Overview of the indexes in the fields of sustainability and food.

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INTRODUCTION

An index is a method of comparison of different variables or groups of variables, and can also be used to indicate performance or impact in time and space. A framework does not necessarily provide means of comparison, but rather an approach to view systems and relations, and to inform strategies for change. In the space of sustainability and food futures, indexes and frameworks might share similar functionalities and goals. They do not tell us how to solve sustainability challenges, but instead, they inform decision making, catalyse discussions, facilitate actions, and provide feedback for policy changes.

This report provides an overview of food and sustainability indexes and frameworks that could inform and inspire a Suffering or Wellbeing index for evaluating the impact of consuming various foods. Firstly, the report recognises indexes on human or non-human impact, or both. Secondly, it identifies existing indexes that could inform the variables of a Food Suffering or Wellbeing index. Thirdly, the report anticipates the target audiences of the relevant indexes and their influence on the design.
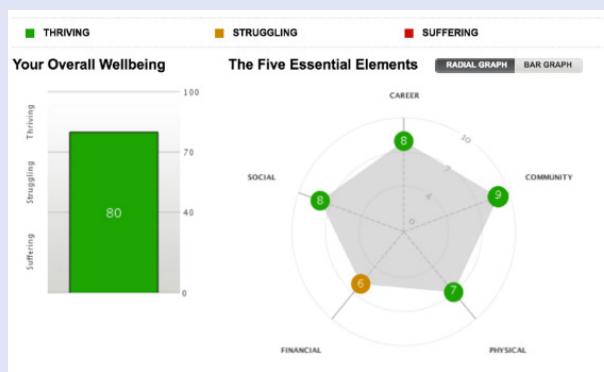
1. RELEVANT INDEXES ON HUMAN-CENTRED IMPACT

Image 1. Source: Gallup.

1.1 The Gallup's Levels of Wellbeing & Indexing method

The Gallup's[1] Levels of Wellbeing approach categorise individual's wellbeing into three zones (see: Image 1):

Thriving: Individual's wellbeing is strong, consistent, and progressing. (Overall wellbeing score of 70-100)

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1 Gallup (2009).

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Struggling: Individual's wellbeing is moderate or inconsistent. (Overall wellbeing score of 40-69)

Suffering: Individual's wellbeing is at high risk. (Overall wellbeing score of 0-39)

The method allows us to assess an individual's and society's wellbeing, and focuses on both — the present moment and future tendencies. The index incorporates the suffering aspect as the lowest level of wellbeing. The target audience of the index is general public and governmental institutions. It has a simple visual form and intuitive design.
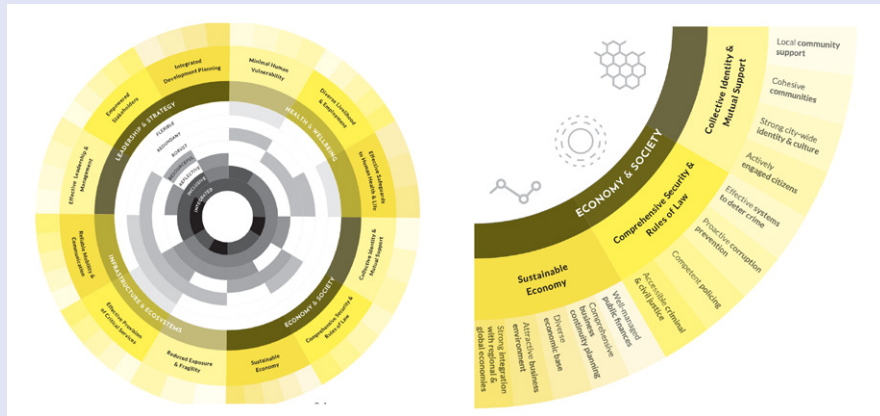

Image 2. Source: The Rockefeller Foundation ARUP.

