D2.3 Short Report on Forum 2

Version 1.3

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Preface

The Co-Change platform (WP2) organizes a series of four interconnected Forums to support mutual learning and exchange between the Co-Change Labs, their ecosystems and Advisory and Sounding Boards.

This Deliverable “Short Report on Forum 2” (D2.3) documents the design and the outcomes of Forum 2 and thus serves as a basis for guiding vital next development steps by the Labs and the project in general. The Report first introduces the objectives, design principles, and resulting agenda (chapter 1) of the Forum. It then describes the main thematic sessions (chapters 2-5) with inputs and highlights of subsequent discussions. It concludes with an outlook on the next steps in the Co-Change project (chapter 6). The annex contains the slides presented by the speakers.

1- Introduction

The project Co-Change is about facilitating institutional change and raising awareness regarding RRI in research funding and performing organizations. In the center of the Co-Change project are small organizational innovation spaces, the Co-Change Labs. In these Labs various activities regarding RRI-related awareness raising, trainings, workshops and discussions, reviews of practices and institutional changes take place. Next to short monthly Lab coordination meetings, the Forums are the most important element in supporting their work. The Forums serve to exchange experience, insert knowledge from the Advisory and Sounding Boards, allow for common discussions and exchange of practices regarding the core tasks of the project. Forum 2 took place on 22 and 23 February 2021 and was co-hosted by AIT from Austria and VTT from Finland.

Objectives

The Co-Change Labs are at the heart of each Forum. The main objectives of Forum 2 for the Labs were:

- to provide an update on their status, and thus provide a common information basis for each other and all other participants,
- to get inspiration and support for their aspired institutional changes by reflecting on best practices and sharing lessons learned,
- to see themselves in a bigger picture through Sustainable Development Goals (SDGs);
- to learn about useful tools and methods (such as impact narratives), and
- to have a space for reflection and self-organization as well as discussions on issues of shared concern and interest.

The Labs were actively supported by the Co-Change Sounding Board and the Advisory Board. Three associated partners also took part of Forum 2 as well as a possible new collaboration partner.

Design

Due to the COVID-19 pandemic several travel restrictions were imposed during spring 2021 all over Europe and beyond. These restrictions forced the Co-Change team to deliver the Forum 2 online.

In the spirit of co-design, the Forum 2 team consulted with the Co-Change Lab coordinators two times on the objectives and contents of Forum 2 to align the program with their needs and expectations.

Connecting and co-creating as participants in a digital environment remains a challenge. The collective experiences and creativity of the project team was mobilized to provide the best available experience which allowed the Forum 2 team to prepare an attractive program. In several iterations, a new design based on four virtual gatherings over the course of two days was developed with the following themes, structure, and elements:

Themes

Fresh ideas and practical RRI lessons (to be) learned are in high demand by Co-Change Labs to broaden their views.

Members of the Co-Change Advisory Board and an associated partner were invited to share practical **RRI experiences** and lessons learned regarding other cases from other projects and initiatives with a focus on concrete practices, methods, and tools which might be applied in Co-Change Labs.

The United Nation's **Sustainable Development Goals** (SDGs) as a reference framework for 'societal responsibility' were introduced and discussed in terms of their meaning or relevance for Labs. Can SDGs be taken into consideration, or even be used, as a guiding/strategical instrument for Labs? Integration and pinning points of SDGs and RRI were focal points for discussion.

SDGs may also be viewed from the perspective of impacts and impact assessment. **Impact narratives** are commonly used to describe, track, and report the impact generated in research projects. The concept of impact narratives is linked to the SDGs. A specific session was devoted to this topic. The concept of impact narratives was introduced such that participants can apply this tool to their own projects.

Structure

It was agreed to condense the full-day programme into four sessions over the course of two days for facilitating the attention of participants in a virtual environment. Thus, a structure of 4 hours working time on each day with a substantial break after two hours was set up for the total of 45 participants. Forum 2 was actively supported by the ESSRG team in terms of communication and moderation as well as project partner Tecnalia in terms of social activities (i.e. ice-breakers).

Elements

To counter the risk of „digital fatigue" and provide a rich experience, the program of Forum 2 had a variety of elements such as group discussions, Lab-to-Lab meetings, keynotes and plenaries, all designed to support the Co-Change Labs.

