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The bioeconomy we *need*: A regional development approach to the bioeconomy

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- The project BioWay
- Definition of bioeconomy and the EU strategy
- Linking bioeconomy and human wellbeing → HSDA approach
- Wellbeing, needs, strategies
- The HSDA approach applied in BioWay
- A possible way forward: using the HSDA approach as a multicriteria assessment tool

The project Bioway

The project BioWay, in a Nutshell

- Aim of the project is to develop a monitoring framework for the bioeconomy and to identify social-ecological strategies in the social system that support safe and just development pathways in the EU bioeconomy.
- Duration: 2017-18, funded by the ÖNB Jubiläumsfonds; carried out at our institute.
- There are 4 work packages:
 - WP1: Development of a framework to assess the bioeconomy in relation to human wellbeing and the environment (human wellbeing supported by ecosystems and the bioeconomy).
 - WP2: Quantitative analysis of the social functions and environmental footprints of the current bioeconomy.
 - **WP3: Understanding the multiple roles and functions of the bioeconomy; participative development of needs based pathways towards a sustainable bioeconomy**
 - WP4: Modelling the social and environmental dimension of bioeconomy pathways

EU Bioeconomy Strategy

What is a bioeconomy?

- ... differs from a 'mainstream' economy in its extractive material: plant-based biomass is produced from carbon dioxide, water and sunlight, leading to potentially lower carbon footprint
- ... refers to the production and extraction of renewable biological resources and their conversion into food and feed, bio-based products and bioenergy (EU Policy briefing 2017).
- ...a wide range of sectors, in particular agriculture, forestry, food processing, but also energy, paper, construction materials, innovative manufacturing materials, chemicals, bioplastics and biotechnology (mainly chemical)
- **In BIOWAY:** the bioeconomy is a process to fulfill social functions within planetary boundaries. Concerns all humans and their households, who meet their needs with biobased goods and services, within or outside the market.

