

# Wellbeing and sufficiency in SWICE

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# Wellbeing and sufficiency in SWICE

Sustainable Wellbeing for the Individual and the Collectivity in the Energy transition

Sustainability is usually defined as a practice that “*meets the needs of the present without compromising the ability of future generations to meet their own needs*” (Brundtland 1987), which corresponds to ***wellbeing for all within planetary boundaries***

SWICE aims to answer: how to improve wellbeing for all with a much lower energy use?

WP1 - The human dimension of change

WP2 - Wellbeing, standards and transition

WP3 - Resilient transition of neighborhoods

WP4 - Towards climate neutral buildings

WP5 - The role of open spaces for energy transitions and wellbeing

WP6 - New work, mobility and energy

WP7 - Energy systems and infrastructure

WP8 - Integration across LLs: methods, impact and upscaling

# Why is wellbeing central to a sustainable society?

**Wellbeing is a state of thriving, which involves full participation in society, a sense of prosperity and of leading a good life, based on the precondition of all needs being satisfied. Sustainable wellbeing extends this wellbeing to future generations.**

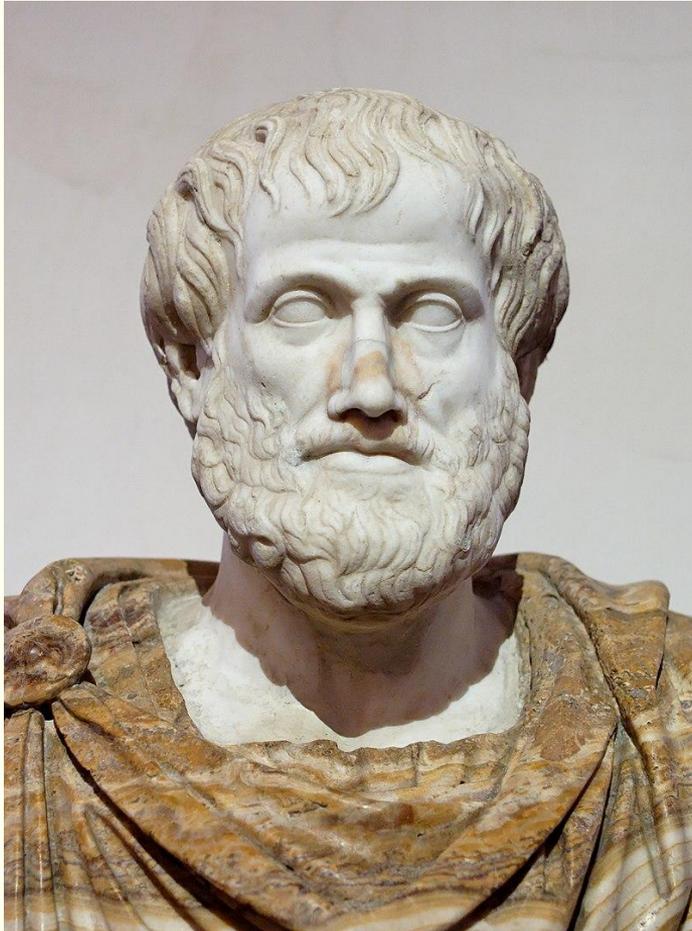
The concept of human needs is central to wellbeing, and the only approach that can define wellbeing in a broad culturally meaningful way, relevant now and far in the future.

“Preference satisfaction”, or the different but equally subjective concept of hedonic happiness cannot be a basis for wellbeing, for many reasons such as limits to knowledge or rationality, adaptation, lack of moral distinction, or cultural differences (Gough 2015, 2017).

# How to analyze wellbeing?

1. Eudaimonic vs. hedonic wellbeing
2. Analytical framework
3. Main concepts related to eudaimonic wellbeing
4. Human needs: the main eudaimonic schools of thought
5. Sufficiency and wellbeing
6. The central role of provisioning systems - a descriptive framework
7. Decent Living Standards (DLS)