To facilitate informal interaction and diverse (social) learning, participants were invited to discuss and reflect on each of the three main theme sessions - RRI Experiences, Sustainable Development Goals, Impact Narratives – in **cascading rounds** with varying group sizes and compositions:

- In a first round, participants shared their observations and reactions to the input session in dedicated small group settings with their peers (each Lab team, the associated partners, and the Board).
- In a second round, they discussed and compared their initial findings in larger mixed groups composed of members from different institutions and backgrounds.
- In a third round, highlights from previous group discussions were shared in the whole group to collect and consolidate the main findings.

To activate minds and get in contact socially, **ice-breaker activities** were an important element in the Forum. The two exercises involved the entire group of participants and with their playful approach loosened up the atmosphere and connected participants from different backgrounds socially with each other. The choice of activities also provided a thematically appropriate introduction to the main themes of Forum 2 - sustainability development goals (SDGs) and impact.

In a fictional SDG Magic Lab, the participants were divided into small groups, asked to select an SDG, choose elements for a remedy, design a formula and describe their approach and expected results on a whiteboard in their break-out rooms. The following picture shows the instructions for this exercise:

Another ice-breaker activated the creativity when the whole group was invited to create a small story about RRI by contributing one sentence each. This exercise provided not only a good transition to a session on impact narratives, but also lightened the mood:

The **Virtual Coffee Break** introduced a space to discuss informally and connect freely. Participants could share and connect with each other regardless of their role or status in the context of the project. Everybody was free to choose between three different types of break: (1) breaks with a topic (e.g. RRI in research and practice, achieving and advancing sustainability by research, or sharing thoughts and ideas on Lab status) (2) breaks with ad-hoc topics proposed by participants, and (3) breaks without any topic at all.

Bilateral **Lab-to-Lab meetings** were scheduled to allow Labs to share their experiences, challenges, and successes more in-depth.

- The research organizations AIT and VTT found that they face the same challenge of AI projects rapidly changing their topical focus in a changing environment. Both want to create truly interdisciplinary projects, but this proves to be quite difficult. They found it relieving that other Labs are facing similar challenges to integrate ethics and RRI early enough in project preparation.
- The research funding organizations WWTF and PL also share similar experiences and are of the same opinion that even though it would be nice to implement all important measures at once, it is better to start with one element and add more as soon as competencies of people increase.
- The universities TUD and PNRS with research organization TECNALIA lauded the business model of NEN, where inclusion and consensus are essential. They consider building on NEN's standardization procedure to work with stakeholders and guide them to consensus. Nevertheless, it remains challenging to incentivize stakeholders to join this process of innovation.

Since these exchanges turned out to be very fruitful, it is planned to repeat this format within the framework of the monthly Lab Coordinator's videoconferences.

Program

The overall design of Forum 2 is reflected in this detailed program:

	Monday - 22 February 2021	
08:30	*Telco opens*	
09:00	**Welcome** by Peter Biegelbauer (AIT, project coordinator) **Ice-breaker activity** Antonia Bierwirth (Tecnalia)	Plenary
09:35	**Status of Co-Change Labs** Interviews: Petra Wagner (AIT)	Plenary
10:35	**Virtual coffee break**	Break-out
11:00	*Break*	
12:45	**Working on RRI experiences - Panel Discussion** with Erik Fisher (Advisory Board), Barbara Lohwasser (FFG), Philine Warnke (Sounding Board) Moderator: György Pataki (ESSRG)	Plenary
13:45	**Discussion sessions**	Break-out/Plenary
14:50	**Reflection of Day 1 and outlook on Day 2**	Plenary
15:00	End of Day 1	Plenary

	Tuesday - 23 February 2021	
08:45	*Telco opens*	
09:00	**Welcome**	Plenary
09:05	**Lab-to-Lab meeting**	Break-out
09:30	**Introduction to Sustainable Development Goals** Keynote: Maurizio Sajeva (University of Palermo)	Plenary
10:05	**Discussion sessions**	Break-out/Plenary
11:00	*Break*	
12:45	**Ice-breaker activity** Antonia Bierwirth (Tecnalia)	Plenary
13:00	**Impact narratives – a mission-oriented approach** Speakers: Mika Nieminen (VTT) and Jyrki Hakapää (Academy of Finland)	Plenary
13:30	**Discussion Sessions**	Break-out/Plenary
14:35	**Reflection of Forum 2 incl. feedback survey** **Call for Innovative RRI practices**	Plenary
15:00	End of Forum 2	Plenary

2- Status of the Co-Change Labs

The first session of Forum 2 aimed at a rapid self-assessment of each Lab's purpose and status. In this way the Labs updated each other where they were standing and also all other Forum participants listening to them. The session was moderated by Petra Wagner (AIT) who asked each Lab coordinator (a) to introduce the aims and goals of their Lab and (b) to describe which elements of what they aim for is already visible in their Labs today and/or what they are currently struggling with.