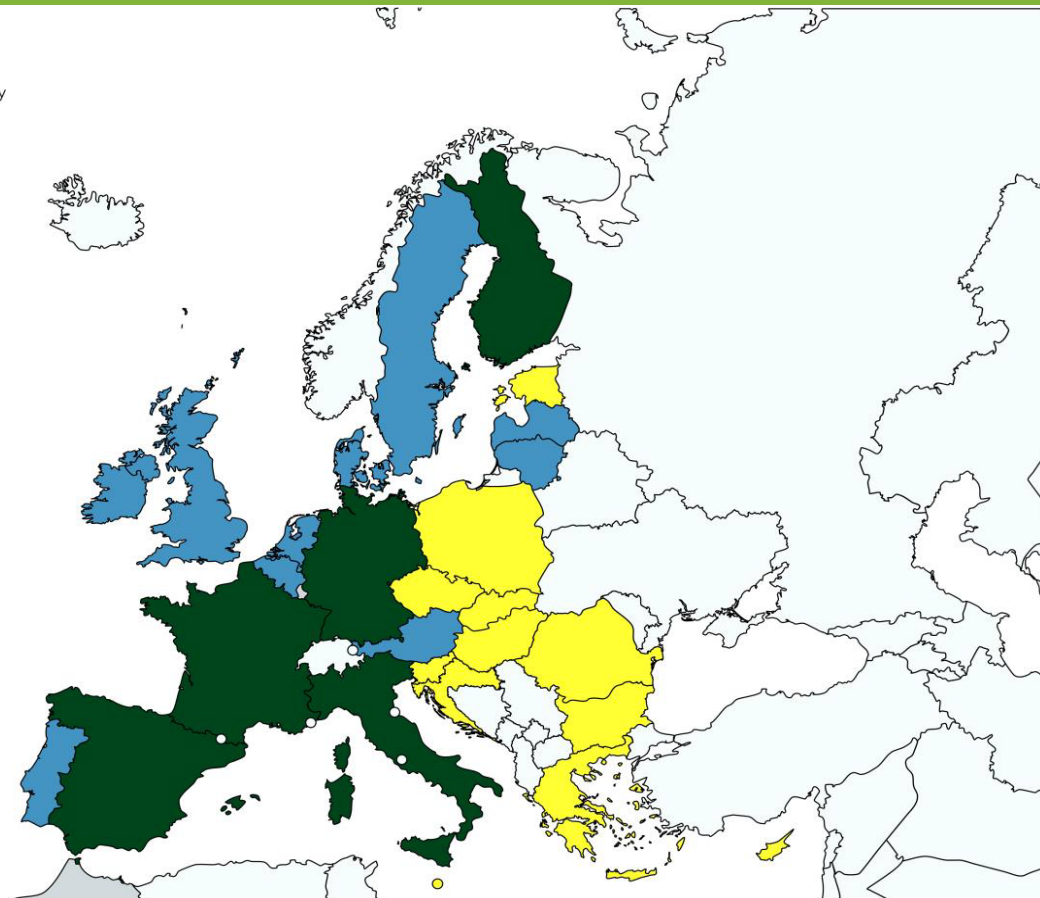
Bioeconomy strategies in Europe

(European Commission, DG Research and Innovation, 2017)

- Germany: aims at self-sufficiency in energy and raw materials, knowledge based ('green technology')



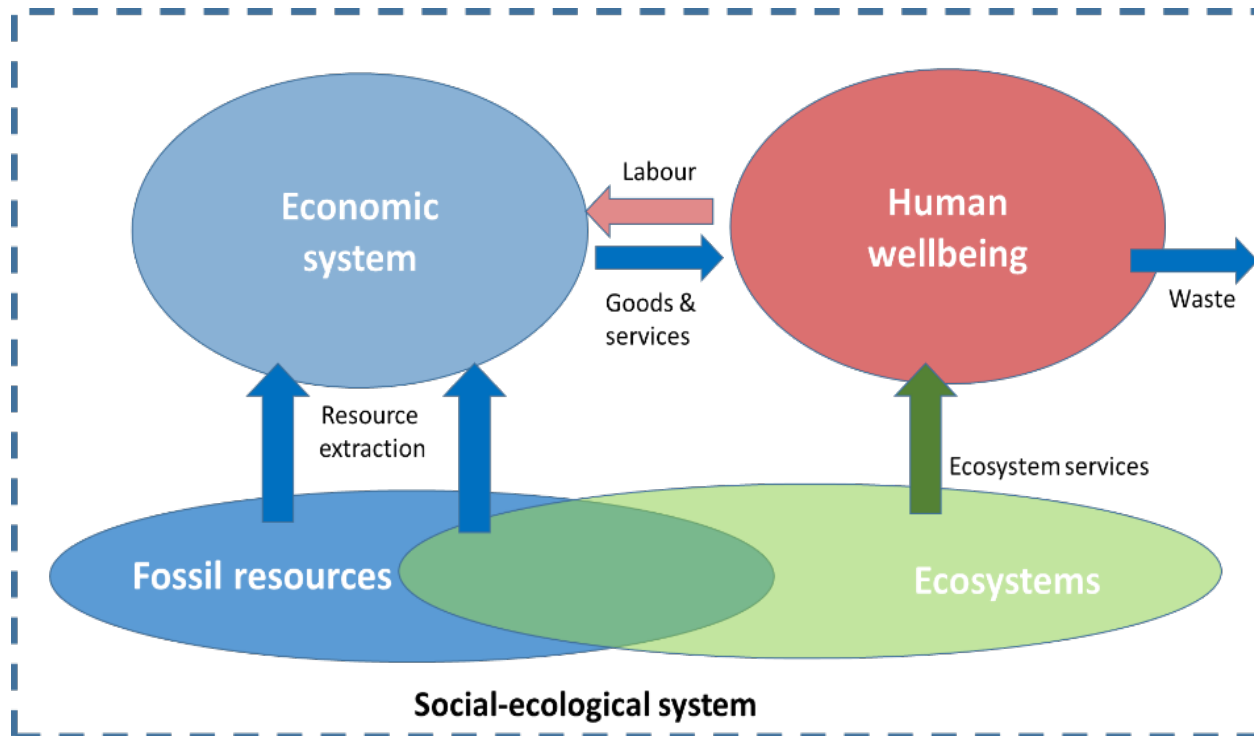
- Finland: Wood based bioeconomy, economic growth
- Netherlands: chemical and energy sectors, focus on securing biomass
- Sweden: aims to reach zero greenhouse gas emissions by 2050. Analyses linkages climate, environment and society.
- Austria: FTI Strategy, growing non-food bioeconomy, capitalistic structures (Hausknost, 2017)