1.2 City Resilience Index

The aim of the index is to provide a tool for relative performance assessment in different cities to promote knowledge-sharing and discussions. The index is created by The Rockefeller Foundation ARUP.[2]

City resilience index is static, since it is more informative and does not compare any variables. It has the shape of a wheel and is divided into rings and clusters (see: Image 2). The wheel is meant to be read from inwards to outwards. Each of the rings serves as an information breakdown of the previous ring. The index is flexible in the level of detail, and can reveal the information while being scaled. The primary target audience of the index is city governments, followed by other interested organisations. While the index is visually highly technical, it also has graphic icons that illustrate the twelve goals.
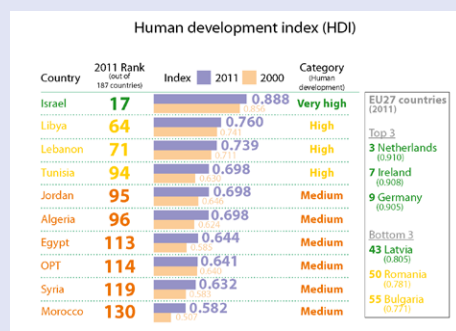

Image 3. Source: European Parliamentary Research Service.

1.3 Human Development Index

Human development index (HDI) aims to provide an alternative and wider approach for indexing social wellbeing, by drawing attention away from the GDP method.[3] It is created by the Department of Economics at the University of Massachusetts-Amherst. HDI combines proxies for three important human capabilities: health, education, and a decent standard of living. Health is represented by life expectancy, education by literacy and school enrollment, and standard of living by GDP per capita (see: Image 3).
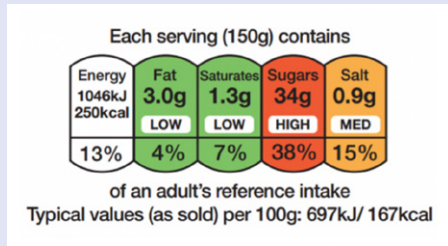
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2 Bhoite et al. (2018).
3 Stanton (2017).

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Image 4. British Nutrition Foundation.

1.4 Traffic Light Labeling

The labeling is developed and widely implemented by the UK government.[4] It aims to inform consumers of food nutrition levels, to inform diet related decisions. The target audience of the labeling is the general public — consumers, therefore the design is hyper-simple and intuitive (see: Image 4). The labeling uses traffic light colour coding to indicate high, low, or medium amounts of several variables:

Energy (kilojoules (kj) and calories (kcal));
Fat;
Saturates;
Sugar;
Salt.

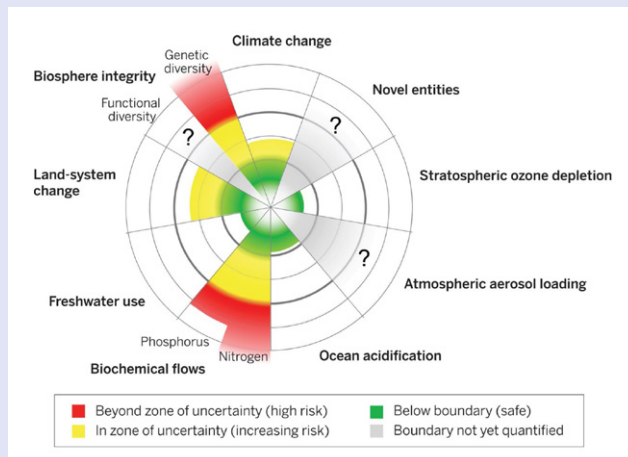## 2. RELEVANT INDEXES ON ENVIRONMENTAL IMPACT

Image 5. Source: Stokhlm Resilience Centre.

2. 1 The Planetary Boundaries Framework

The Plantary Boundaries framework presents a set of nine planetary boundaries within which humanity can continue to develop and thrive for generations to come. The nine variables are crucial to ensure stability and resilience of the Earth system. The framework has been developed in Stockholm Resilience Centre and has generated interest within science, policy, and practice.[5]

The nine variables are:
Climate change;
Bisophere integrity;
Land-system change;
Freshwater use;

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4 Kunz et al. (2020).
5 Rockström (2009).

