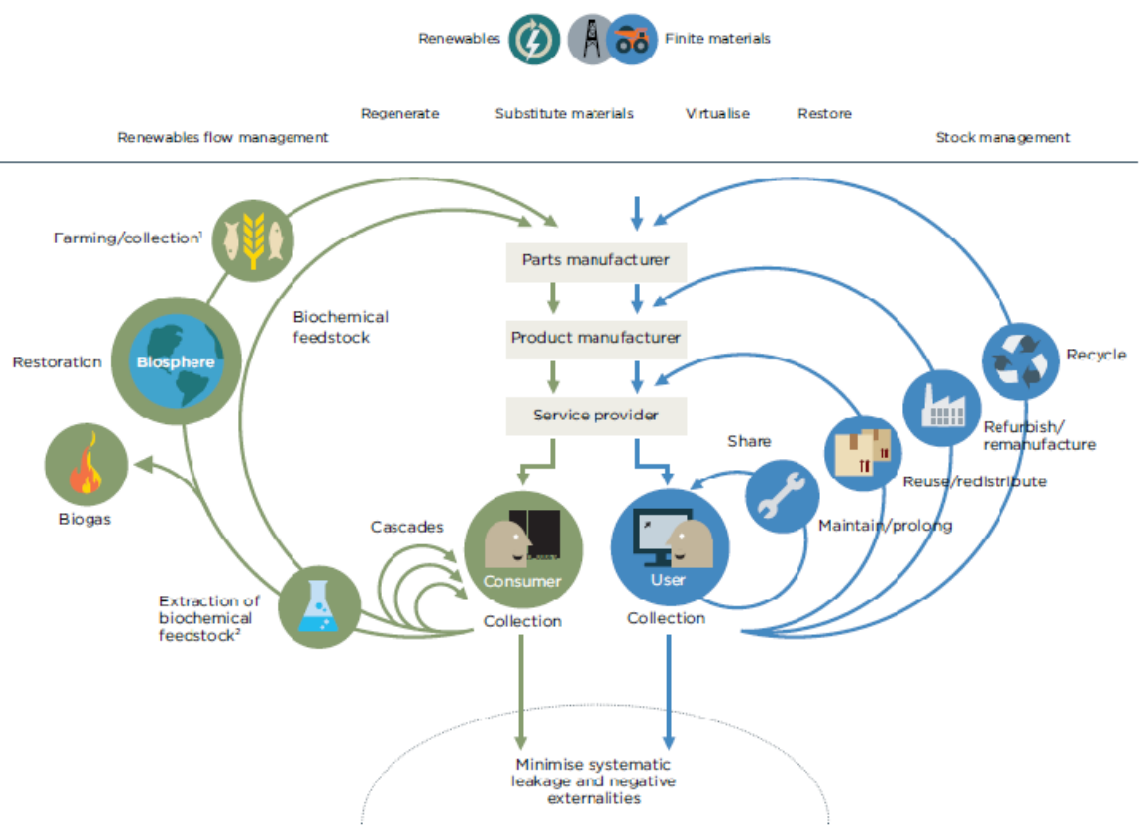
2

Optimise resource yields by circulating products, components and materials at the highest utility at all times in both technical and biological cycles – for example, sharing or looping products and extending product use cycles.

3

Foster system effectiveness by revealing and designing out negative externalities, such as water, air, soil, and noise pollution; climate change; toxins; congestion; and negative health effects related to resource use.

FIGURE 1 **THE CIRCULAR ECONOMY – AN INDUSTRIAL SYSTEM THAT IS RESTORATIVE BY DESIGN**



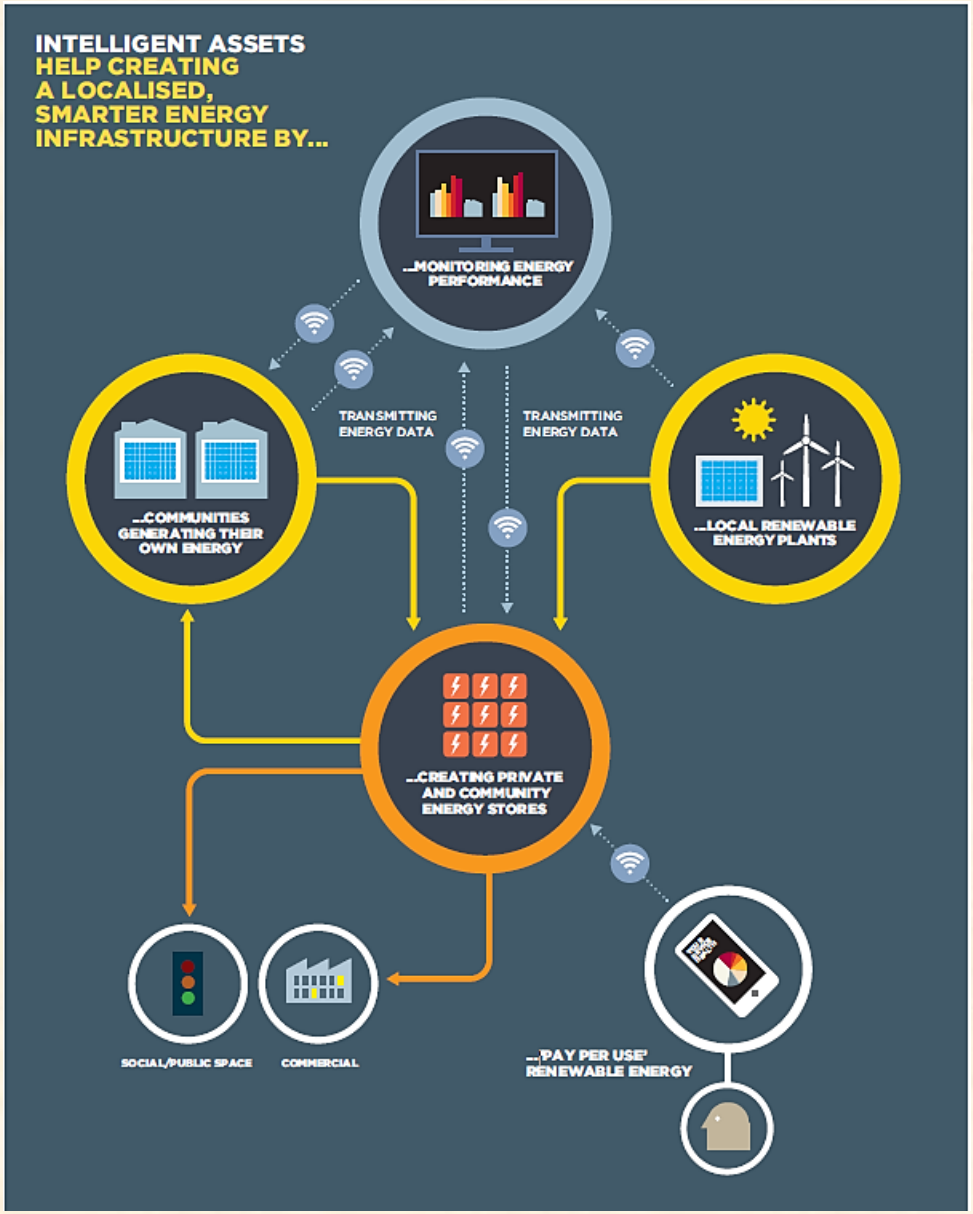
(Source: Intelligent Assets: unlocking the circular economy potential. Ellen Macarthur Foundation 2016)

Interactions of circular economy and intelligent asset value drivers and example of value creation opportunities

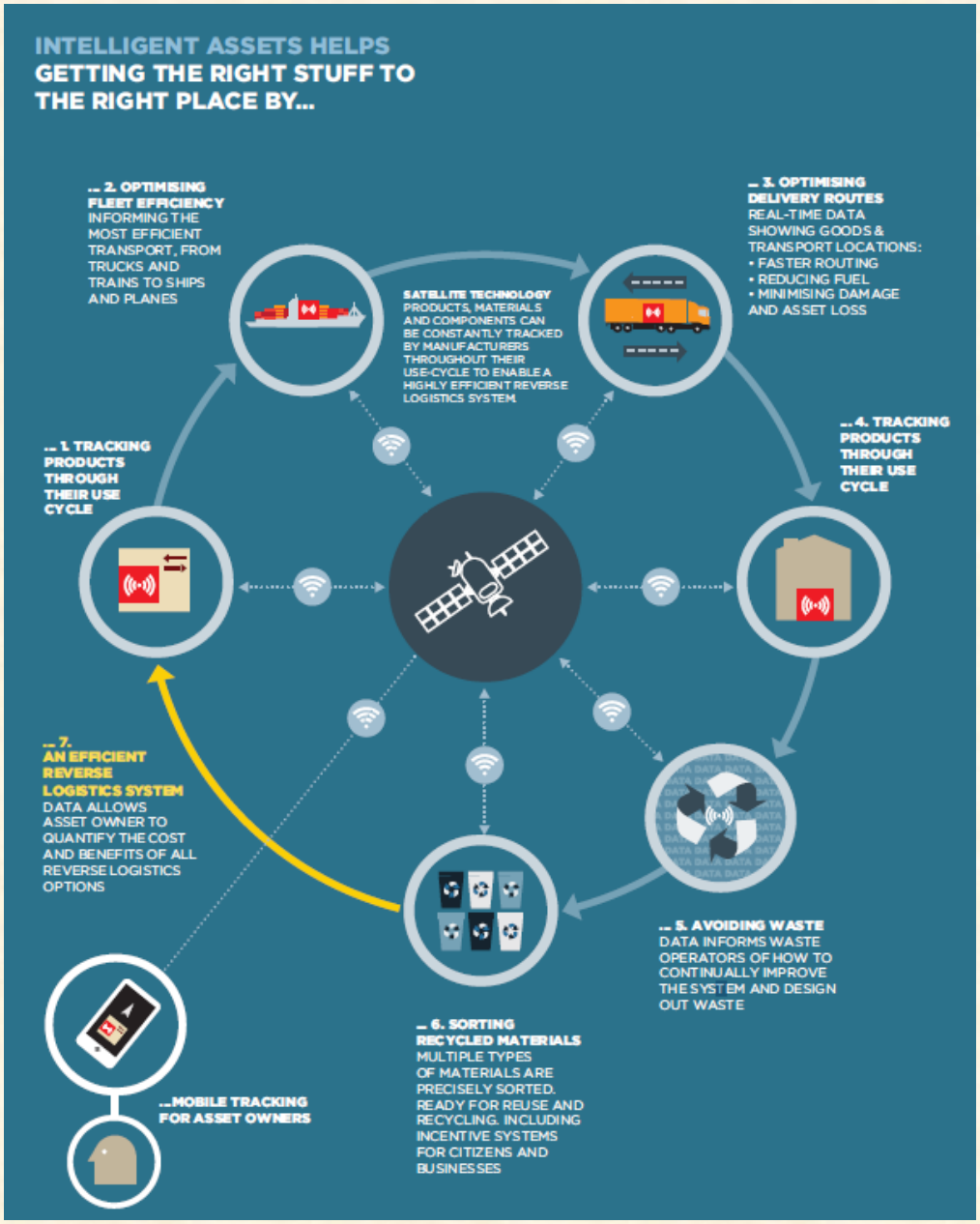
FIGURE 2
INTERACTIONS OF CIRCULAR ECONOMY AND INTELLIGENT ASSET VALUE DRIVERS AND EXAMPLE OF VALUE CREATION OPPORTUNITIES