Linking the bioeconomy and human wellbeing

Human wellbeing dependent on ecosystems and the economic system

Current bioeconomy



Interrelation between social and ecological systems

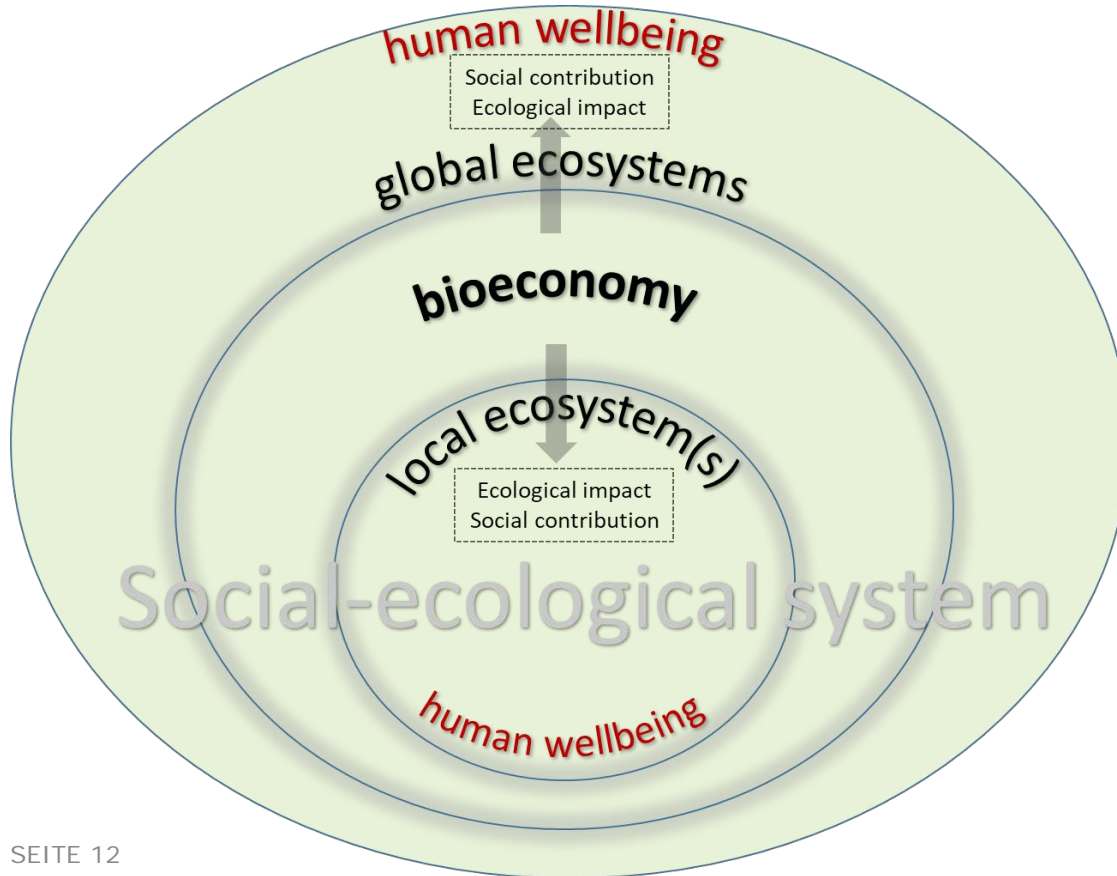
- Millennium Ecosystem assessment: humans are part of the biosphere in (1) being fundamentally dependent on the services provided by ecosystems as well as (2) being a major force in shaping local and global ecosystem dynamics and their carrying capacity to contribute to human wellbeing ([Folke, 2006](#)).
- The human and ecological system are interrelated and understood as a coupled social-ecological system (SES) (Janssen en Anderies, 2007)
→ need for a more interdisciplinary approach to the complex societal challenges of the modern welfare state and the wellbeing of individuals therein ([Max-Neef, 2005](#)) and to complement mathematical models of economic growth and efficiency with a more holistic approach to human wellbeing ([Anderies et al., 2004](#); [Schlüter et al., 2012](#)) .