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Biochemical flows;
Ocean acidification;
Atmospheric aerosol loading (not quantified yet);
Stratospheric ozone depletion;
Novel entities (not quantified yet).

The framework uses a visual representation of the planet Earth with a wheel of the variables. The intensity of variables is marked from inwards to outwards, by using scale and traffic-light colour coding, where green colour indicates safe space of operations within the boundaries, but red colour total overshoot of the limits (see: Image 5).

2.2 Mepham's aspects of animal welfare

In his book Food Ethics, professor Bem Mepham defines five aspects of animal welfare that could be assessed and identified[6]:
Freedom from thirst, hunger or malnutrition;
Freedom from discomfort;
Freedom from pain, injury and disease;
Freedom to display most normal patterns of behaviour;
Freedom from fear, or distress.

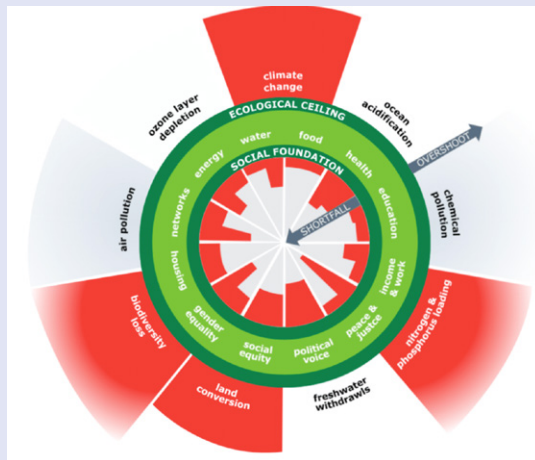## 3. RELEVANT INDEXES ON BOTH — HUMAN-CENTRED AND ENVIRONMENTAL IMPACT

Image 6. Source: Kate Raworth.

3.1 Doughnut Economies Framework

Dounghnut Economies framework represents the global challenge of supporting social foundations while not overshooting ecological limits.[7] The main goal of the new model is to inform the policy, re-frame economic problems and help to set new goals. In this model, an economy is considered prosperous when the social foundations are met without overshooting any of the nine ecological ceilings. The diagram was developed by University of Oxford economist Kate Raworth. The target audience of the index is policy makers, and city, country governments. The model has been already used to inform the Amsterdam city development strategy.

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6 Mepham (1996).
7 Raworth (2012).

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The framework is based on the Planetary Boundary Framework while adding an extra social dimension by creating a visual metaphor of a lifebelt (see: Image 6). However, the visual representation might be confusing, since it is complicated and the dual variables from inner and outer rings are not directly related to each other.
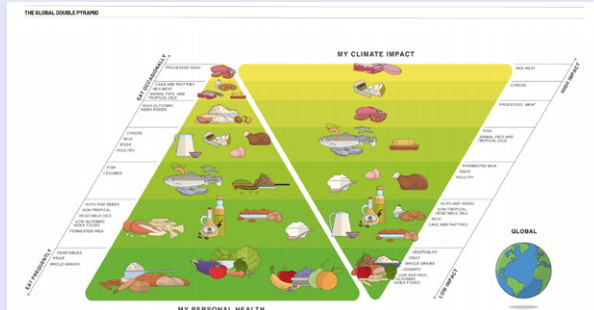

Image 7. Source: Barilla Foundation & Research Unit on Nutrition.

3.2 The Double Health and Climate Pyramid Framework

The framework aims to inform healthy and sustainable diets. The Double Health and Climate Pyramid has been designed to illustrate the impact of food on human health, wellbeing and longevity, and the food system's pressure on the environment, and more specifically on climate. The index is not uniform, but regionally customised.[8]

The variables of the framework:

I. For Health Pyramid: Assessed the risk of cardiovascular diseases related to popular food items;
II. For the Environmental Pyramid: carbon footprint from LCA assessment.

This publication was jointly realized by the research team of the Barilla Foundation and is designed for wide audiences. The Double Pyramid framework is informative and easy to use. The use of illustrations to represent food items instead of written text makes the infographic accessible for the general audience (see: Image 7).

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8 Barilla Foundation & Research Unit on Nutrition (2021).