# How to analyze wellbeing?



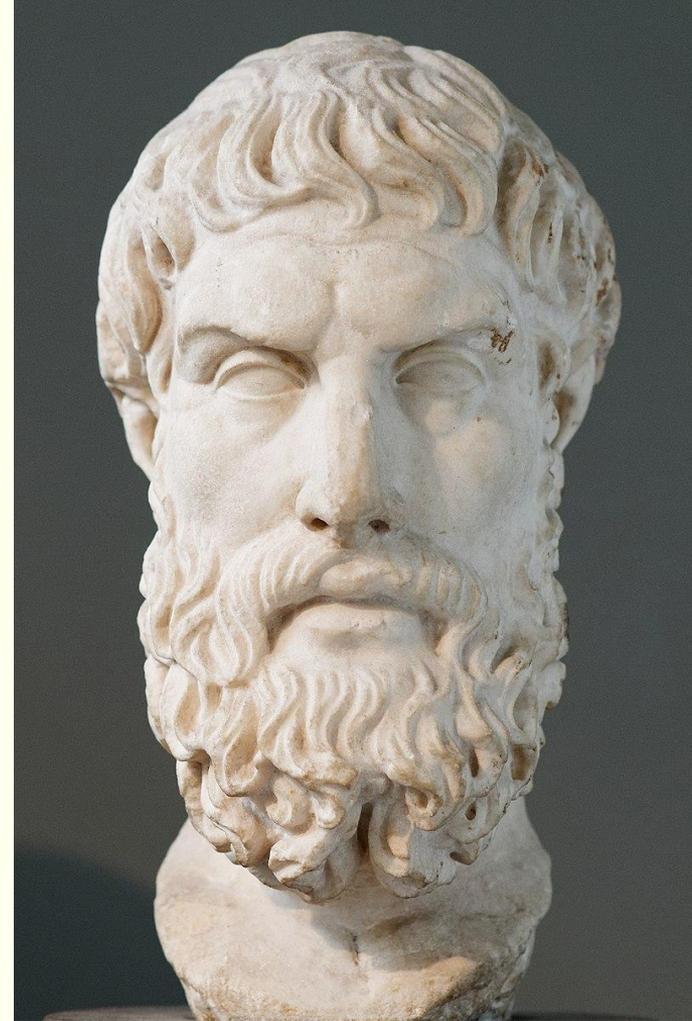
## 1. Eudaimonic vs. hedonic wellbeing

Epicurus  
341–270 BC

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Aristotle  
384–322 BC

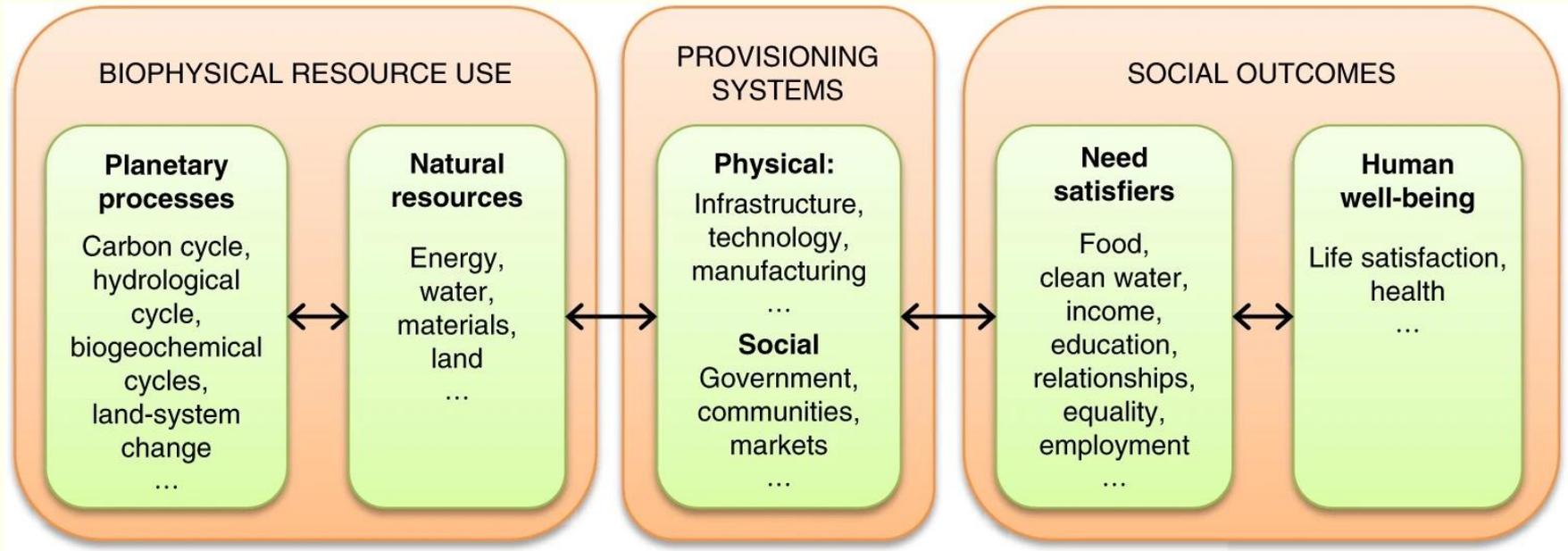
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# How to analyze wellbeing?

## 2. Analytical framework

from Living Well Within Limits (LiLi) analytical framework (O'Neill et al 2018):

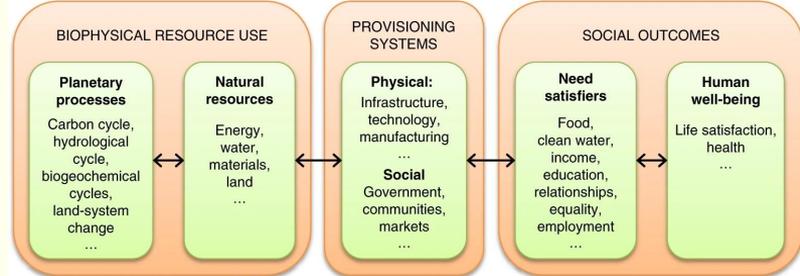


Collectively determine: Economic system

Culture

# How to analyze wellbeing?

## 2. Analytical framework - example food EAT-Lancet Commission, 2019



Food production boundary			GHG emissions	Cropland use	Water use	Nitrogen application	Phosphorus application	Biodiversity loss
Baseline in 2010			5.0 (4.7-5.4)	13 (11.0-15.0)	2.5 (1.0-4.0)	90 (65.0-140.0)	8 (6.0-16.0)	10 (1-80)
Production (2050)	Waste (2050)	Diet (2050)						
BAU	Full waste	BAU	9.8	21.1	3.0	199.5	27.5	1,043
BAU	Full waste	Dietary shift	5.0	21.1	3.0	191.4	25.5	1,270
BAU	Halve waste	BAU	9.2	18.2	2.6	171.0	23.2	684
BAU	Halve waste	Dietary shift	4.5	18.1	2.6	162.6	21.2	885
PROD	Full waste	BAU	8.9	14.8	2.2	187.3	25.5	206
PROD	Full waste	Dietary shift	4.5	14.8	2.2	179.5	24.1	351
PROD	Halve waste	BAU	8.3	12.7	1.9	160.1	21.5	50
PROD	Halve waste	Dietary shift	4.1	12.7	1.9	151.7	20.0	102
PROD+	Full waste	BAU	8.7	13.1	2.2	147.6	16.5	37
PROD+	Full waste	Dietary shift	4.4	12.8	2.1	140.8	15.4	34
PROD+	Halve waste	BAU	8.1	11.3	1.9	128.2	14.2	21
PROD+	Halve waste	Dietary shift	4.0	11.0	1.9	121.3	13.1	19