	INTELLIGENT ASSET VALUE DRIVERS		
CIRCULAR ECONOMY VALUE DRIVERS	Knowledge of the **location** of the asset	Knowledge of the **condition** of the asset	Knowledge of the **availability** of the asset
Extending the use cycle length of an asset	• Guided replacement service of broken component to extend asset use cycle • Optimised route planning to avoid vehicle wear	• Predictive maintenance and replacement of failing components prior to asset failure • Changed use patterns to minimise wear	• Improved product design from granular usage information • Optimised sizing, supply, and maintenance in energy systems from detailed use patterns
Increasing **utilisation** of an asset or resource	• Route planning to reduce driving time and improve utilisation rate • Swift localisation of shared assets	• Minimised downtime through to predictive maintenance • Precise use of input factors (e.g. fertiliser & pesticide) in agriculture	• Automated connection of available, shared asset with next user • Transparency of available space (e.g. parking) to reduce waste (e.g. congestion)
Looping/ cascading an asset through additional use cycles	• Enhanced reverse logistics planning • Automated localisation of durable goods and materials on secondary markets	• Predictive and effective remanufacturing • Accurate asset valuation by comparison with other assets • Accurate decision-making for future loops (e.g. reman vs. recycle)	• Improved recovery and reuse / repurposing of assets that are no longer in use • Digital marketplace for locally supplied secondary materials
Regeneration of natural capital	• Automated distribution system of biological nutrients • Automated location tracking of natural capital, such as fish stocks or endangered animals	• Immediate identification of signs of land degradation • Automated condition assessment, such as fish shoal size, forest productivity, or coral reef health	

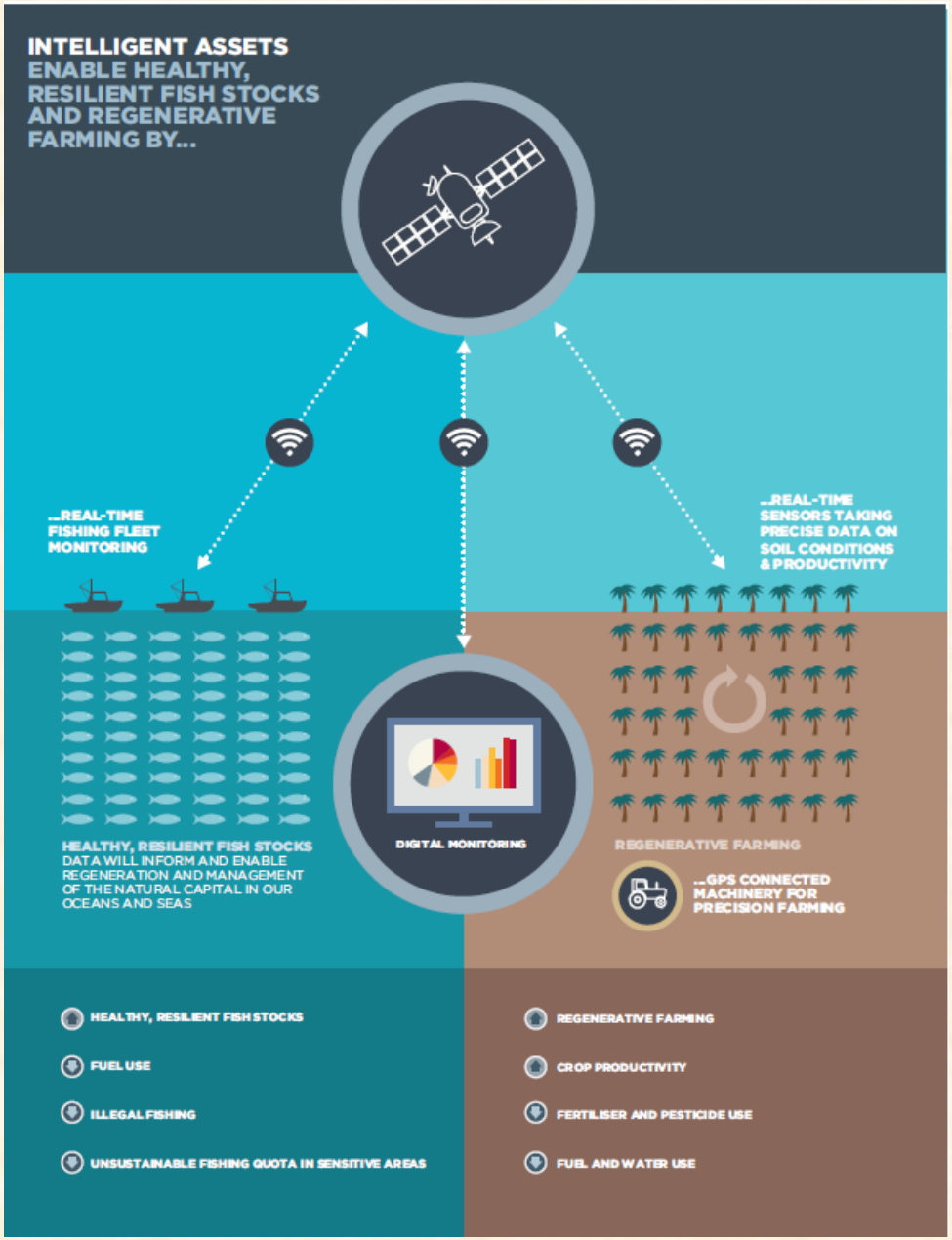
(Source: Intelligent Assets: unlocking the circular economy potential. Ellen Macarthur Foundation 2016)



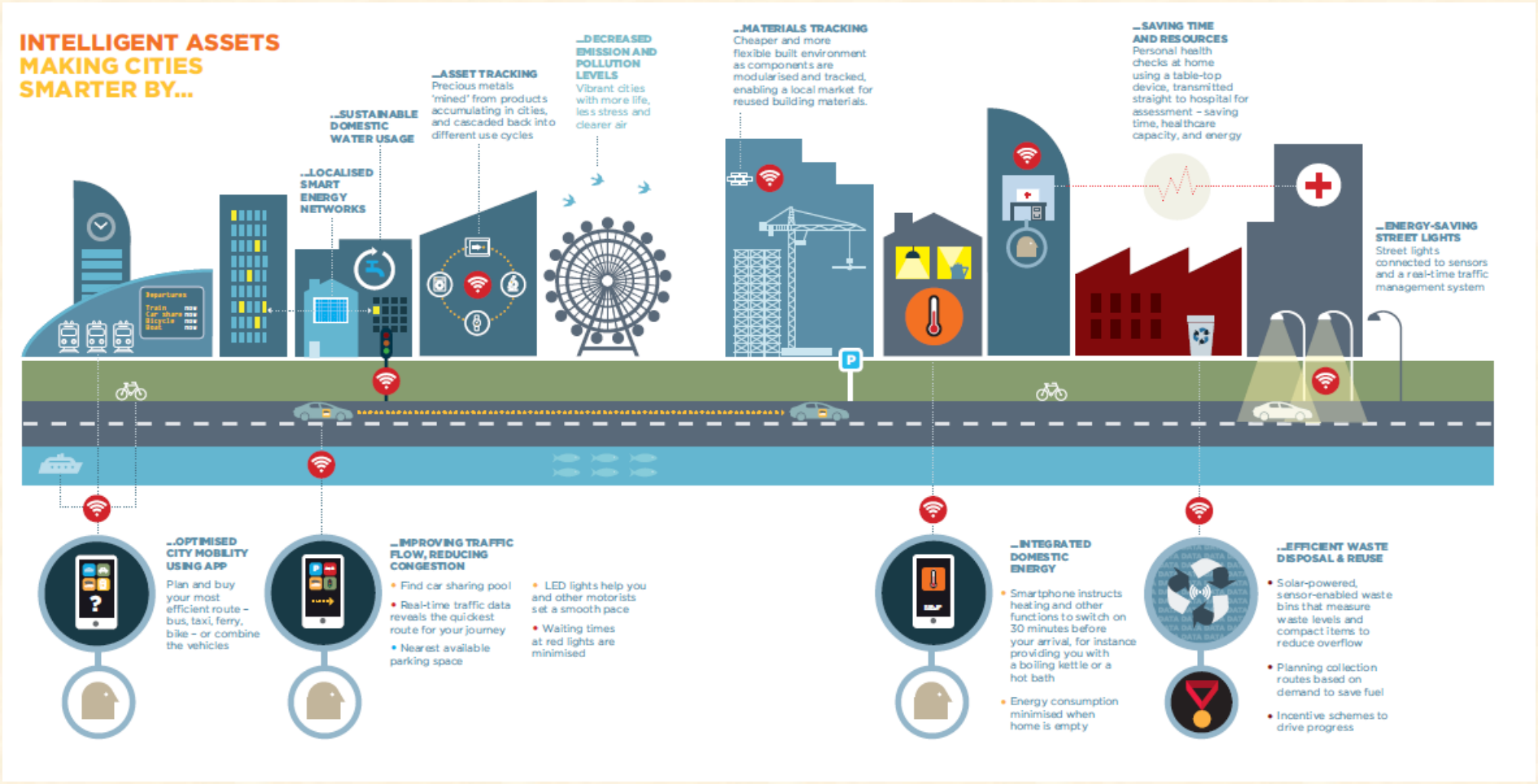
(Source: Intelligent Assets: unlocking the circular economy potential. Ellen Macarthur Foundation 2016)



(Source: Intelligent Assets: unlocking the circular economy potential. Ellen Macarthur Foundation 2016)



(Source: Intelligent Assets: unlocking the circular economy potential. Ellen Macarthur Foundation 2016



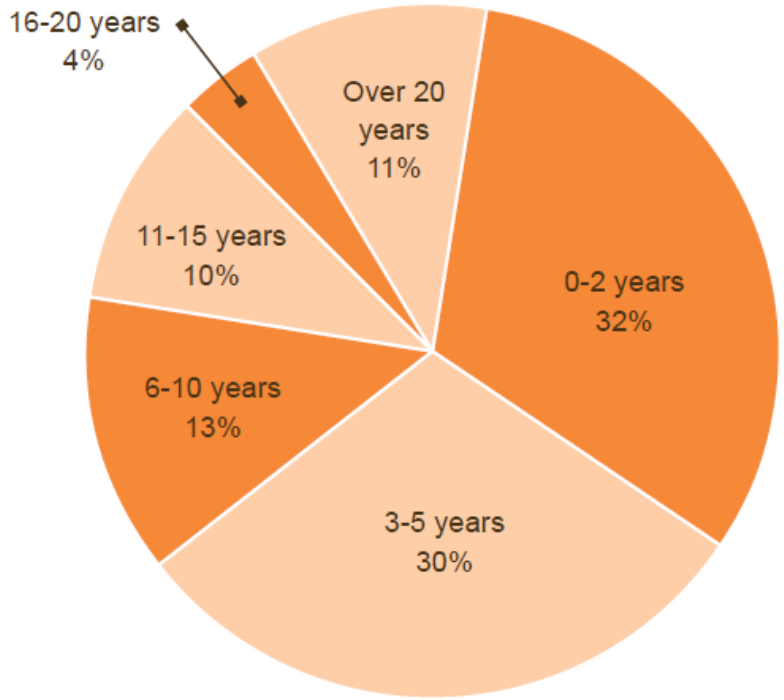
(Source: Intelligent Assets: unlocking the circular economy potential. Ellen Macarthur Foundation 2016)