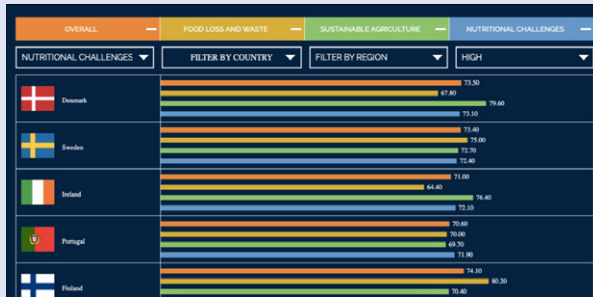ATARCA   A! Aalto-yliopisto Aalto-universitetet Aalto University

Image 8. Source: Barilla Foundation & Research Unit on Nutrition.

3.3 Food Sustainability Index (FSI)

Food Sustainability index provides a tool for food sustainability assessment between countries, and aims to take into account the economic, social, and environmental dimensions of food sustainability.[9] The index provides assessment in three dimensions that are informed by 55 variables:

Food loss and waste;
Sustainable agriculture;
Nutritional Challenges.

The index is developed by the Barilla Foundation in collaboration with the Economist. The visual interface of the index is in the form of a bar chart and the three assessment dimensions are categorised in different colours (see: Image 8).

THE SUMMAR

The overview of the indexes and frameworks in the field of sustainability and the future of food provides several different approaches to assessing, visualising and comparing data. It also provides many options for variables for a Food Suffering or Wellbeing index, and understanding how the target audience dictates the information design of the indexes and frameworks.

While many indexes address human or non-human impact, several address both. The Double Health and Climate Pyramid Framework and Doughnut Economies Framework both represent the social resilience that should be met and environmental impact that should be mitigated. The first visualises it in two separate entities — pyramids. The second, combines them into one image, but divides it into inner and outer circles.

There are several approaches to visualising the difference and scale of suffering and wellbeing. The Traffic Light Labeling, Planetary Boundaries Framework and The Gallup's Levels of Wellbeing & Indexing method uses traffic light method, whereas red colour represents the suffering or high risk, green represents wellbeing, safe space to operate or healthy nutrition, and orange — the space inbetween. There are several approaches when using a wheel — Planetary Boundaries indicate the green area in the middle and red area outside, versus The Gallup's Levels of Wellbeing & Indexing method, which uses the opposite approach.

There is also a difference in visual approaches when the target audience of the indexes differ. The Double Health and Climate Pyramid Framework is targeted to general audi-

9 Barilla Foundation & Research Unit on Nutrition (2021).

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ence and uses mainly visual icons — illustrations that are easy to understand at any age group or with any pre-knowledge, versus several indexes, as The City Resilience Index is targeted towards more professional audiences, and is more complicated and very rich in information.

The City Resilience Index has a feature of scalability. As a Food Suffering or Wellbeing index is also rich in information it could be inspired by this approach. The approach allows to reveal more information and breakdown facts while scaling it.

There are many indexes that could inform the variables of a potential Food Suffering or Wellbeing index. The Food Sustainability Index provides numerous variables that are classified under food loss and waste, sustainable agriculture, nutritional challenges categories. The Doughnut Economies Framework, the Traffic Light Labeling can inform variables related to social resilience and nutrition. Mepham's aspects of animal welfare can inform variables of animal suffering or wellbeing.

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3 Stanton E. A. (2017). The Human Development Index: A History. Workingpaper series. Number 127. Global Development and Environment Institute Tufts University.

4 Kunz, S., Haasova, S., Rieß, J., & Florack, A. (2020). Beyond Healthiness: The Impact of Traffic Light Labels on Taste Expectations and Purchase Intentions. Foods (Basel, Switzerland), 9(2), 134. https://doi.org/10.3390/-foods9020134

5 Rockström, J., W. Steffen, K. Noone, Å. Persson, et.al. (2009). Planetary boundaries:exploring the safe operating space for humanity. Ecology and Society 14(2): 32

6 Mepham B., (1996). *Food Ethics.* Routledge

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