Earth system process

Climate change

Land-system change

Freshwater use

Nitrogen cycling

Phosphorus cycling

Biodiversity loss

Control variable

GHG emissions

Cropland use

Water use

N application

P application

Extinction rate

Boundary  
(Uncertainty range)

5 Gt CO<sub>2</sub>-eq yr<sup>-1</sup>  
(4.7 - 5.4 Gt CO<sub>2</sub>-eq yr<sup>-1</sup>)

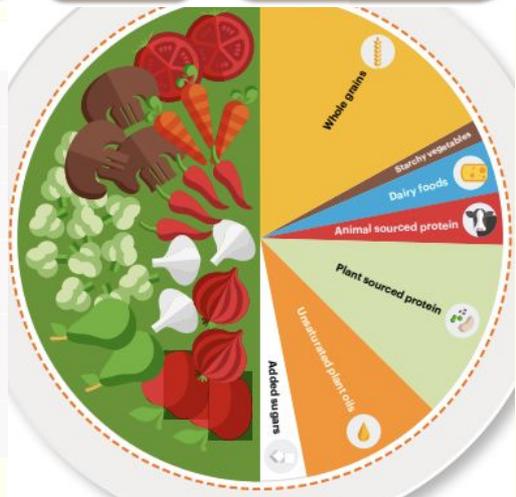
13 M km<sup>2</sup>  
(11-15 M km<sup>2</sup>)

2,500 km<sup>3</sup> yr<sup>-1</sup>  
(1000-4000 km<sup>3</sup> yr<sup>-1</sup>)

90 Tg N yr<sup>-1</sup>  
(65-90 Tg N yr<sup>-1</sup>) \*  
(90-130 Tg N yr<sup>-1</sup>) \*\*

8 Tg P yr<sup>-1</sup>  
(6-12 Tg P yr<sup>-1</sup>) \*  
(8-16 Tg P yr<sup>-1</sup>) \*\*

10 E/MSY  
(1-80 E/MSY)



**Approach 1**  
Comparative Risk

**19%** or **11.1 million**  
adult deaths per year

**Approach 2**  
Global Burden of Disease

**22.4%** or **10.8 million**  
adult deaths per year

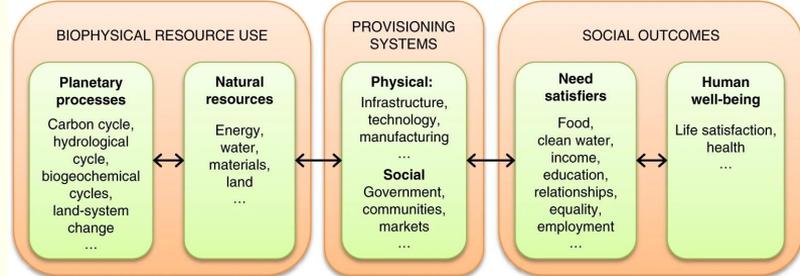
**Approach 3**  
Empirical Disease Risk

**23.6%** or **11.6 million**  
adult deaths per year



# How to analyze wellbeing?

## 2. Analytical framework - example food EAT-Lancet Commission, 2019



### Difference from today:

	GHG emissions	Cropland use	Water use	Nitrogen application	Phosphorus application	Biodiversity loss
Food production boundary	5.0 (4.7-5.4)	13 (11.0-15.0)	2.5 (1.0-4.0)	90 (65.0-140.0)	8 (6.0-16.0)	10 (1-80)
Baseline in 2010	5.2	12.6	1.8	131.8	17.9	100-1000
Production (2050)						
Waste (2050)						
Diet (2050)						
BAU Full waste BAU	9.8	21.1	3.0	199.5	27.5	1,043
BAU Full waste Dietary shift	5.0	21.1	3.0	191.4	28.5	1,270
BAU Halve waste BAU	8.3	12.7	1.9	166.1	21.5	50
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PROD Full waste BAU	8.9	14.8	2.2	187.5	25.5	208
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PROD+ Full waste BAU	8.7	13.1	2.2	147.5	16.5	37
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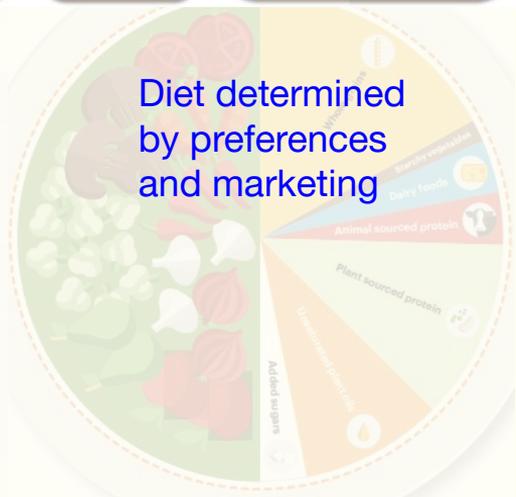
Production determined by global market designed for profitability / rent extraction



Little variety in satisfiers, producer-led, optimized for production and rent extraction

Almost no consideration for planetary boundaries

Earth system process	Control variables	Planetary boundary
Climate change	CO <sub>2</sub> emissions	1,800 Gt CO <sub>2</sub> eq yr <sup>-1</sup>
Land-system change	Cropland use	13 M km <sup>2</sup> (11-15 M km <sup>2</sup> )
Freshwater use	Water use	2,500 km <sup>3</sup> yr <sup>-1</sup> (1000-4000 km <sup>3</sup> yr <sup>-1</sup> )
Nitrogen cycling	N application	90 Tg N yr <sup>-1</sup> (65-90 Tg N yr <sup>-1</sup> ) * (90-130 Tg N yr <sup>-1</sup> )**
Phosphorus cycling	P application	8 Tg P yr <sup>-1</sup> (6-12 Tg P yr <sup>-1</sup> ) * (8-16 Tg P yr <sup>-1</sup> )**
Biodiversity loss	Extinction rate	10 E/MSY (1-80 E/MSY)