Need to develop approaches that allow socially and environmentally just future pathways of bioeconomy



Source: K. Raworth, 2012

Human wellbeing at the local level



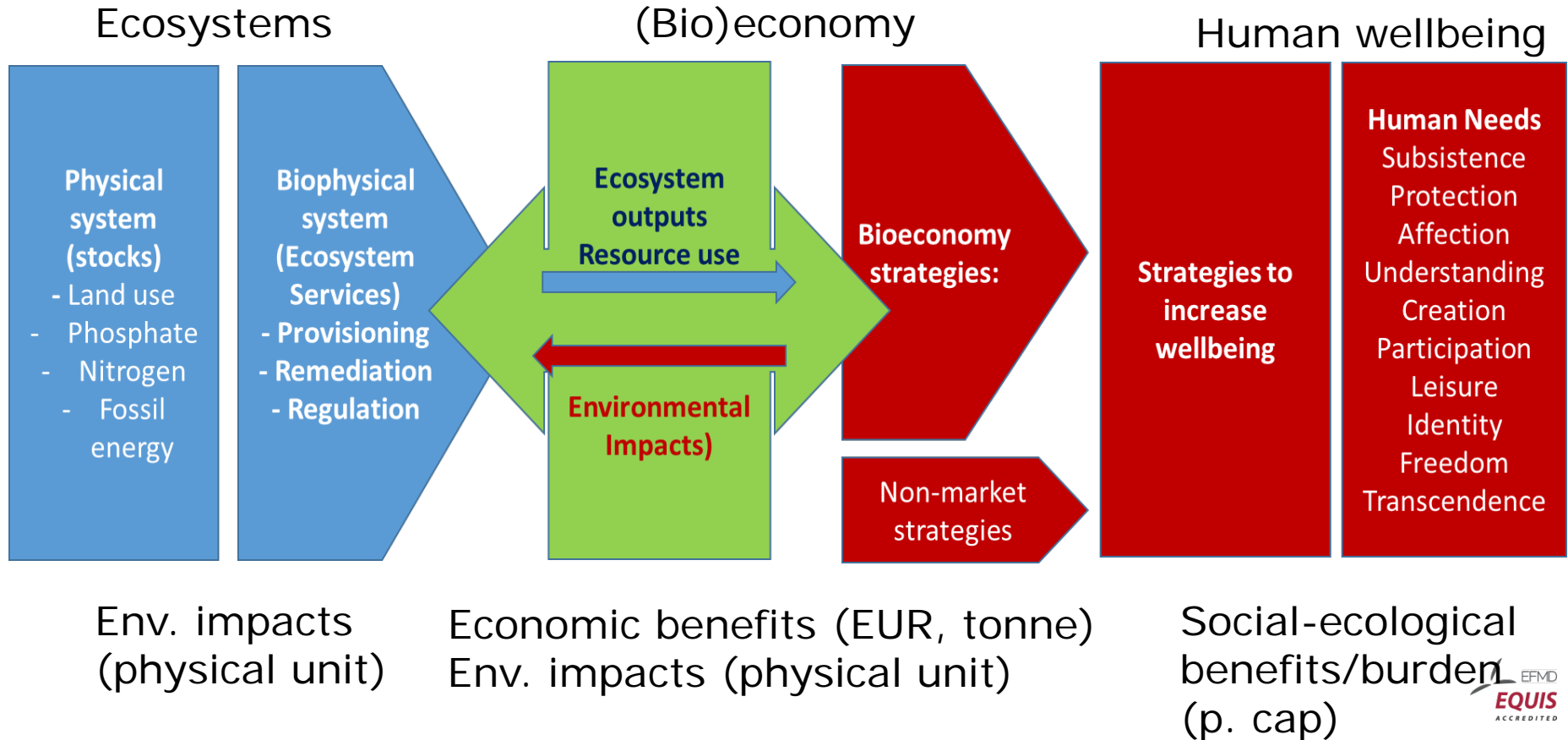
Tension:

- Bioeconomy pathways from an economic perspective (global networks)
- Bioeconomy pathways from a social-ecological perspective (= embedded economy)
- SES: agency at the human level

Why a needs based approach?