FINDINGS OF THE 2013 NATIONAL FOOD HUB SURVEY

SEPTEMBER 2013

MICHIGAN STATE UNIVERSITY
CRFS MSU CENTER for REGIONAL FOOD SYSTEMS
WALLACE CENTER WINROCK INTERNATIONAL

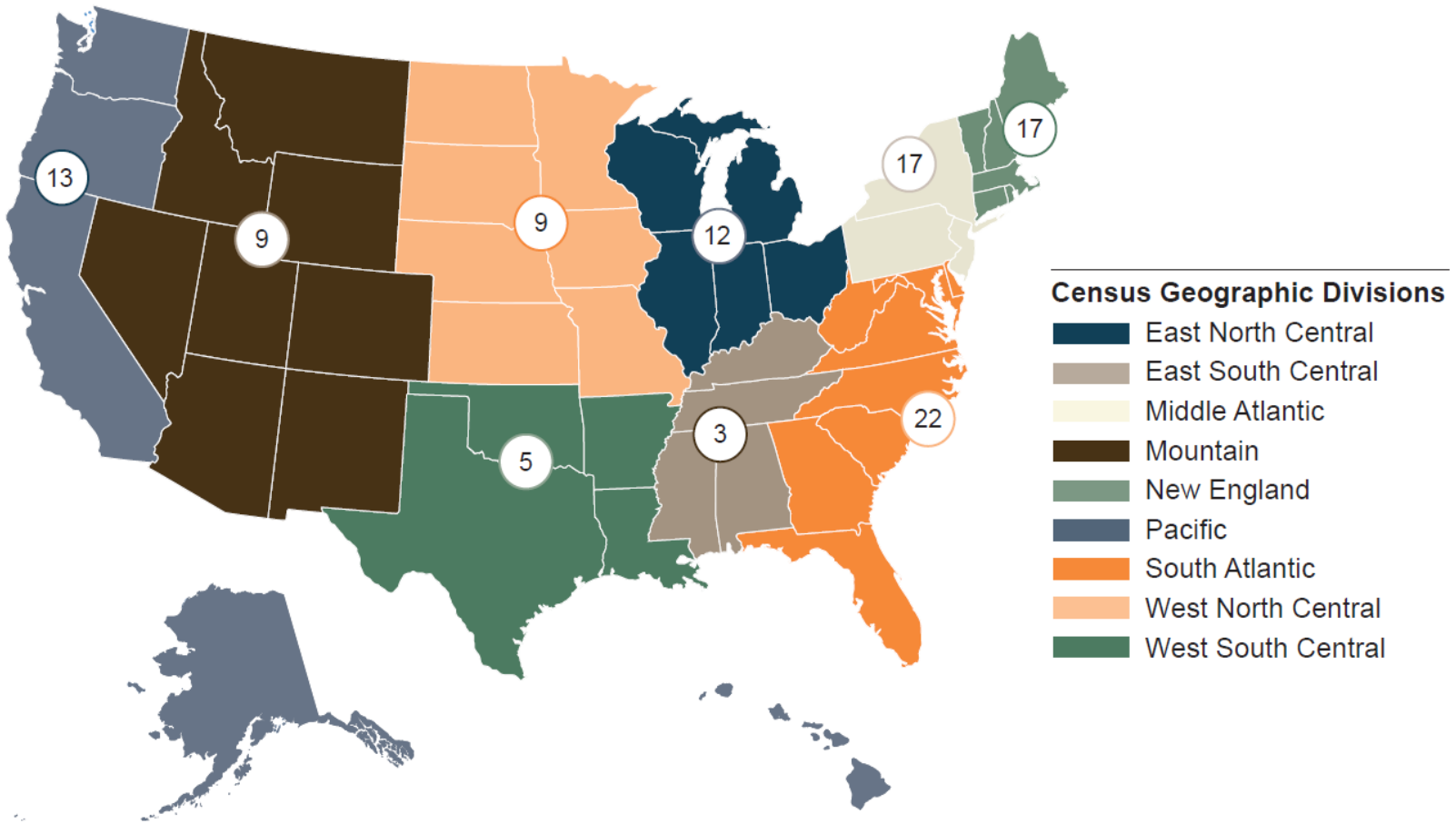
FIGURE 1: FOOD HUBS BY YEARS IN OPERATION (*N*=106)



Average:[5] 11 years
Median:[6] 4 years
Range: Less than 1 year to 142 years

(Source: FINDINGS OF THE 2013 NATIONAL FOOD HUB SURVEY. THE WALLACE CENTER AT WINROCK INTERNATIONAL . MICHIGAN STATE UNIVERSITY'S CENTER FOR REGIONAL FOOD SYSTEMS . SEPTEMBER 2013)

FIGURE 2: LOCATION OF 2013 NATIONAL FOOD HUB SURVEY RESPONDENTS

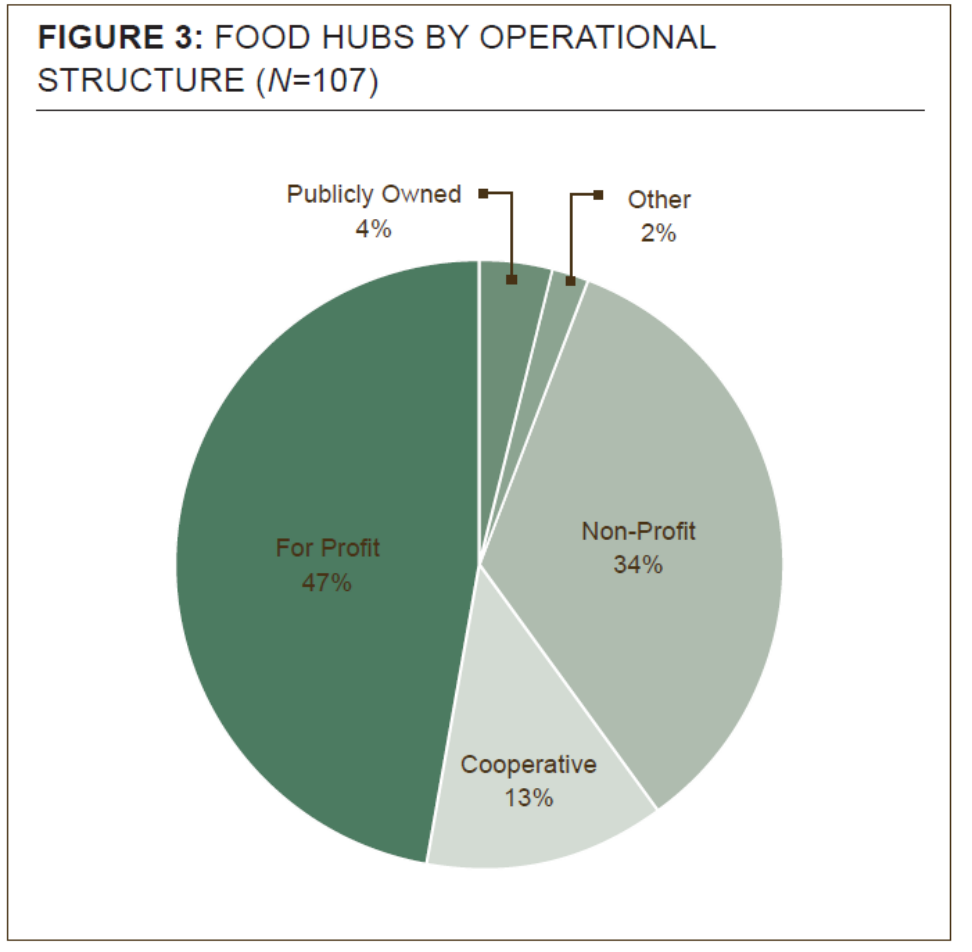


(Source: FINDINGS OF THE 2013 NATIONAL FOOD HUB SURVEY. THE WALLACE CENTER AT WINROCK INTERNATIONAL . MICHIGAN STATE UNIVERSITY'S CENTER FOR REGIONAL FOOD SYSTEMS . SEPTEMBER 2013)

TABLE 1: FOOD HUBS BY COUNTY TYPE

	N	Percent of hubs	County type
Metropolitan counties	51	48%	Counties in metro areas of 1 million population or more
	18	17%	Counties in metro areas of 250,000 to 1 million population
	11	10%	Counties in metro areas of fewer than 250,000 population
Nonmetropolitan counties	8	7%	Urban population of 20,000 or more, adjacent to a metro area
	3	3%	Urban population of 20,000 or more, not adjacent to a metro area
	8	7%	Urban population of 2,500 to 19,999, adjacent to a metro area
	6	6%	Urban population of 2,500 to 19,999, not adjacent to a metro area
	2	2%	Completely rural or less than 2,500 urban population, adjacent to a metro area
	0	0%	Completely rural or less than 2,500 urban population, not adjacent to a metro area

(Source: FINDINGS OF THE 2013 NATIONAL FOOD HUB SURVEY. THE WALLACE CENTER AT WINROCK INTERNATIONAL . MICHIGAN STATE UNIVERSITY'S CENTER FOR REGIONAL FOOD SYSTEMS . SEPTEMBER 2013)



(Source: FINDINGS OF THE 2013 NATIONAL FOOD HUB SURVEY. THE WALLACE CENTER AT WINROCK INTERNATIONAL . MICHIGAN STATE UNIVERSITY'S CENTER FOR REGIONAL FOOD SYSTEMS . SEPTEMBER 2013)

TOWARD A NEW SETTLEMENT:

A *deep place* approach to equitable and sustainable places

crew
Regeneration Wales
Adfywio Cymru

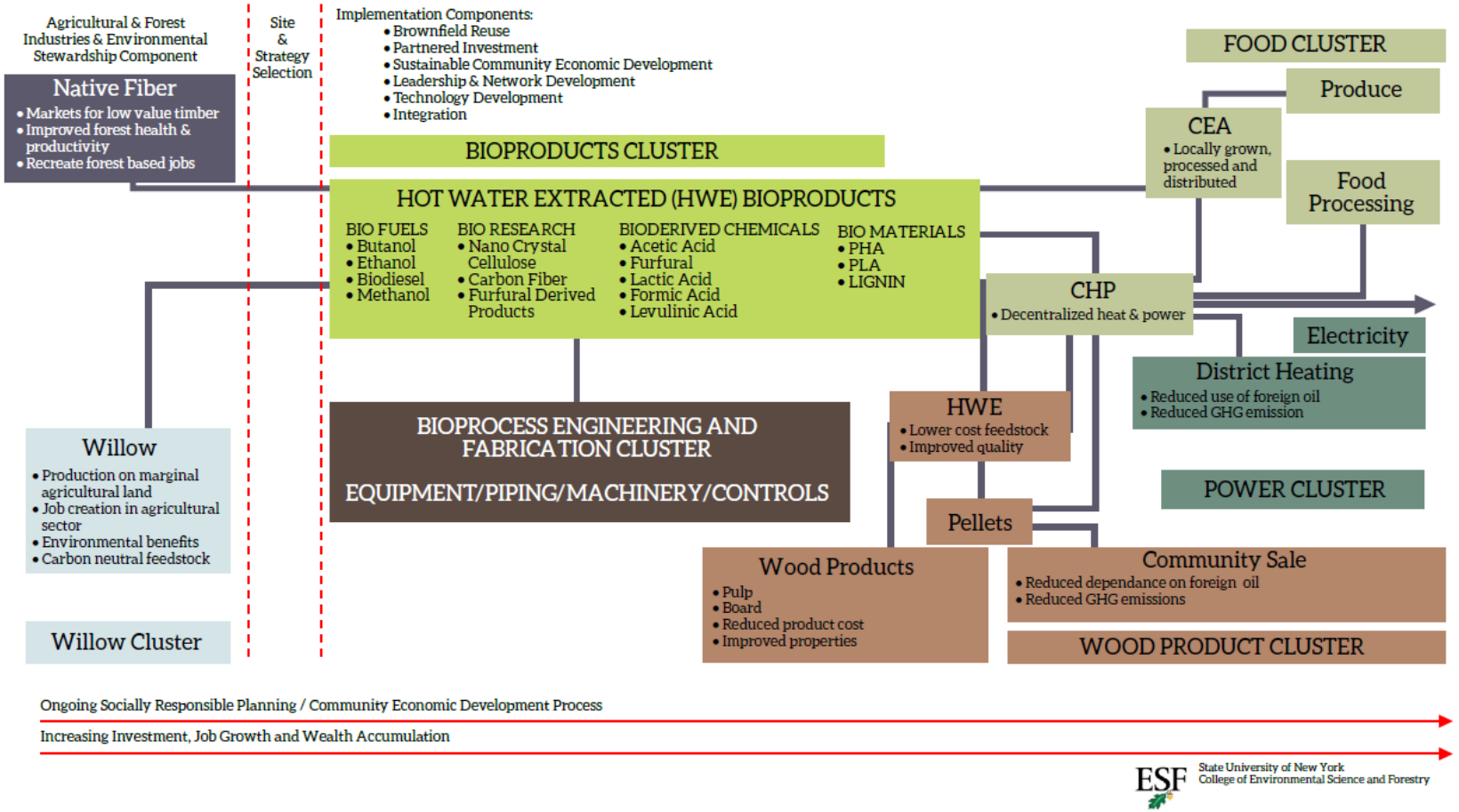
Professor Dave Adamson and Dr Mark Lang

April 2014

CONTENTS

New Forest Economy Initiative:

A Northeast Community Based Economic Development Initiative



(*Source:* **TOWARD A NEW SETTLEMENT: A *deep place* approach to equitable and sustainable places. Professor Dave Adamson and Dr Mark Lang April 2014)**

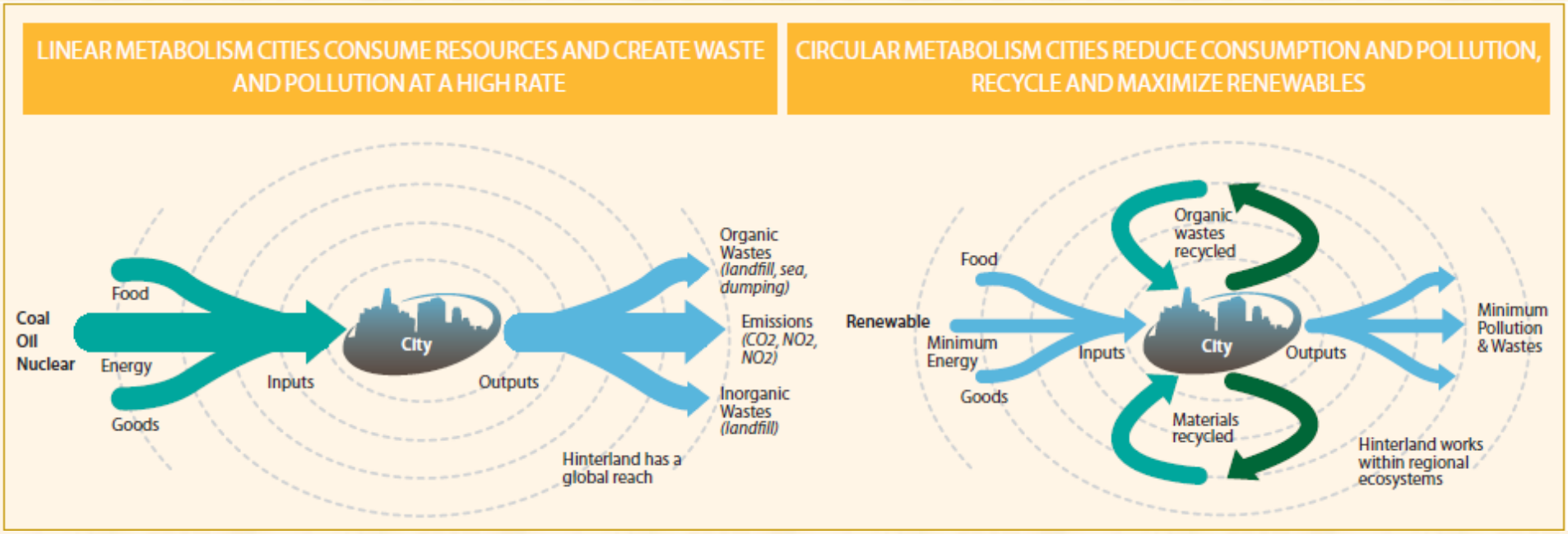
COMMISSION ON CITIES AND CLIMATE CHANGE

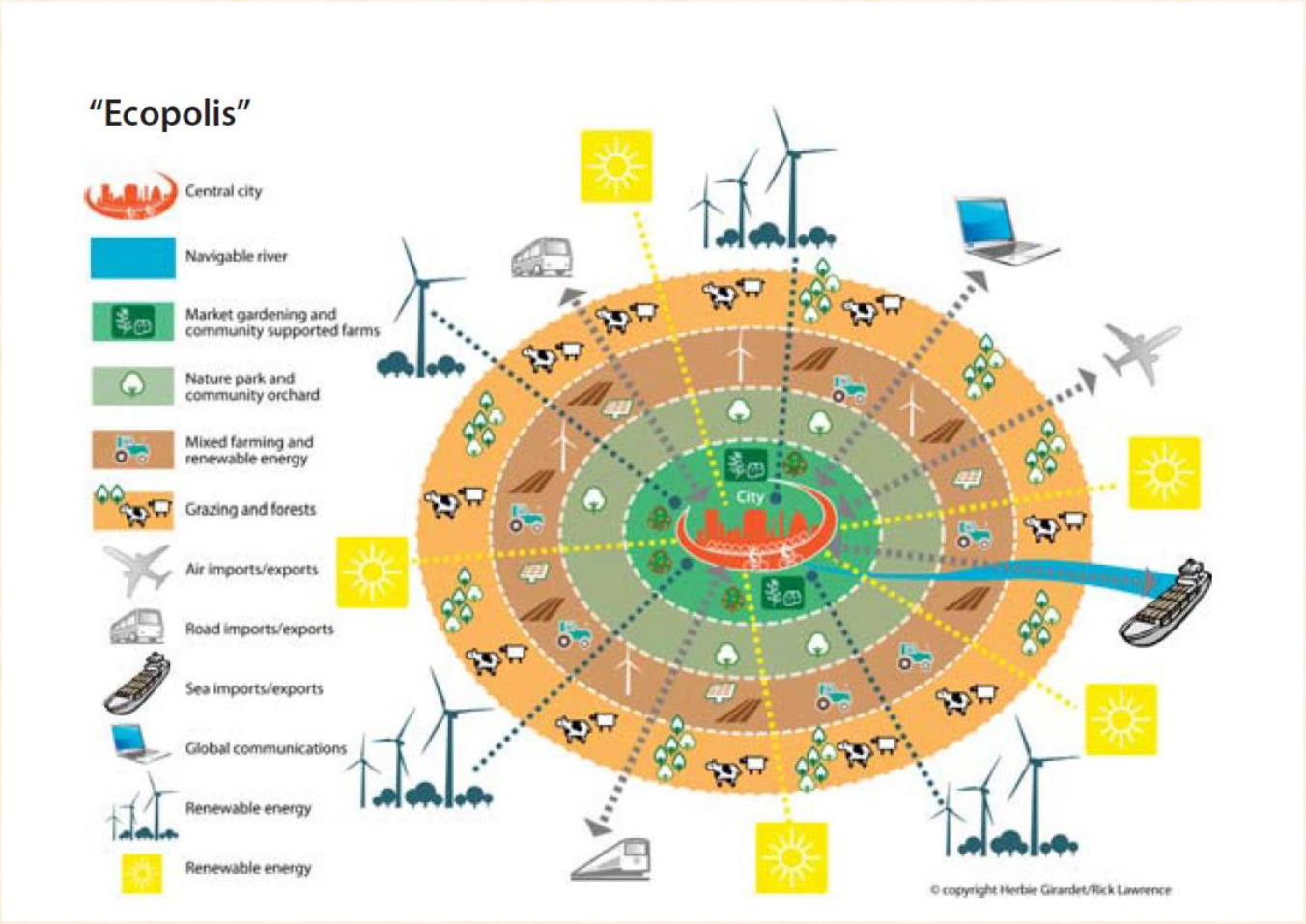
World Future Council

HCU HafenCity University Hamburg

Regenerative Cities

A key component of the sustainable city is a 'circular metabolism' which assures the most efficient possible use of resources





© Herbert Girardet / Rick lawrence

The Competent Society

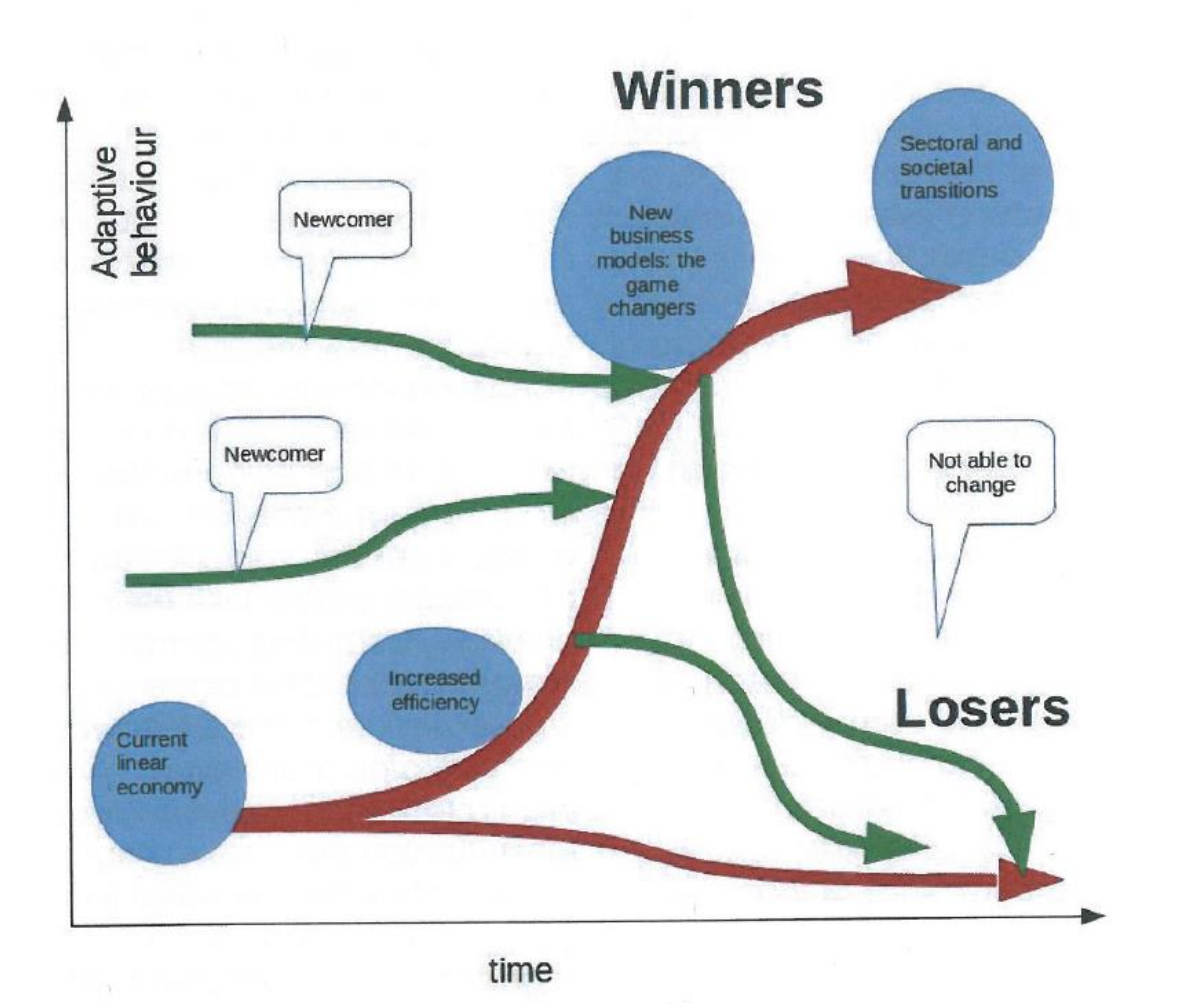
Governance and Rural Alliances for the Common Good