Approach 1  
Comparative Risk

19%

or

11.1 million adult deaths per year

Approach 2  
Global burden of Disease

22.4%

or

10.8 million adult deaths per year

Approach 3  
Empirical Disease Risk

23.6%

or

11.6 million adult deaths per year

Poor health outcomes, large inequalities

# How to analyze wellbeing?

## 3. Main concepts related to eudaimonic wellbeing

- **Subjective vs. objective** assessment of wellbeing: both eudaimonic and hedonic wellbeing can be evaluated by individuals themselves (subjective), or others, based on measurable indicators (objective). The self-assessment of life satisfaction is a subjective measure of both eudaimonic and hedonic wellbeing (Brand-Correa & Steinberger 2017).
- **Needs:** Satisfying fundamental human needs is a necessary precondition for wellbeing; otherwise serious harm is caused to people and societies.
- **Satisfiers:** There are numerous ways of satisfying each need, collectively defining a culture: material or immaterial, individual or collective; or how the main satisfiers are rooted in history, adapted to local climate and ecosystems; and how they are produced, including the associated provisioning systems.
- **Desires:** Potentially infinite, do not satiate, change over time or place, may or may not be linked to needs or satisfiers, culturally fabricated, often manipulated by private companies for financial gain. Systematically confused in everyday language: “I need X” may denote desire, not need. Totally unsuitable as a basis for analyzing, or planning for wellbeing.
- **Wealth / consumption:** Culturally dominant satisfiers, together with their provisioning systems, will determine the level of (monetary) wealth and (resource) consumption of a society needed to collectively satisfy its needs, and even its very ability to do so. More inclusive societies are better at satisfying individual needs, regardless of individuals’ wealth or ability to pay. Human needs are satiable (Lamb & Steinberger 2017, Gough 2015), but the consumer society perpetuates growth by satisfier substitution, identified as “the symbolic language of material goods” (Jackson 2016).
- **Happiness:** Eudaimonic wellbeing is not directly concerned with (momentary) happiness, and takes a long-term, multidimensional evaluative view of life satisfaction. Despite its name, the World Happiness Report actually measures life satisfaction. Happiness is less useful for sustainability analysis, as it cannot easily be planned for.

# How to analyze wellbeing?

## 5. Sufficiency and wellbeing

Based on the satiability of human needs, sufficiency is a central concept in sustainability theory and practice, and a **necessary condition for reaching wellbeing for all within planetary boundaries**. Being incompatible with neoclassical economics and numerous institutions, beliefs, and today's practices, sufficiency is widely misunderstood, and almost completely absent from national and regional policy.

“The Logic of Sufficiency” defines **sufficiency as a desirable organizing principle of society, opposed to today's dominant efficiency**, as a basis for wellbeing within ecological constraints (Princen 2005).

IPCC AR6 WG3 SPM (2022) states “**Sufficiency policies are a set of measures and daily practices that avoid demand for energy, materials, land and water while delivering human wellbeing for all within planetary boundaries**”.

Again we find the essential components of sufficiency:

- Using less, reducing activity level, while ensuring human wellbeing
- Ecological constraints, to ensure ecosystem integrity
- Collective or society-level goals, organizing principles, policies, actions

# How to analyze wellbeing?

## 6. The central role of provisioning systems - a descriptive framework

**Structure:** socio-technical infrastructure, institutions, laws, information flows

**Governance, power structure:** who decides what and how

**Meaning, Culture, Values:** how does society value benefits, associated narratives

**Appropriation:** actual and potential rent extraction

Adapted from Kalt et al 2019, Fanning et al 2020, Doyal and Gough 1991.

	Resources	Structure	Governance	Meaning	Appropriation	Satisfiers	Wellbeing
	<b>( input )</b> energy, water, materials, land, ecosystem services	socio-technical infrastructure, institutions, laws, info flows	<b>power structure:</b> who decides what and how	<b>Culture, Values:</b> how does society value benefits, associated narratives	actual and potential rent extraction	<b>( output )</b> description, type (destroyer, pseudo-, simple, synergistic), related needs	<b>(outcome )</b> life satisfaction, social participation, health, autonomy of agency
Nutrition							
Health							
Habitat							
...	<b>Legend:</b> provisioning system components, inputs - outputs - outcomes of the provisioning system						

# Operationalizing wellbeing

Wellbeing can be measured and modeled directly by estimating the level of satisfaction of each need, or indirectly, by asking about general or domain-specific life satisfaction:

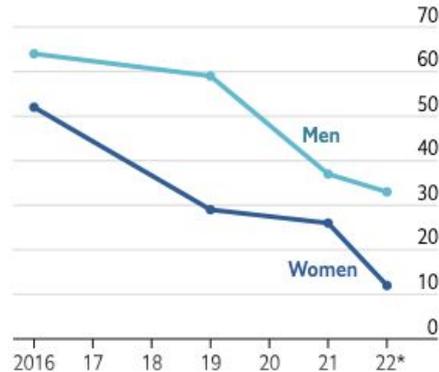
- **Composite, measuring subjective life satisfaction using a single question** (Cantril ladder / World Happiness Report): *Please imagine a ladder, with steps numbered from 0 at the bottom to 10 at the top. The top of the ladder represents the best possible life for you and the bottom of the ladder represents the worst possible life for you. On which step of the ladder would you say you personally feel you stand at this time?*
- **Intermediate approach, distinguishing technical and social systems** (following O'Neill et al 2018):
  - *How do you feel the physical infrastructure that you live in (especially housing and transport systems) enables you to satisfy your needs and flourish within your society?*
  - *How do you feel the social systems that you live in (public services, social support, culture and community) enables you to satisfy your needs and flourish?*
- **Measuring satisfaction of needs**, following Max-Neef or Doyal & Gough:
  - Do you feel our society makes it easy for you to satisfy your material needs, such as food or shelter? Why or why not?
  - Do you feel our society makes it easy for you to live a healthy life? Why or why not?
  - Do you feel our society makes it easy for you to satisfy your social needs, such as participating in society, creating, relaxing, or being who you want to be? Why or why not?
- **Combining descriptive and analytical satisfaction of needs:**
  - Asking people to describe their habits and everyday lives in order to then extrapolate in analysis how their needs are being met, based on a common list of needs.
  - While also asking people to react directly to a common list of needs, so as to state what needs are being satisfied in relation to certain practices (keeping warm, getting around, preparing a meal, etc.)