- Needs are universal: people can develop a common language and connect
- Needs are perceived as deprivations, they drive development (shared needs can drive a bottom up regional development)
- Bioeconomy plays important role in needs fulfilment, in particular subsistence needs
- Bioeconomy (commodified ecosystem services) competes with non-commodified services (fresh water, clean air, biodiversity, ...) and, hence, is also a threat for wellbeing (especially across multiple scales)
- Need for understanding (complexity)!

The BLOWAY framework: 1 assessment framework with different dimensions



Wellbeing, needs and strategies

„Quality of life ...defined as subjective wellbeing and personal growth in a healthy and prosperous environment“ (Lane 1996)

Quality of life has two determinants:

- Objective: opportunities one person has to fulfill his/her needs (resources, institutions, income, talents...)
- Subjective: perception of the fulfillment of these *needs* (**wellbeing**, human flourishing)

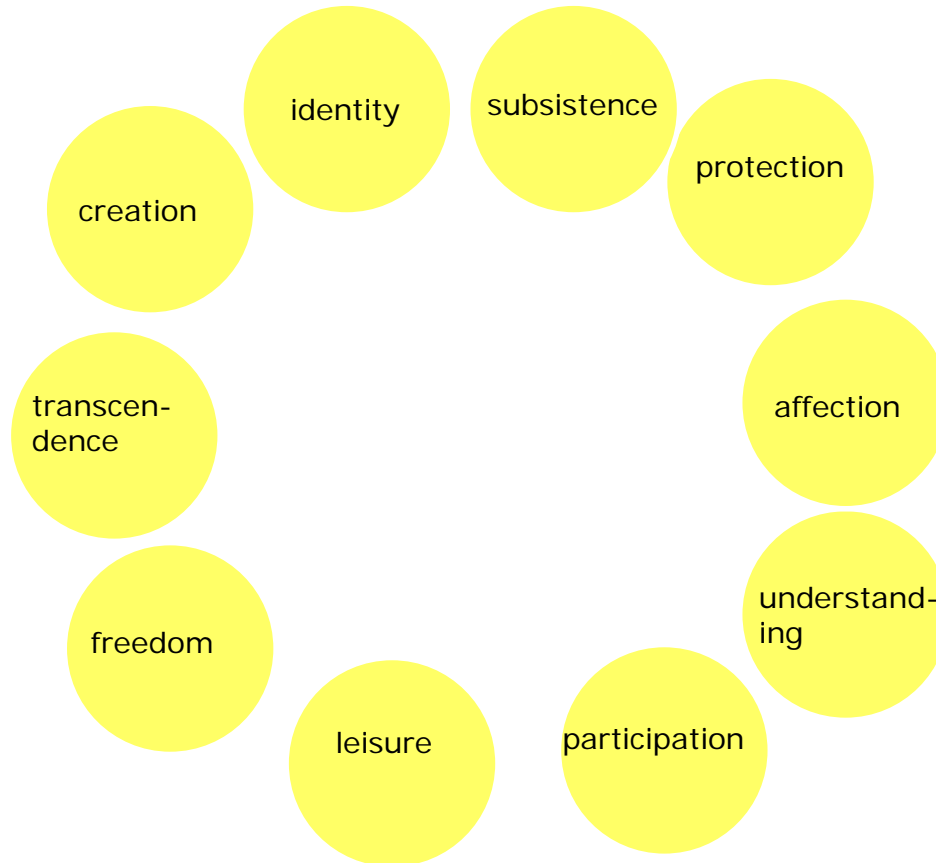
Subjective wellbeing

- Wellbeing as enduring, overall life satisfaction where, in line with psychological literature, a distinction is made between hedonic (pleasure-seeking) and eudaimonic (flourishing) wellbeing.
- **Hedonic wellbeing:** a multidimensional framework which includes subjective evaluations of life satisfaction, aiming at maximising pleasure and minimising pain (utility maximisation).
- **Eudaimonic wellbeing:** refers to Aristotle's actualisation of virtues as a way to live a good or meaningful life (Nussbaum 2015, Sen 1999). It means striving to realize one's personal and social potential. Eudaimonic wellbeing focuses on the individual in the broader context of society, which allows for social institutions and political systems to be studied in light of their ability to enable individuals to flourish within them.