March 2015

Thijs de la Court

Rural Alliances

Investing in Opportunities



(Source: The Competent Society: Governance and Rural Alliances for the Common Good. Rural Alliances 2015)

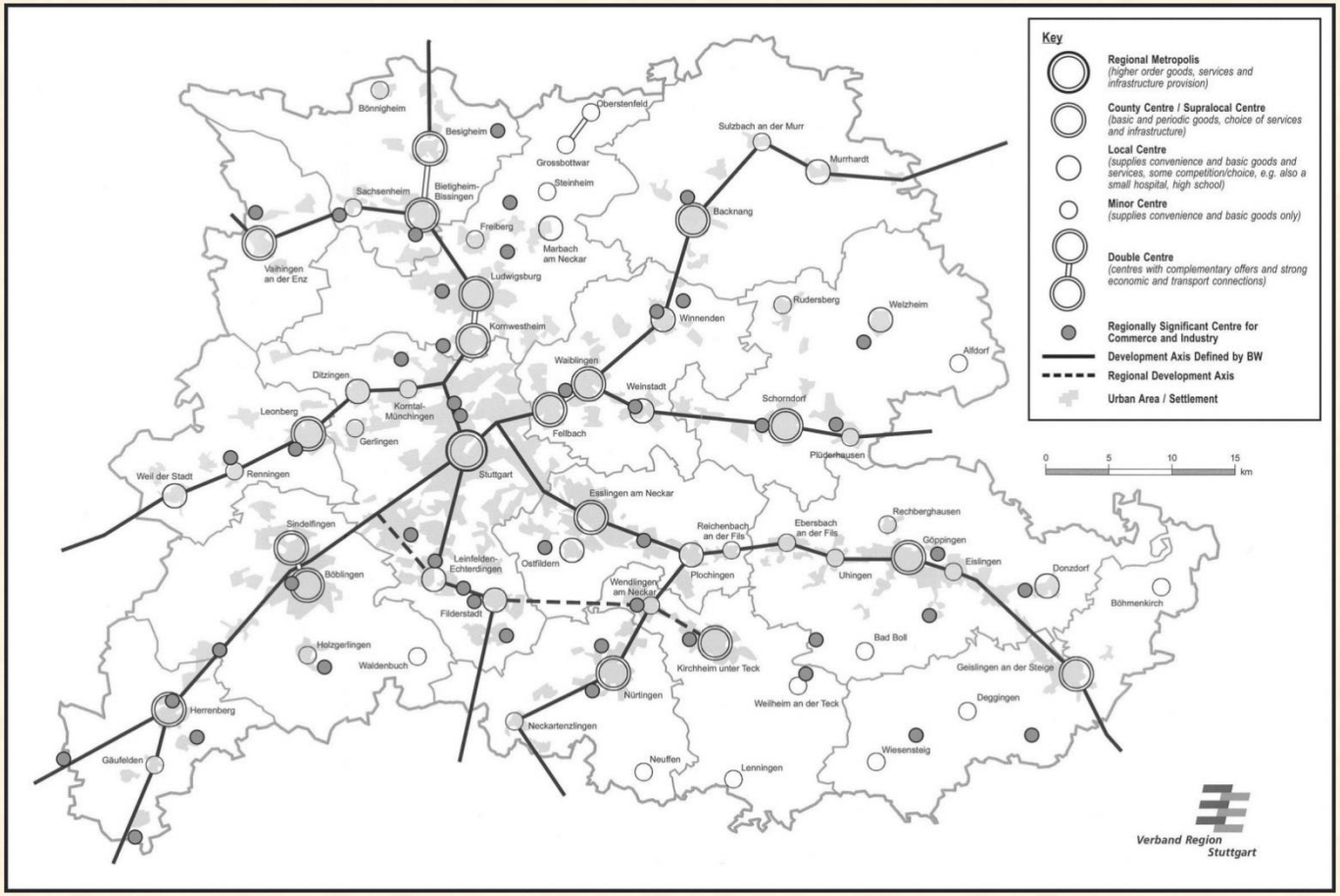
179 Municipalities in the Stuttgart Region

(Source: Metropolitan Ruralities: Regional Spatial Planning, Government and Governance as Recipe for Sustainable Development? Andrea Frank and Terry Marsden)

Baden-Württemberg's 12 regions

(Source: Metropolitan Ruralities: Regional Spatial Planning, Government and Governance as Recipe for Sustainable Development? Andrea Frank and Terry Marsden)

Regional Plan



(Source: Metropolitan Ruralities: Regional Spatial Planning, Government and Governance as Recipe for Sustainable Development? Andrea Frank and Terry Marsden)

Key features of SPM

- Foundational economy: deep locality studies (Williams, CREW, 2014)
- Endogenous-exogenous equations and networks
- Innovations scaling out, in and under the nexus
- Engagement with multi-level and reflexive governance and scales: village neighbourhood, catchment, city region, bio-region, province…
- Enrolment of community into the active reappraisal of: assets, infrastructures, entrepreneurial networks, landscapes
- Evolutionary collaborative/collective informal planning and project development around place-based assets
- Re-working strategies with existing regulatory and institutional structures and creating new ‘spaces for action’
- Re-organisation of bio-sphere property rights
- Participation in translocalism agenda.

SPM processes

- Networked value creation rather than GVA/GDP squeeze
- A re-capturing of multiple flows of knowledge, goods and services
- Reflexive spatial governance
- A re-localisation of social assets, capitals and market practices
- A commitment to social as well as technical design, social innovation as well as new product innovation.
- A re-cognition of space as place
- Filling in the social and infrastructural ‘missing middle’ between individualised behaviours and aggregated abstractions.
- Nexus (food, energy, water, landscape) thinking turning into practices.
- Community based action research and capacity building

SUSPLACE ITN Research projects

- Sustainability awareness and agency in food
- Eco villages and sustainable living
- Sense of place in sustainable place shaping
- Modes of innovation in managing the commons
- Re-grounding of practices in place-specific assets and resources
- The energetic society
- Place Ambassadors
- Connected Learning spaces
- Leadership of place
- Circular economy
- Place branding and communication in urban creative clusters
- Social economy , Social Entrepreneurship
- Nature as pathway for reaching social and health goals
- Sustainable city regions
- Place-based policies and pathways

Spatial Design Network Analysis (sDNA)

- Network Analysis Methodology
  - Active travel; walking, cycling, public transport
  - Urban Design & Land Use Modelling
  - Health & Community Cohesion
  - Environment
  - Economy
- Software created and released by Cardiff University
- Partners

ARUP

WSP | PARSONS BRINCKERHOFF

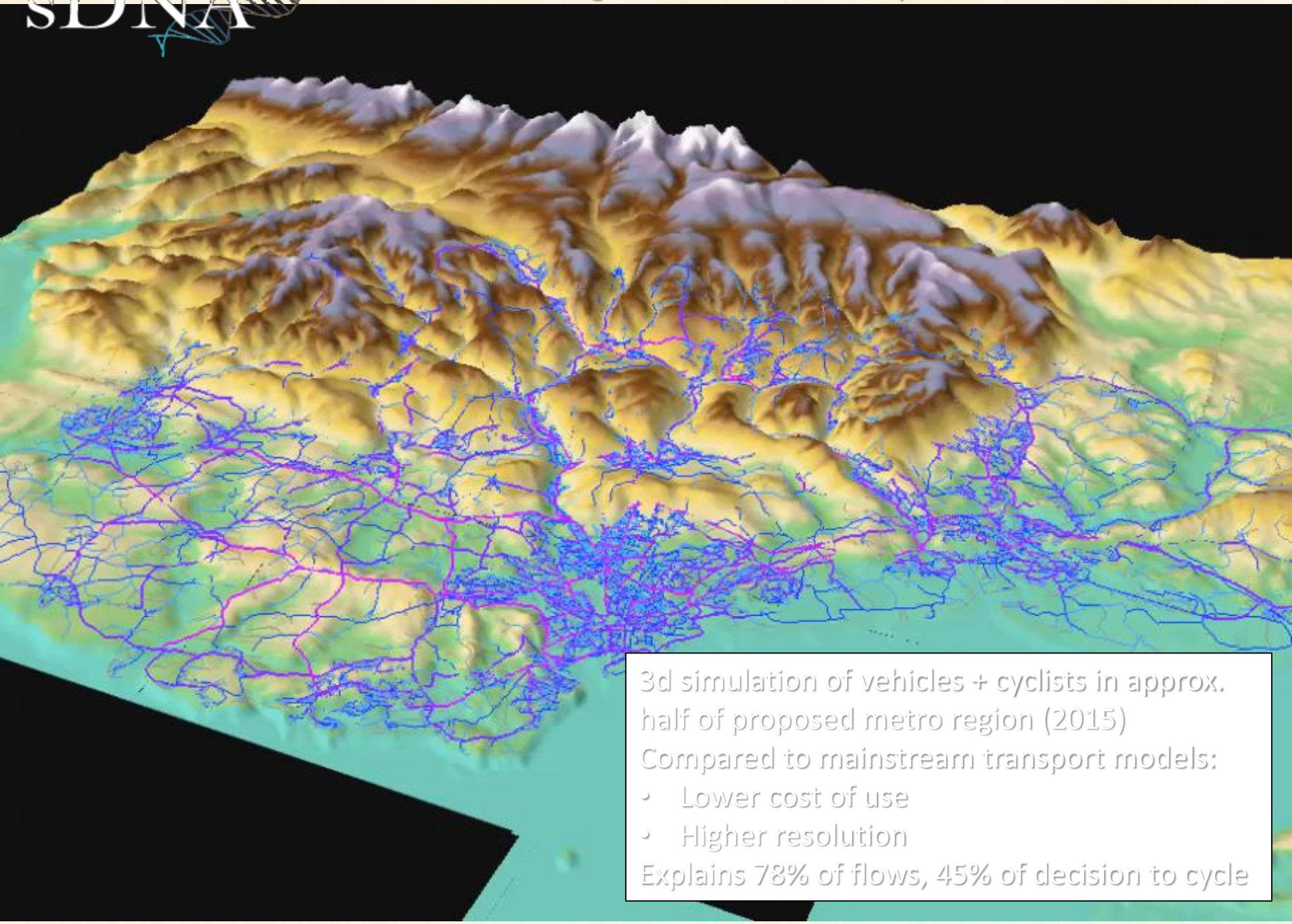
sustrans
JOIN THE MOVEMENT

THE UNIVERSITY OF HONG KONG 香港大學
faculty of architecture 建築學院

同济大学建筑与城市规划学院
COLLEGE OF ARCHITECTURE AND URBAN PLANNING TONGJI UNIVERSITY

sDNA

Network Modelling from Cardiff University



3d simulation of vehicles + cyclists in approx. half of proposed metro region (2015)