# Operationalizing wellbeing

**Example World Happiness Report:** *Please imagine a ladder, with steps numbered from 0 at the bottom to 10 at the top. The top of the ladder represents the best possible life for you and the bottom of the ladder represents the worst possible life for you. On which step of the ladder would you say you personally feel you stand at this time?*

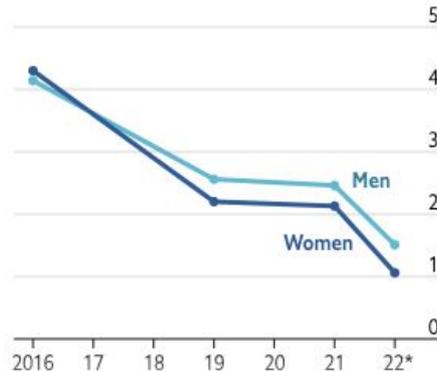
## It's a miserable life Afghanistan

### Are women treated with respect and dignity? % responding "yes"



Sources: Gallup; *The Economist*

### How would you rate your life? 10=best



\*Survey of 1,000 adults, Jul 20th-Aug 27th

## World Happiness Report 2022

Figure 2.1 Ranking of Happiness based on a three-year-average 2019-2021

### Average Life Evaluation Explained by six Factors



Rank	Country
1	Finland
2	Denmark
3	Iceland
4	Switzerland
5	Netherlands
6	Luxembourg*
7	Sweden
8	Norway
9	Israel
10	New Zealand
11	Austria
12	Australia
13	Ireland
14	Germany
15	Canada
16	United States
17	United Kingdom
18	Czechia
19	Belgium
20	France
21	Bahrain
22	Slovenia
23	Costa Rica



# State of knowledge, research agenda for SWICE

## What do we know?

1. **Wellbeing** is the result of satisfying needs in all major human needs approaches.
2. **Needs** are universal, constant over time and cultures, classifiable, non-substitutable, and satiable.
3. **Satisfiers**, separate from needs, are culturally specific but have common characteristics. Resource need strongly depends on the dominant satisfiers.
4. **Desires**, potentially infinite, are often disconnected from needs, and are not useful in designing for wellbeing.
5. **Multidimensional needs satisfaction** is a necessary condition for and strongly correlates with wellbeing (O'Neill et al 2018, Helliwell 2008).
6. **Decent Living Standards** (DLS) approach shows that all material prerequisites for wellbeing can be satisfied with 10% of final energy used in rich countries today, while providing wellbeing for all.
7. **Significant gaps** in providing shelter, nutrition, health, mobility, and socialization remain in all world regions. Closing *all* DLS material provisioning gaps requires new infrastructure which could be built with a one-time investment of 290 EJ, or 9 months of world's final energy use (Kikstra et al 2021).
8. **Provisioning factors** strongly affect the effectiveness of satisfier provision: positively (public service, public health, clean energy access, democracy, equality) or negatively (extractivism, economic growth) (Vogel et al 2021)

# State of knowledge, research agenda for SWICE

## What do we NOT know? (*Gaps in literature and research questions for SWICE WP2*)

1. How to design a provisioning system to create synergistic satisfiers with little resources. This includes minimizing rent extraction (appropriation).
2. DLS under “realistic” conditions, including residual non-zero inequality, or what technology can be installed within a useful time-frame, say 10-15 years.
3. Levers to start the required deep transformation of society.
4. How to gain broad stakeholder acceptance for the needed change towards wellbeing for all within planetary boundaries.

Many more gaps exist, some of which might be covered by SWICE:

- How to experiment with different ways of satisfying needs, using living labs?
- How to integrate power dynamics, social justice, etc.?