Concept of needs

- Most fundamental dimension of human flourishing
- Non-negotiable
- Essential for health/wellbeing of individual
- Needs are universal in type, therefore abstract
- Needs are not (un) sustainable
- Different „lists“ exist: Maslow, Nussbaum, Alkire, Max-Neef

Max-Neef: fundamental human needs



Strategies



- Strategies serve to fulfil one's needs
- They are chosen depending on values, culture, preferences, resources and chances for realisation, social environment (determine lifestyles)
- They are often chosen unconsciously
- Basic (subsistence) needs require rather materialistic strategies
- Other needs: also immaterial strategies possible
- Choice of strategies can lead to (un)sustainable development (use of resources)
- Strategies are negotiable and concrete, but not universal

The Human Scale Development Approach

The HSDA in a nutshell

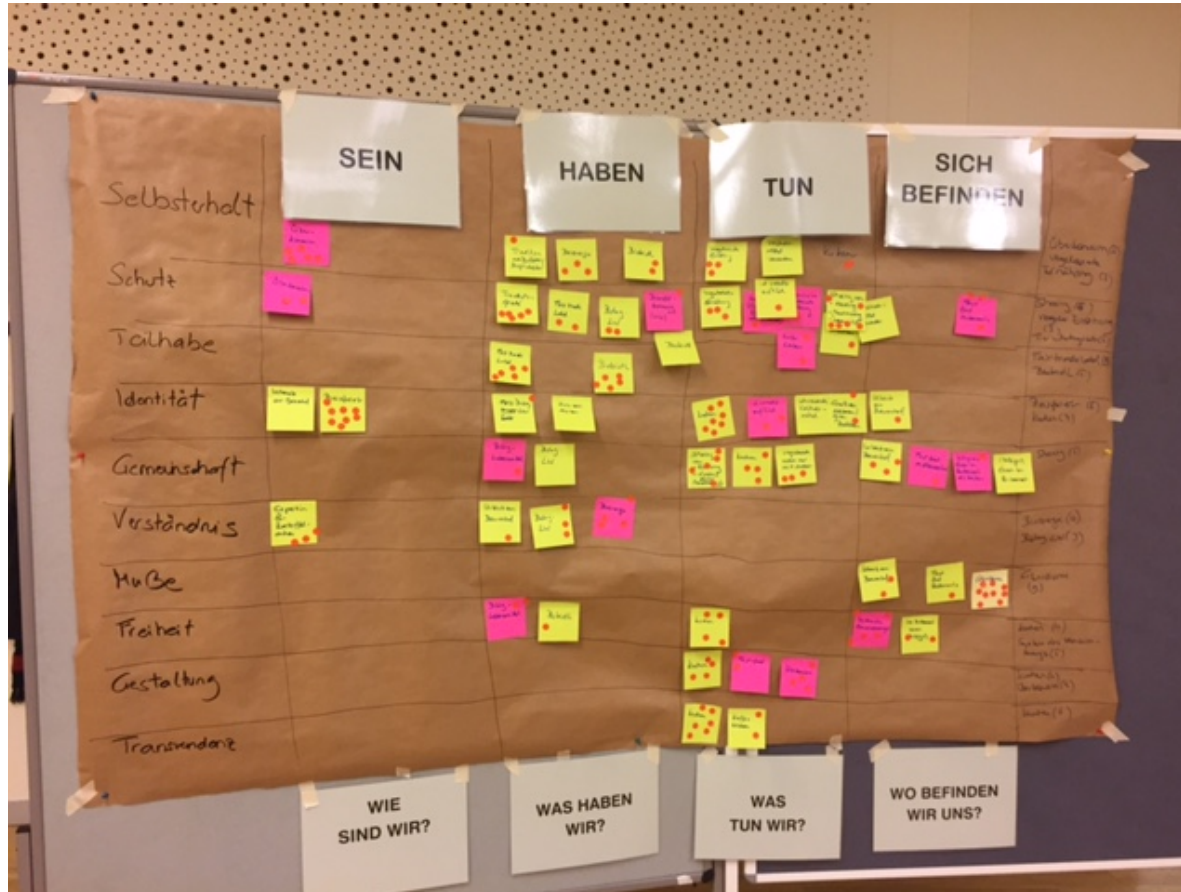
- Introduced by Manfred Max-Neef (1980s)
- Encourages and empowers bottom-up-initiatives
- Development of people not of things
- Serves to identify poverties and wealths of a community
- Differentiates between needs and satisfiers. Satisfiers: attitudes, behaviours, actions, social practices, values, forms of organisation and political models
- Satisfiers can meet or harm one or more needs
- Quality of life depends on the possibilities to meet one's needs
- Strategies and reflections concerning “Eigenwelt”, “Mitwelt” and “Umwelt”