Compared to mainstream transport models:

- Lower cost of use
- Higher resolution

Explains 78% of flows, 45% of decision to cycle

sDNA projects

Past

- Predicting Community Cohesion arising from walkability (Int Jnl Health Geographics 2014)
- Sarkar et al (2015) Exploring associations between urban green, street design and walking: Results from the Greater London boroughs. (Landscape and Urban Planning)
- Predicting pedal cycle flows, risk and mode choice (Jnl Transport Geog 2016)
- Pedestrian and Vehicle models in central London (Int Jnl GIS 2015)
- Ecological footprints for the Hay Festival (Jnl Sustainable Tourism 2016)
- Evaluating walking, cycling, driving catchment of canal restoration for CRT (2015)
- Analysis of Shanghai metro system (2016)

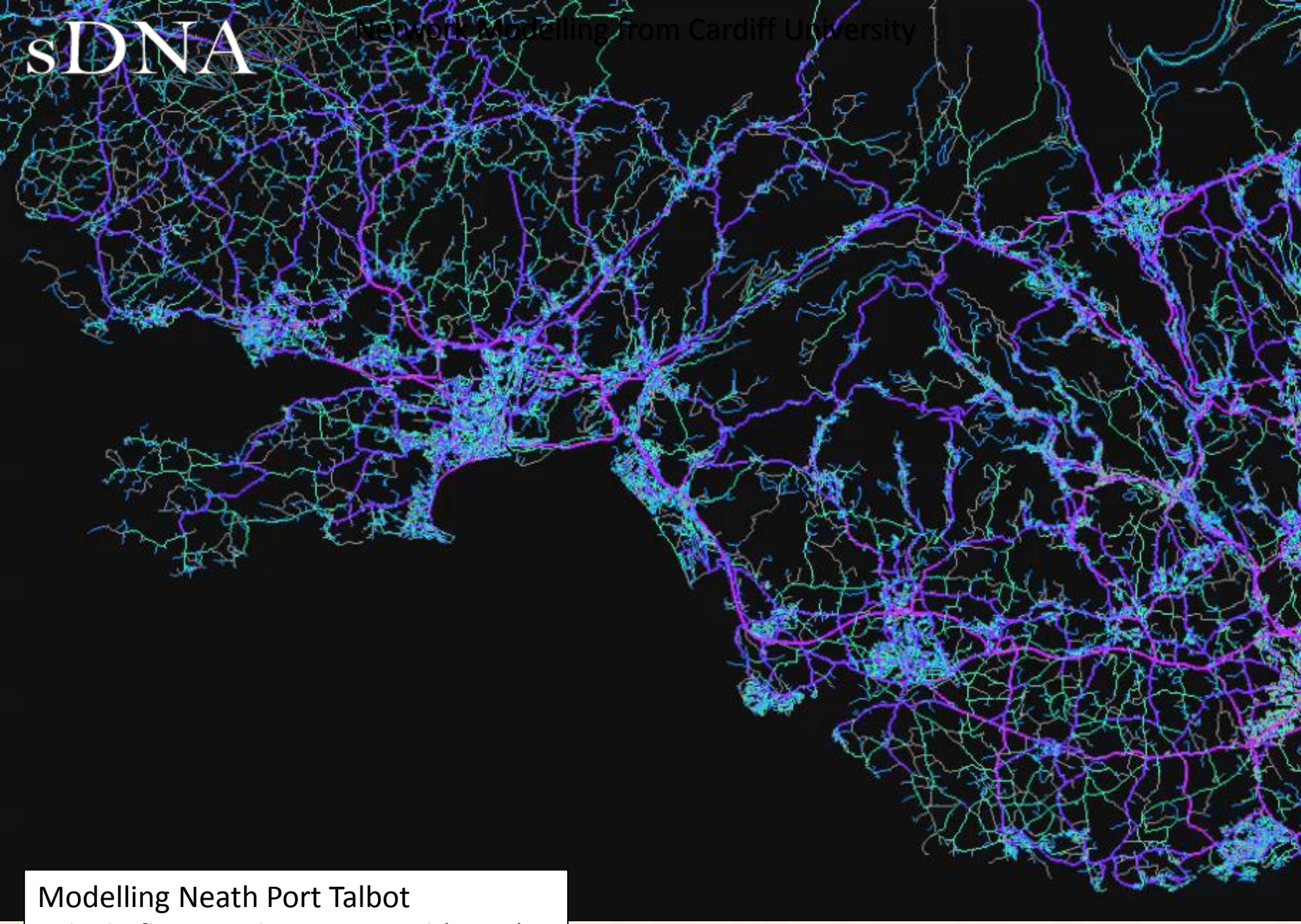
Ongoing

- Pedestrian mode choice & flow modelling
- Land Use
- Metro
- Health and access to Green Space

<u>sDNA is designed for big data health projects – used in UK BioBank (2014)</u>

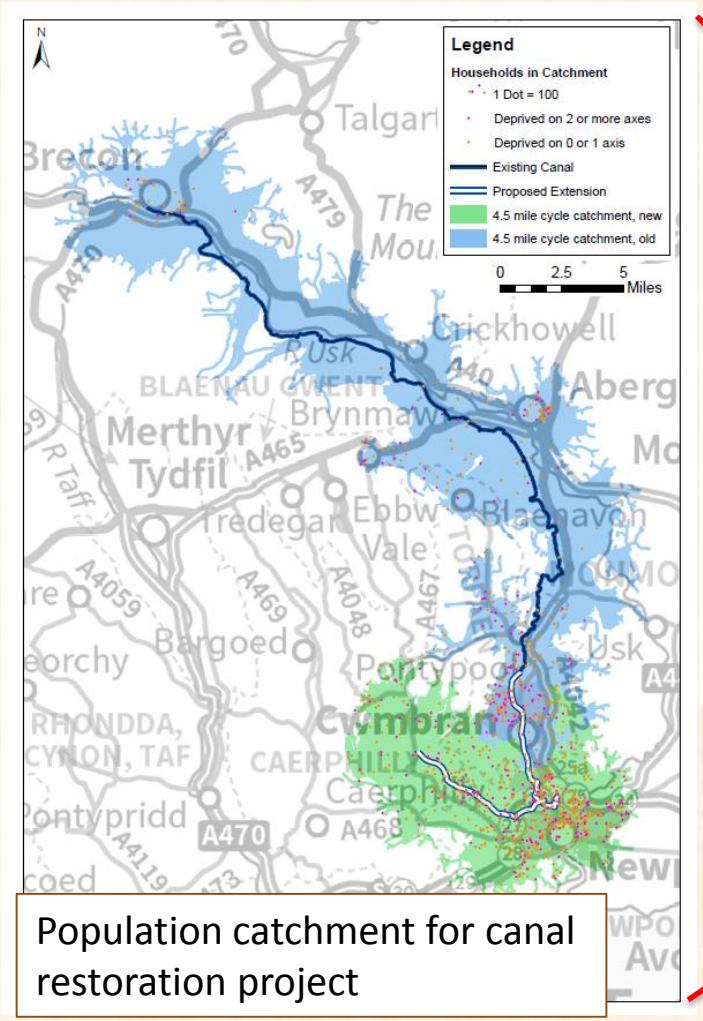
sDNA

Network Modelling from Cardiff University

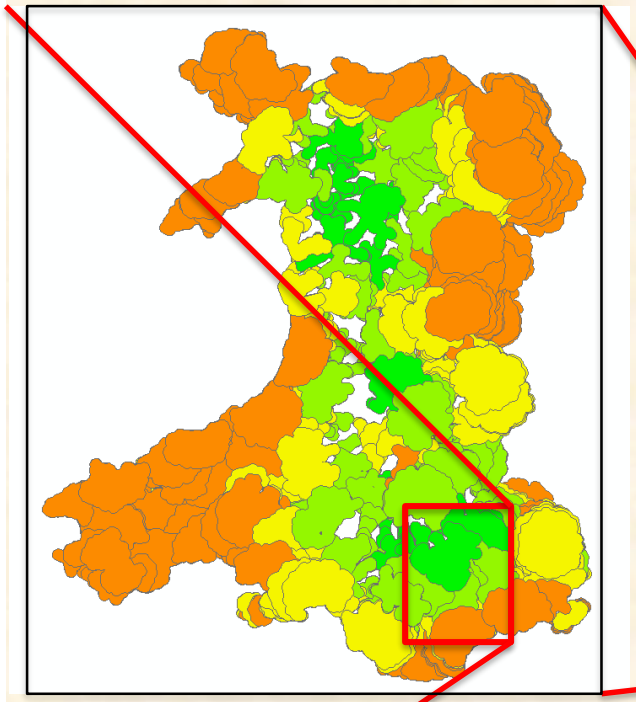


Modelling Neath Port Talbot
vehicle flows and active travel (2015)