# Supplementary information

# How to analyze wellbeing?

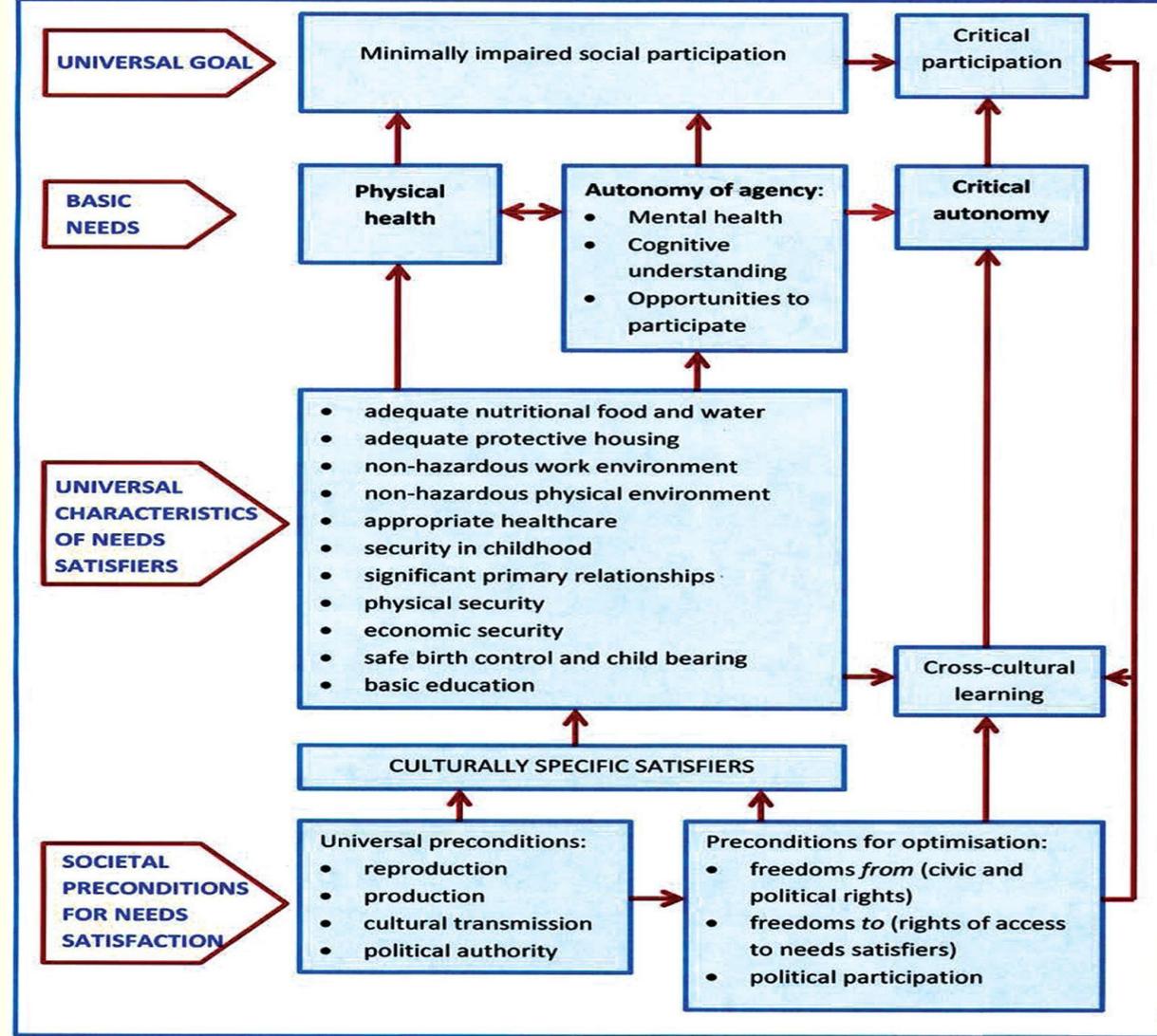
## 4. Human needs: the main eudaimonic schools of thought

- **Max-Neef (1991), Fundamental Human Needs: *Subsistence, Protection, Affection, Understanding, Participation, Idleness, Creation, Identity, and Freedom***. Satisfiers are classified into *destroyers, inhibitors, pseudo-, singular, and synergistic satisfiers*. This essential distinction of needs and satisfiers is also the foundation of Doyal & Gough's work.
- **Doyal & Gough (1991), Theory of Human Need:** defines a hierarchy starting with the universal goal of ***Minimally impaired social participation***, with ***Physical health*** and ***Autonomy of agency*** as basic needs, and defining universal characteristics of needs satisfiers. Additionally, ***Critical participation*** (the ability to change society) requires *Critical autonomy*, based on *Cross-cultural learning* and *Political freedoms*.
- **Sen & Nussbaum, The Capability Approach** (Robeyns et al 2021): human wellbeing can be understood in terms of ***capabilities*** (real freedoms defining what people can do if they so choose) and ***functionings*** (realized capabilities). Martha Nussbaum famously defined ten "central capabilities": *life; bodily health; bodily integrity; senses, imagination and thought; emotions; practical reason; affiliation; other species; play; and control over one's environment*. The Human Development Index (HDI) is based on the Capability Approach.
- **Di Giulio & Defila (2020), Protected Needs:** they organize needs into three groups, *material, person-focused, and community-focused*, requiring "special protection". In other words, the approach focuses on the needs that society can plan for and protect, at a collective and institutional level. This list of needs has been tested in Switzerland through a representative survey, making this latest approach relevant to Switzerland and SWICE.