List of needs and satisfiers

(based on Max-Neef 1993)

Fundamental human NEEDS	Being (Qualities)	Having (Things)	Doing (Actions)	Interacting (Settings)
Subsistence	Physical and mental health	Food, shelter, work	Feed, clothes, rest, work	Living environment, social setting
Protection	Care, adaptability, autonomy	Social security, health systems, work	Co-operate, plan, take care of, help	Social environment
Affection				
Understanding				
Participation	Receptiveness, dedication, sense of humour	Responsibilities, duties, work, rights	Cooperate, dissent, express opinions	Associations, parties, churches, neighbourhoods
Freedom	Autonomy, passion, self-esteem	Equal rights	Dissent, choose, run risks, develop awareness	anywhere
Idleness				
Creation				
Identity				
Transcendence				

Workshop participants identify their strategies (with a relation to the bioeconomy or natural resources) and relate them to needs fulfilment



Categories:

- Food
- Living
- Energy
- Leisure
- Nature
- Clothes
- Work and learning

Identifying which bioeconomy strategies fulfil which needs

	Max-Neef			Bioeconomy		
Fundamental Human Needs	Having (things)	Doing (actions)	Interacting (settings)	Having	Doing	Interacting
Subsistence	Food, shelter, work, energy	Eat, rest, work	Living environment, social setting	Nutritious food, <u>Biobased</u> construction materials, Bioenergy, income	Time availability or working hrs), food expenditure/income, sports	Environmental impact, Place of consumption (at home, restaurant), Min. income conditions
Protection	Social security, health systems, savings, rights, family, work	Co-operate, plan, take care of, cure, help	Living space, social environment, dwelling	Average healthy age, social security, health care coverage for overweight, environmental quality		<u>neighborhood</u> connectivity, friends
Affection	Friendship, family, partnerships, relationships with nature	Express emotions, appreciate, make love, share, take care of, cultivate, appreciate	Privacy, intimacy, home, spaces of togetherness	Food communities, environmental footprint, <u>Access</u> to green areas	Participate in communities, group sports, social activities at work (lunch etc.)	Work-life balance?, spend time in nature
<u>Understanding</u>	Literature, teachers, method, educational policies, communication policies	Investigate, study, experiment, educate, analyse, meditate	Settings of formative interaction, schools, universities, academies, groups, communities, family	Knowledge human-nature interaction, footprint calculation, education level, biobased products, product transparency	Learning human-nature interactions (at school/ <u>uni</u> ?), spend time in nature, eco-traveling	Reading, eco-traveling, environmental legislation in a country/ eco-conscious government
Participation	Rights, responsibilities, duties, privileges, work	Become affiliated, co-operate, propose, share, dissent, obey, interact, agree on, express opinions	Settings of participative interaction, parties, associations, churches, communities, <u>neighborhoods</u> , family	Food communities, voluntary work, work teams, project work, capabilities	Eating together, community gardening	Freedom at work (education?), working time