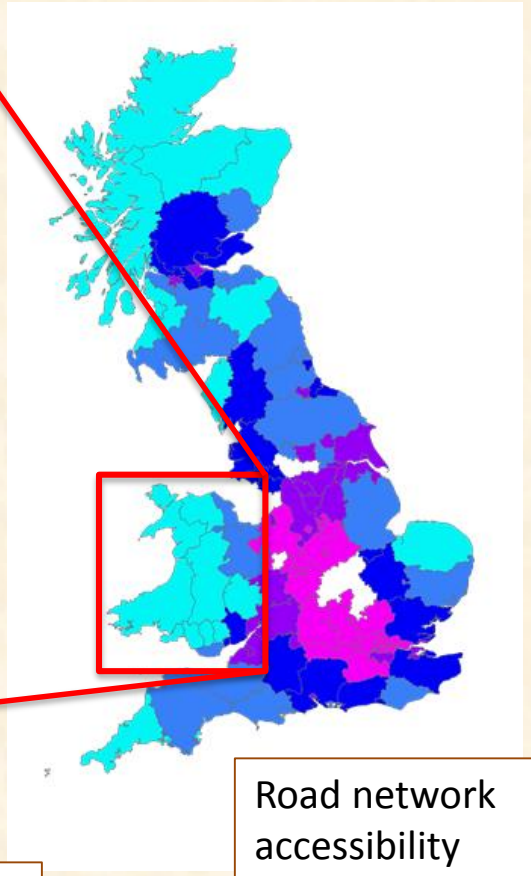
sDNA – regional to national



Population catchment for canal restoration project

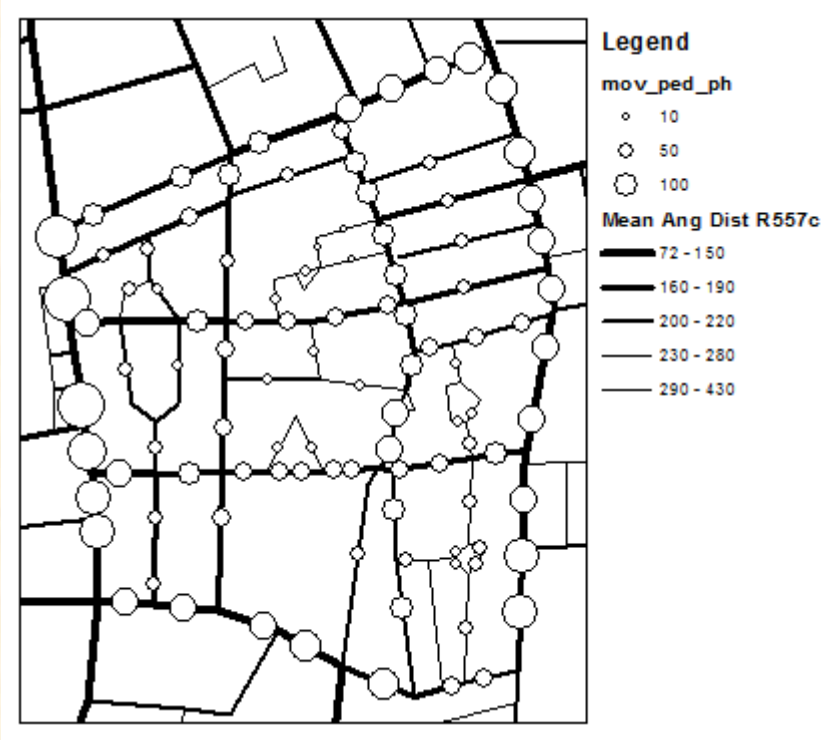


Access to green space



Road network accessibility

sDNA – Town Centre Scale

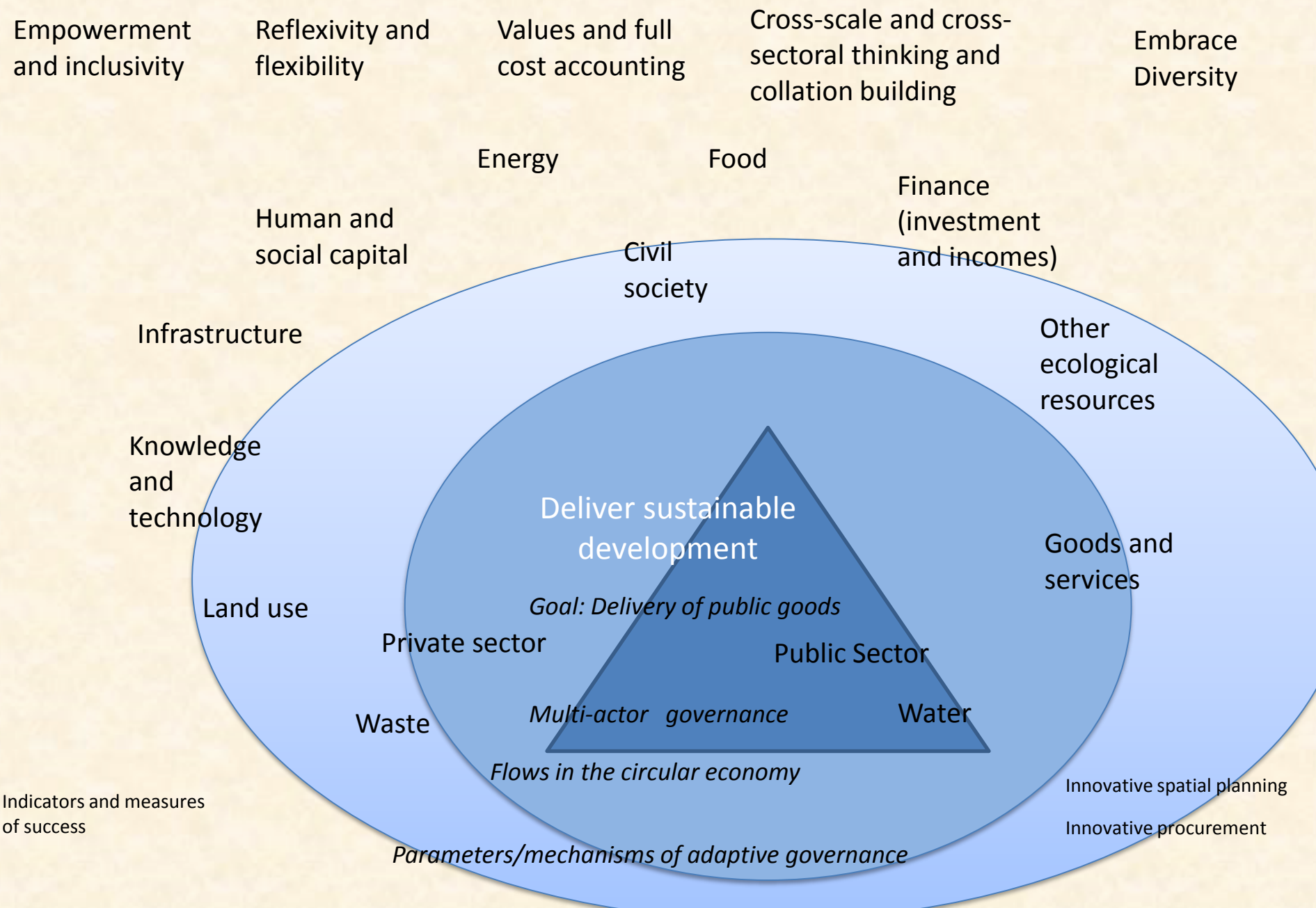


Adaptive Governance for Sustainable Rural Urban Linkages.

- **Drivers:**
- Circular economy
- Place-based mobilisations, assemblages and more reflexive governance
- Eco-economy versus bio-economy
- New governance models
- **Mechanisms:**
- Innovative spatial and sustainability partnerships and planning.
- Creative and green public procurement
- Improved and redesigned targeting monitoring and performance measures of adaptation.
- Arrival and policy space for new and expanded place-based (translocal) actors, networks.

Figure 1. Initial conceptual framework

Figure 1: Adaptive governance to the circular economy



- This report proposes 15 recommendations to address this including:
    - Placing sustainable diets at the heart of food and nutritional policy through adopting successful public health interventions such as Food for Life and bolstering public sector food procurement and catering provision;
    - Providing support for farmers to produce less intensive, more sustainable, and higher food quality products through more diversified sets of supply chains;
    - Increasing investment in ‘the missing middle’ infrastructure of the food supply chains;
    - Progressing research, development and extension in sustainable production and consumption systems;
    - Expanding horticulture;
    - Effective monitoring in line with the Well-being of Future Generation Act goals;
    - Creating a full Welsh Government Cabinet Minister for Food; and
    - Creating an active network of food sector Partnership Boards.

Sustainable Food Cities Network

Ana Moragues Faus

The main case

The **Sustainable Food Cities Network** (SFCN) is a partnership project that brings together public, private and third sector organisations who believe in the power of food as a vehicle for driving positive change and therefore are committed to promoting sustainable food for the benefit of people and the planet. The SFCN aims to help people and places to share challenges, explore practical solutions and develop best practice in all aspects of sustainable food. The SFCN constitutes a step forward in scaling up and out urban food strategies in a national context, representing a pioneer and unique experience in the **world of urban food policy**.

The main aim of this case study is to understand **how these new spaces of deliberation can contribute to deliver FNS** at different levels. Therefore the key research question revolves around how the SFCN addresses FNS vulnerabilities. This includes analysing the practices and governance configurations that have proven successful for this task, as well as the challenges encountered.

Connections workshop and the case

The SFCN is particularly committed to tackle food poverty in the UK supporting policy changes and practices at the local but also national level. In this context, the **Wales Food Poverty Alliance** (WFPA) is a timely incentive to discuss which policies and practices need to be put in order to deliver FNS. Through TRANSMANGO we aim to support these initiatives in the process of reflecting and planning the necessary actions to build a more food secure Wales.

The first workshop has already taken place. Participants include representatives from Public Health (Wales and Cardiff), Wales Local Government Association, Welsh Government, Cardiff City Council, SFCN, Foodbanks, Oxfam, Community Supported Agriculture Network, Food Cardiff, Fareshare, WRAP and Rural Regeneration Unit.

Image from http://sustainablefoodcities.org/campaigns/2015beyondthefoodbank

Preliminary findings

The research so far has included the analysis of secondary data; attendance to SFCN workshops in Cardiff, London (x2) and Edinburgh (x2); conducting exploratory interviews and participating regularly in the Cardiff Food Council. The table below shows some of the preliminary insights derived from our research.

Contributions to FNS	Challenges
SFCN promotes an holistic approach to sustainable food .	Place-based needs and priorities push local actors to focus on specific and pressing issues .
SFCN proposes the establishment of multi-actor partnerships as a necessary element of a sustainable food city.	Partnerships are very diverse, with different spaces for participation and inclusivity, actors play different roles.
Cities and municipalities as key transition places. They have responsibilities , powers and capacity to build more sustainable food systems.	The focus on cities raises issues around spatial justice (hinterlands and rural areas) and also the incorporation of global dynamics.
The network can contribute to debates at different levels.	Political context hinders progress at UK level. The SFCN does not engage at the EU level.
Capitalizing on synergies among different sectors and actors, relying on the public and voluntary sector.	The resilience and long term sustainability of individual cities and the network are conditioned by public funding and civil society involvement. Also individual food champions play a key role.
Cities are engaging in policy making, developing action plans, and specific programs. There are increasing levels of activity and more cities joining the network.	How to measure success constitutes a key challenge to inform internal decisions but also gain support from local and national governments and funders.

The first workshop has been instrumental to develop a vision for a *Food Secure Wales.* Three main areas were selected as key to deliver FNS: Education and Skills, Integrated and Implemented Food System Strategy and Diverse Farming Systems.

Progress & plans

January'16	Scenario workshops
March'16 (9^{th})	Transition pathways workshop
	Workshop Right to Food (15^{th})
	SFCN Conference (21-22^{nd})
July '16:	Report on case-study progress
November '16:	Final report on case-study
	Final report of foresight workshop

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Infrastructure to access to fresh fruit & vegetables in Cardiff: Wholesale Market, Co-ops and Vegetable boxes

Ana Moragues Faus, Barbora Adlerova and Tereza Hausmanova

The satellite case

The debate on Food and Nutrition Security (FNS) has by and large focused on the production and consumption ends, ignoring a range of other key functions operating in the middle. There is a range of food hubs that are instrumental both for producers to sell their products and for consumers to access them. In this satellite case study we investigate three food hubs that provide fresh fruit and vegetables to Cardiff residents.

First, the Bessemer **wholesale market** constitutes a key piece of infrastructure acting like a food broker as wholesalers take the risk of selling fresh products from producers directly to public and private institutions such as independent shops, restaurants, caterers or hospitals.

Second, different **organic vegetable box schemes** are operating in Cardiff, managed by producers, cooperatives or small independent business.

Finally, **community food co-ops** have been established across Wales to facilitate access to affordable fresh fruit and vegetables.