# How to analyze wellbeing?

4.a. Human needs:  
the main eudaimonic  
schools of thought

Outline of the  
theory of human need,  
reproduced from  
Doyal & Gough 1991



# Max-Neef's matrix of needs and satisfiers

## Existential needs

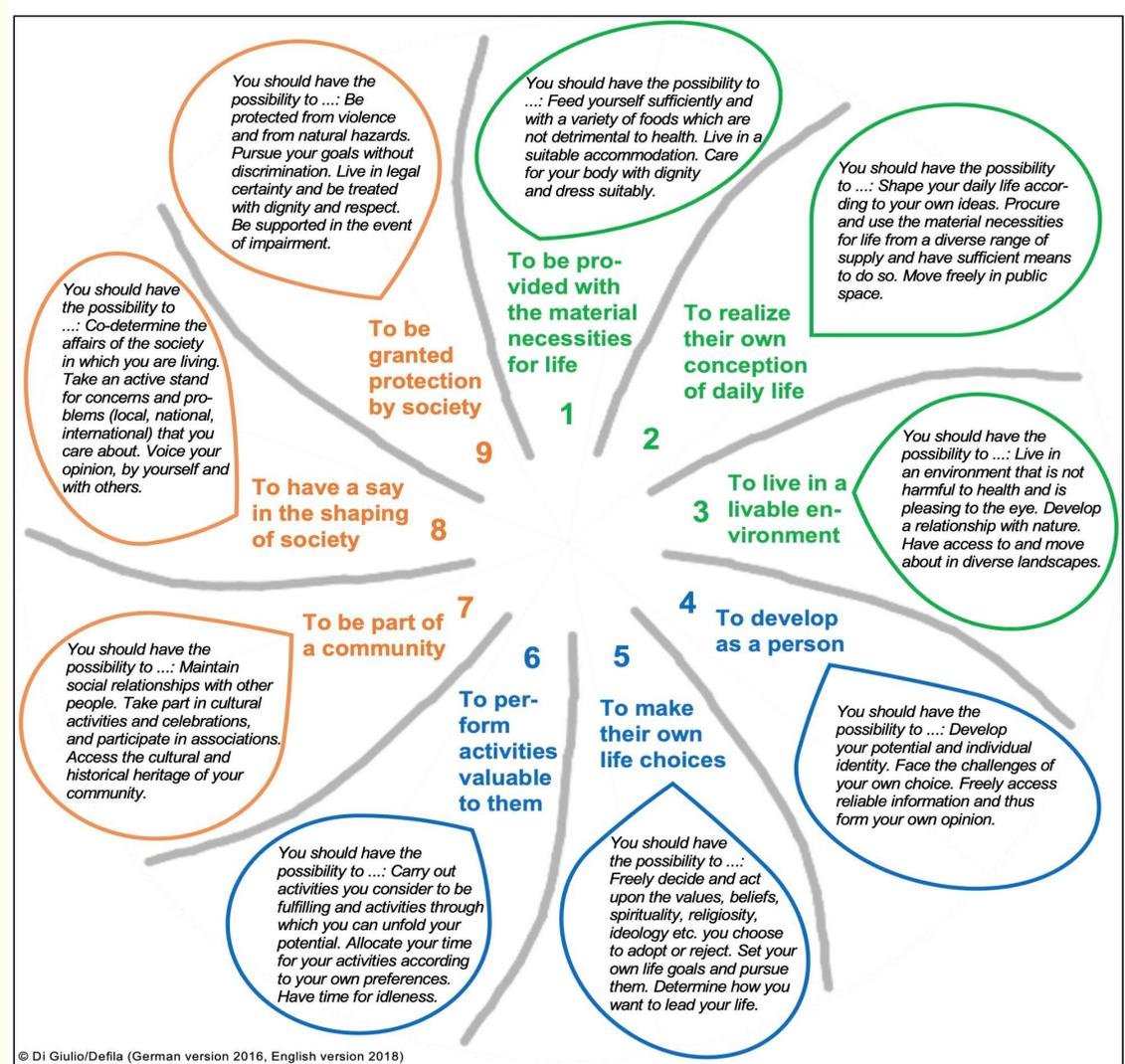
### Axiological needs

	Being	Having	Doing	Interacting
<b>Subsistence</b>	physical health, mental health, equilibrium, sense of humour, adaptability	food, shelter, work	feed, procreate, rest, work	living environment, social setting
<b>Protection</b>	care, adaptability, autonomy, equilibrium, solidarity	insurance systems, savings, social security, health systems, rights, family, work	cooperate, prevent, plan, take care of, cure, help	living space, social environment, dwelling
<b>Affection</b>	self-esteem, solidarity, respect, tolerance, generosity, receptiveness, passion, determination, sensuality, sense of humour	friendships, family, partnerships, pets, relationships with nature	make love, caress, express emotions, share, take care of, cultivate, appreciate	privacy, intimacy, home, space of togetherness
<b>Understanding</b>	critical conscience, receptiveness, curiosity, astonishment, discipline, intuition, rationality	literature, teachers, method, educational policies, communication policies	investigate, study, experiment, educate, analyze, meditate	settings of formative interaction, schools, universities, academies, groups, communities, family
<b>Participation</b>	adaptability, receptiveness, solidarity, willingness, determination, dedication, respect, passion, sense of humour	rights, responsibilities, duties, privileges, work	become affiliated, cooperate, propose, share, dissent, obey, interact, agree on, express opinions	settings of participative interaction, parties, associations, churches, communities, neighbourhoods, family
<b>Idleness</b>	curiosity, receptiveness, imagination, recklessness, sense of humour, tranquility, sensuality	games, spectacles, clubs, parties, peace of mind	daydream, brood, dream, recall old times, give way to fantasies, remember, relax, have fun, play	privacy, intimacy, spaces of closeness, free time, surroundings, landscapes
<b>Creation</b>	passion, determination, intuition, imagination, boldness, rationality, autonomy, inventiveness, curiosity	abilities, skills, method, work	work, invent, build, design, compose, interpret	productive and feedback settings, workshops, cultural groups, audiences, spaces for expression, temporal freedom
<b>Identity</b>	sense of belonging, consistency, differentiation, self-esteem, assertiveness	symbols, language, religion, habits, customs, reference groups, sexuality, values, norms, historical memory, work	commit oneself, integrate oneself, confront, decide on, get to know oneself, recognize oneself, actualize oneself, grow	social rhythms, everyday settings, settings which one belongs to, maturation stages
<b>Freedom</b>	autonomy, self-esteem, determination, passion, assertiveness, open-mindedness, boldness, rebelliousness, tolerance	equal rights	dissent, choose, be different from, run risks, develop awareness, commit oneself, disobey	temporal/spatial plasticity

# How to analyze wellbeing?

## 4.c. Human needs: the main eudaimonic schools of thought

### Mandala of Protected Needs (Di Giulio & Defila 2020)



# How to analyze wellbeing?

## 4.d. Human needs: the main eudaimonic schools of thought

Approximate comparison of the main eudaimonic approaches to wellbeing, reproduced from Lamb & Steinberger 2017