Developing social-ecological option/ decision making space

Many needs

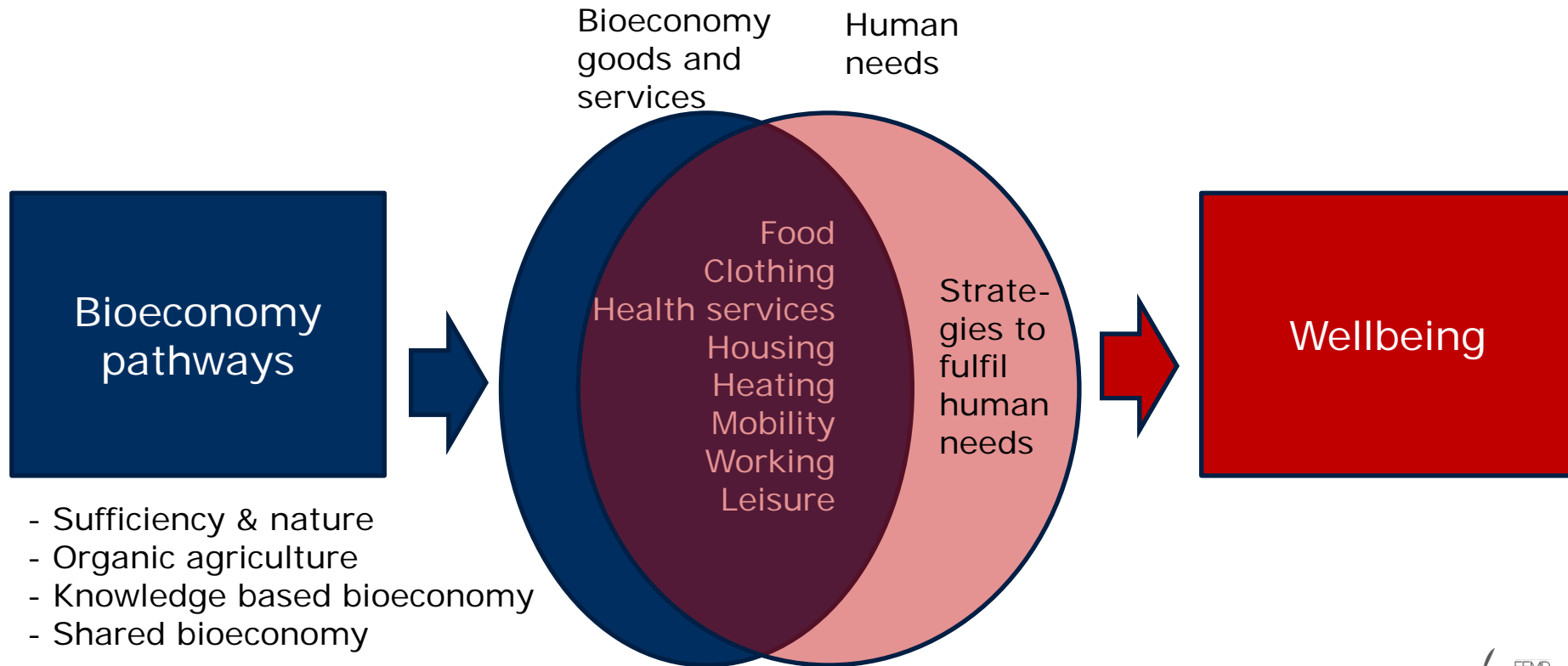
Biokistl Cooking Vegetarische Ernährung Bio heating	(good) restaurant with friends Animal products
Biking Cheap food	Biofuel Fast food

Single need

Low env. Impact
(e.g. land use)

High env. Impact

Linking bioeconomy pathways to wellbeing – outcomes pilot workshop



**An outlook: Using needs
as criteria to evaluate
strategies/pathways in a
multi-criteria mode?**

Which strategies to choose?

- Those, that are socially and environmentally most efficient
- Which criteria to apply: environmental impact, economic costs/benefits, social criteria → multiple criteria; diverse indicators
- This requires a multi-criteria approach
- If needs can be seen as criteria, it might be useful to assess their fulfillment in a participatory way (social MCE)
- That way the social impacts can be evaluated by the stakeholders themselves, which increases the legitimacy and acceptance of the assessment
- Citizens could be participatory decision-makers in the (regional) bioeconomy, who want to take responsibility for and promote the common good

Evaluation matrix

criteria options	g_1	g_2	g_3	g_m
a_1	$a_1(g_1)$	$a_1(g_2)$	$a_1(g_3)$	$a_1(g_m)$
a_2	$a_2(g_1)$	$a_2(g_2)$	$a_2(g_3)$	$a_2(g_m)$
a_3	$a_3(g_1)$	$a_3(g_2)$	$a_3(g_3)$	$a_3(g_m)$
a_n	$a_n(g_1)$	$a_n(g_2)$	$a_n(g_2)$	$a_n(g_m)$

Impacts of
the options
on the criteria

Evaluation matrix

criteria options	Participati on	Identity	Protection	...
Member of food coop	++	+++	++	
Eating at Mc Donalds	-	--	--	
Vacation at an organic farm	+++	++	+	

Thank you!



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