The case is guided by the following key research questions :

- What are the origins of this project and how has it evolved?
- Who takes part and why? (consumers, producers, traders, transport, volunteers, etc.)
- How does this project contribute to FNS? Explore views on FSN and dimensions:
  - Availability: price, types of foodstuffs offered, quantity, origin, etc.
  - Access: price, physical access, social networks, etc.
  - Utilization: cooking, waste, skills, preservation, etc.
  - Sustainability: economic, environmental and social dimensions, and evolution in the future.

CO-OP: Heather and Ralph Perrett at Bulwark Community Centre.
http://www.southwalesargus.co.uk/news/11727336.Fresh_and_local_produce_make_food_co_ops_hit/

Preliminary findings

The satellite case study is still in a preliminary phase. We have collected secondary data and information on the origins and evolution of these three hubs which reveal vulnerabilities of key food infrastructure in the city as described below:

The Bessemer **Wholesale Market** opened in 1965 with 40 wholesalers operating. At the moment, and after several decades of intense competition with supermarkets, the are only 7 wholesalers left. To compete, the wholesalers have focused on their products' quality and freshness. The wholesalers left have a very limited supply of products sourced in the UK, which varies depending on the season. According to the wholesalers there is no significant opportunity to source fruit and vegetables more locally. There is only one organic wholesaler operating in Cardiff, trying to purchase food as locally as possible and offering organic local farmers a guaranteed place to sell. Furthermore, the market site is for sale due to new housing developments and plans to relocate the market are stalled. This market plays a critical role in the food infrastructure of the region, supplying most of Wales. Next research steps include gathering data from buyers.

In Cardiff there is a diverse range of **organic vegetable box schemes** operating. Our research will tackle three different models and their contributions to FNS, including Blaencamel organic boxes (managed by a family farm), the Riverside Market Garden (a civil society led market garden), the Welsh Food Box Company (a company that delivers organic local and non-local produce) and the Peny-lan Pantry (a small shop and café that offers local organic personalised boxes).

Finally, the **Community Food Co-Operative** Programme in Wales was launched in 2004 funded by the Health and Social Care fund of the Welsh Government. The Rural Regeneration Unit has run the programme helping to set over 300 co-ops in Wales to supply, from locally produced sources as far as possible, quality affordable fruit and vegetables to disadvantaged communities. Funding of the programme is running to an end. Next research steps include analysing secondary data and conduct targeted interviews in Cardiff's co-ops to asses their contribution to FNS and their resilience.

Progress & plans

February'16	Collection primary data
April'16	Analysis of data
July '16:	Report on case-study progress
November '16:	Final report on case-study
	Final report of foresight workshop

CARDIFF UNIVERSITY
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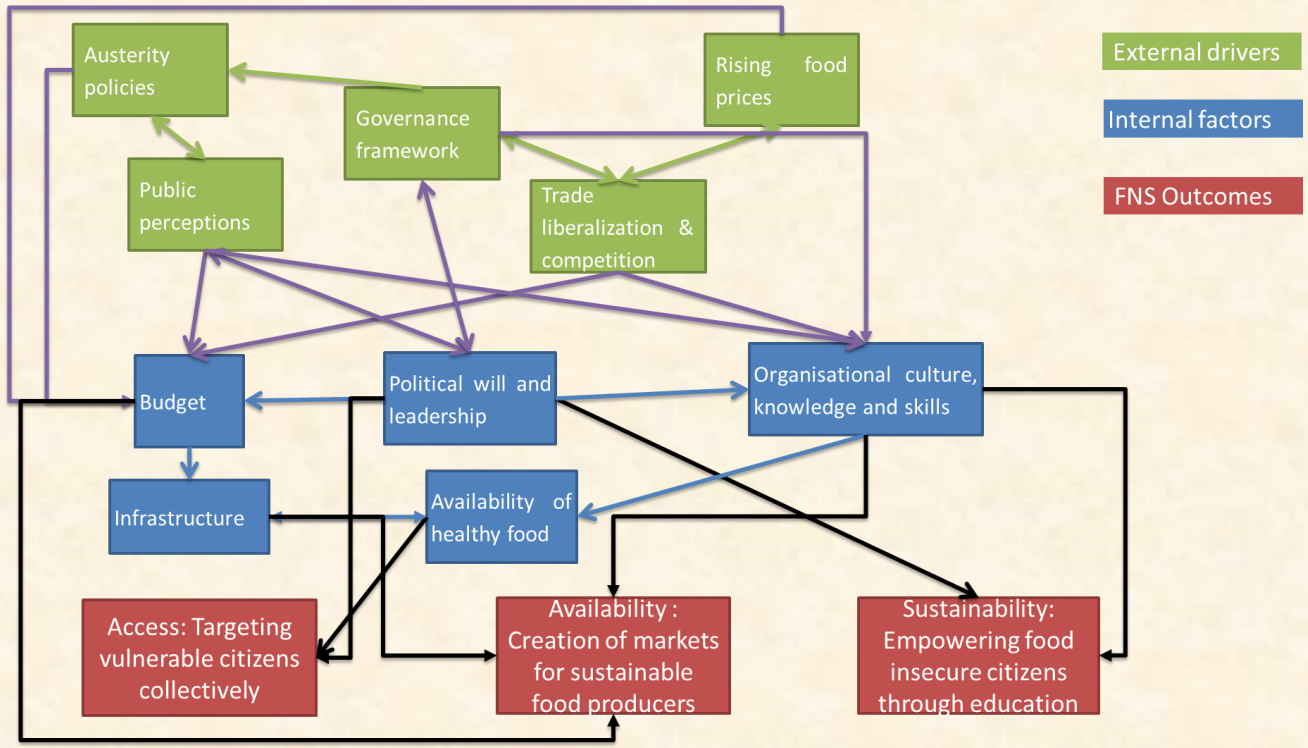
Governance hotspot: Green Public procurement

The figure (Figure 4) below shows the relationships among the internal factors, external drivers and FNS outcomes. This figure allows to



Shaping the eco-economy through financial re-engineering

- Creating regional accounts for sustainable development projects and initiatives (e.g Het Groene Woud, Netherlands).
- Shorter supply chains and networks.
- Local enterprise trading systems
- Time banking.
- Crowd funding.
- Community-based energy feed-in tariffs (e.g Germany)

Sustainable Land Management: coming to a collective, multi-stakeholder vision

- Understanding and accounting for all of the values that land management delivers.
- How to optimise the profitability and viability of land-based businesses.
- Build up levels of trust between stakeholders.
- From process-based to outcome-based regulation.
- Government policy and strategy to enable local and regional alliances and networks.

Towards the (post-neo-liberal) eco-economy.

Enact distributed spatial development: quadruple helix: reflexive design with science, policy, community, business.

Create and join up new translocal and regional food and energy supply networks.

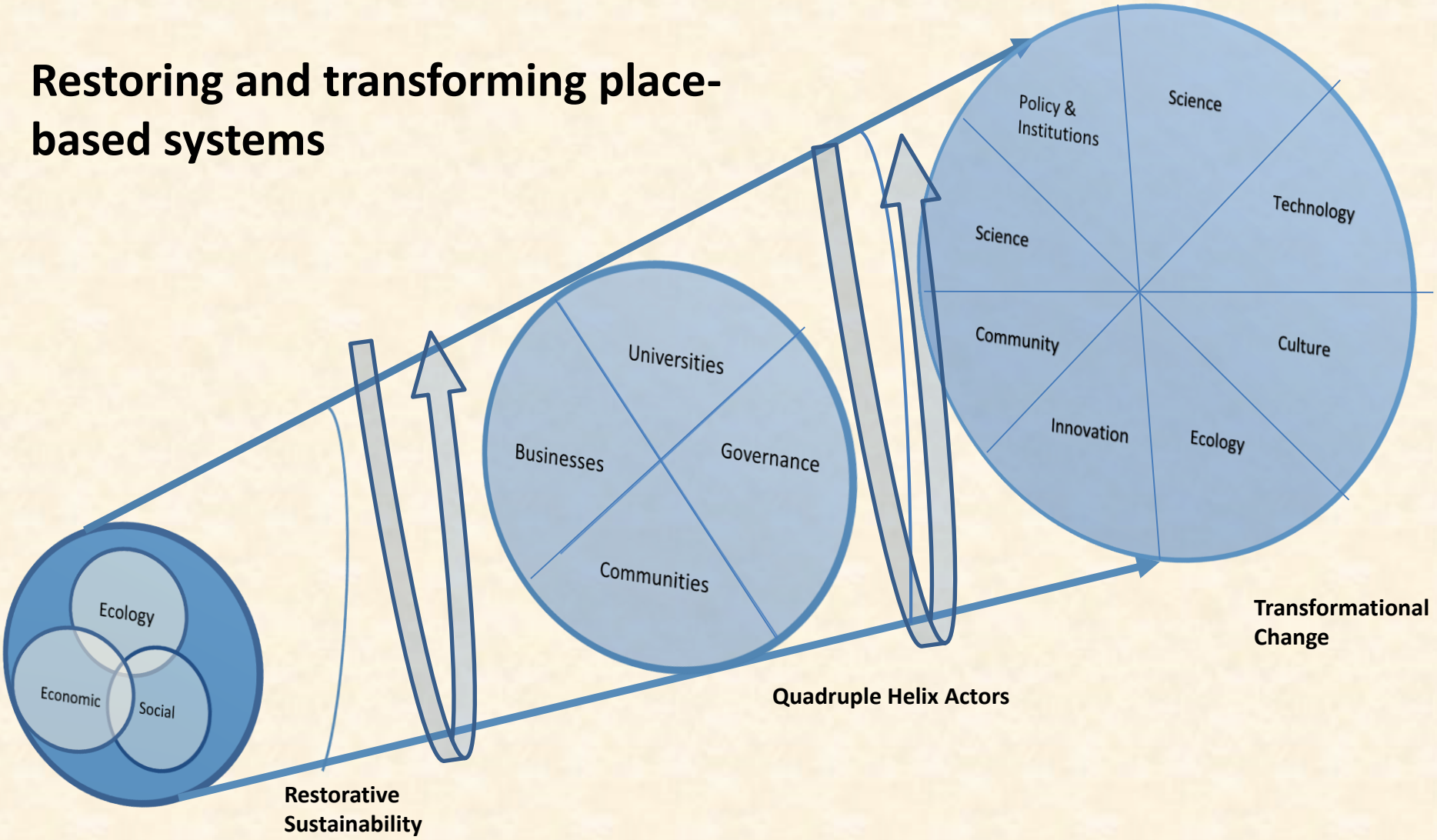
Create innovative platforms for ‘post normal’ sustainability science and sustainable place-making.

Progress Eco-economic and circular economy models (across ‘regenerative’ cities and regions) which embrace a more distributed bio-economy, giving priority to social and ecological objectives and adaptive structures.

Build new infrastructures, including new financial ecologies , food/energy/tourism hubs using digital media.

Embed and translate these into more reflexive multi-level governance frameworks.

Restoring and transforming place-based systems



Where do we go from here?

- Implement the triple and quadruple helix: fora for bring together science, business, civil society, public sector, media and politics at local and city level.
- Living labs- experimental sites for trying out systems and place-based solutions-e.g integrating green infrastructure; new food alliances and initiatives.
- Create new platforms of interchange between science and communities- communities of practice in co-producing contexts. Case study areas and areas of practice.
- New thematic policy dialogues: eg. Youth; excluded groups; access to green infrastructures.