Nussbaum Central Human Capabilities	Max-Neef Axiological Categories of Human Need	Doyal and Gough Theory of Human Need	The Sustainable Development Goals
Life Bodily health	Subsistence	Physical health (BN) Appropriate health care (IN) Safe birth control/childbearing (IN) Adequate food/water (IN)	3. Good health and well-being 5. Gender equality 2. Zero hunger
Bodily integrity Control over one's environment	Protection	Protective housing (IN) Safe physical environment (IN) Safe work environment (IN) Physical security (IN) Security in childhood (IN) Economic security (IN) Non-hazardous work environment (IN)	6. Clean water and sanitation 7. Affordable and clean energy 16. Peace, justice and strong institutions 1. No poverty 5. Gender equality 8. Decent work and economic growth
Senses, thought, imagination Emotions	Creation	Mental health (BN) Cultural understanding (BN)	3. Good health and well-being
Practical reason	Understanding Identity	Cognitive understanding (BN) Appropriate education (IN)	4. Quality education
Affiliation	Participation Affection	Opportunities to participate (BN) Significant primary relationships (IN)	5. Gender equality
Play	Leisure Freedom	Critical autonomy (BN)	16. Peace, justice, and strong institutions
Other species		Sustainability preconditions	14. Life below water 15. Life on land 13. Climate action
	Satisfiers	Societal preconditions for need satisfaction (means, not ends)	9. Industry, innovation, and infrastructure 10. Reduced inequalities 11. Sustainable cities and communities 12. Responsible consumption and production 17. Partnerships for the goals

# Decent Living Standards (DLS)

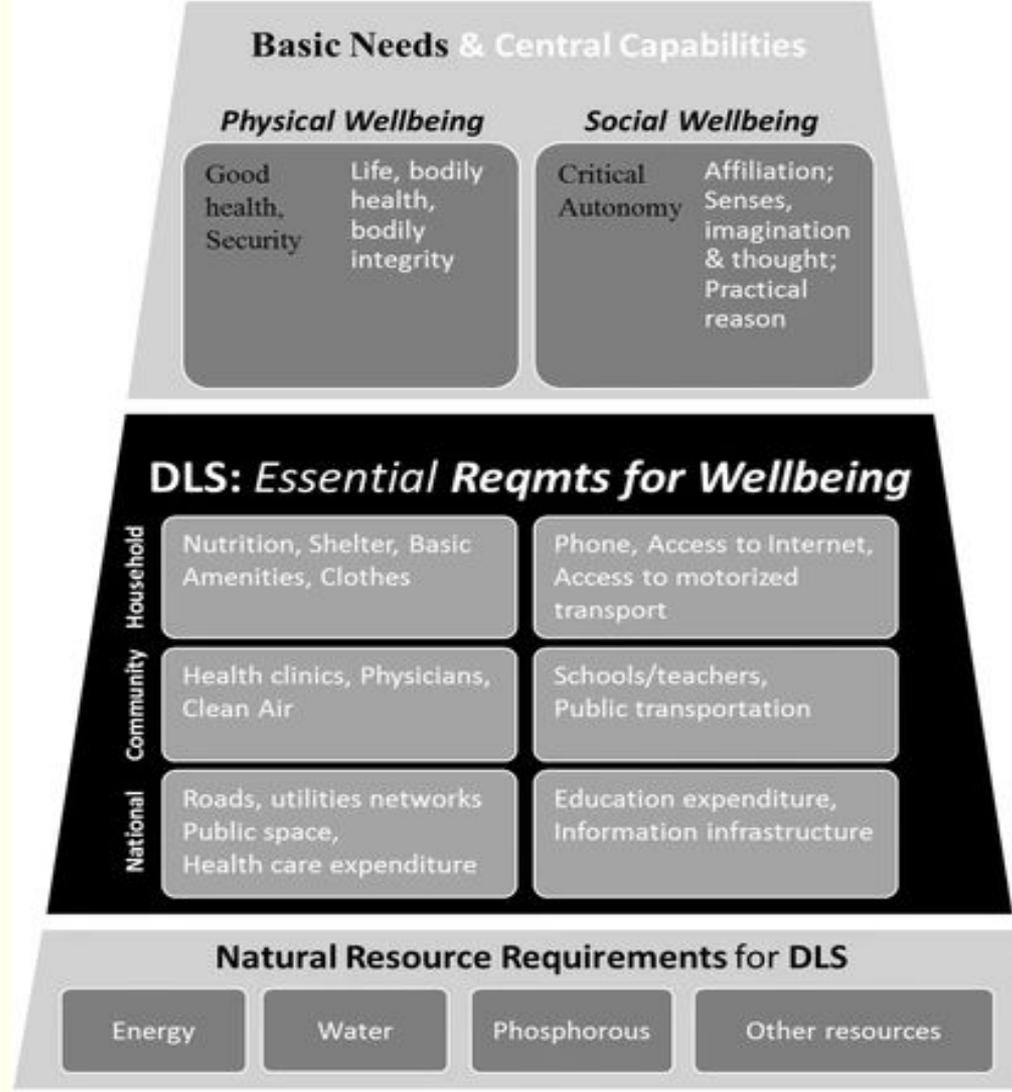
The Decent Living Standards (DLS) approach identifies material prerequisites for wellbeing, as well as minimum energy and material requirements (Rao & Min 2018). DLS combines basic needs from Doyal & Gough with Nussbaum's central capabilities, and defines essential requirements at the household, community, and country level.

DLS energy requirements have been estimated for India, Brazil, and South Africa (Rao et al 2020), and at a global level (Millward-Hopkins et al 2020). The resulting energy requirement of approx. 15 GJ per capita per year is less than 10% of final energy used in rich countries today, while providing wellbeing for all.

# How to analyze wellbeing?

## 7. Decent Living Standards (DLS)

Structure of material requirements for Decent Living Standards, combining basic needs from Doyal & Gough with Nussbaum's central capabilities, reproduced from Rao & Min 2018



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