"**Learning about machine learning"**
AIT Austrian Institute of Technology – Peter Biegelbauer
Machine learning, or artificial intelligence, technologies, have become pervasive in recent years (Alexa/Siri, facial recognition software, Google Maps). Person-related data is the driver of these technologies, therefore questions about data protection, privacy and ethics arise. In the "Learning about machine learning" Lab at AIT, the conditions under which research is happening are thoroughly considered by the participants. The Lab with members from two different research centers at AIT aims to raise awareness, organize common workshops, and aim at working together in future projects. A key challenge in the cooperation of social scientists and data scientists is that social scientists must first comprehend what machine learning is about. The Lab is still grappling with the ecosystem.

"Shape Lab for setting-up an internal RRI consultancy service" Fundación Tecnalia Research & Innovation – Antonia Bierwirth
The name of the Shape Lab stems from the UK-based network SHAPE (Society, Humanities and the Arts for People and the Economy). The objective is to promote sustainable change within Tecnalia and its innovation ecosystem. To achieve this the Lab creates concrete RRI solutions that will be tested upon demand within the different divisions of Tecnalia. They will gradually be scaled up to external partners of the ecosystem. Participants of the Shape Lab want to be pioneers and motivate people and organizations to be better and act responsibly. Their aim is to create a movement towards more responsibility in research and innovation.

"Developing sustainable start-up opportunities"
Delft Centre for Entrepreneurship & Technische Universiteit Delft – Martijn Wiarda
The main tasks of DCE are facilitating research, educating the next generation of entrepreneurs and providing facilities for them. TU Delft wants DCE to look beyond the needs of their customers and to pursue aligned values. Their aim is to create tools and trainings or workshops to identify values and internalise those values in their business model. An issue is the communication with DCE because they have been difficult to reach since the pandemics. The question remains how to ensure that the start-ups will make value integration a priority.

“Including moral values in standard setting”
National Standardization Organisation of the Netherlands (NEN) & Technische Universiteit Delft (TUD) – Martijn Wiarda
NEN aims to develop desirable standards and tries to include many different stakeholders. It is challenging for TUD to identify what social responsibility means for NEN and its stakeholders and what the key elements are. NEN realised that they need to convince stakeholders if they want to advance social responsibility. The Lab wants to figure out how the process can be shaped to make their standards more desirable.

“RRIzing Lab - Establish RRI practices & guidelines”
University of Novi Sad, Faculty of Agriculture - Branislava Lalic, Mila Grahovac
The main topics at the RRIzing Lab are open access, gender issues, and science education. A central challenge is to elevate their results to a higher level and share them with colleagues who are not part of the Lab. The Lab participants will try to inform and engage them in RRI, so that they will develop an intrinsic motivation for pursuing RRI. The participants are trying to detect the gender gaps that are present at their faculty by doing interviews with its staff about gender equality. The more dialogues are carried out and the more information is gathered, the more the focus shifts to different areas than considered in the beginning of the project. A major learning point was that personal interaction is very valuable for getting a better picture.

“Creating standardized practices & defining core values for new technology”
VTT & Research Alliance for Autonomous systems (RAAS) - Nina Rilla
The Research Alliance for Autonomous systems **(**RAAS) is not an organization but an ecosystem. The Co-Change lab coordinator VTT aims to integrate RRI thinking as an integral part of the research processes of RAAS. This integration has proven to be difficult due to the enormous size of RAAS. Currently, developments, and vitality, are hinging on continued national funding for RAAS. Without the funding for coordination, ecosystem dynamics will change and it is to be seen whether its operations are vital. Regardless of this challenging phase, new R&D projects have been started which is a good sign for the continuation.

“Developing standardized RRI evaluation criteria”
Council of Tampere Region - Tiina Ramstedt-Sen
The funding organization piloted the addition of RRI to their funding criteria in three different cases. The aim is to co-create standardized RRI evaluation criteria and practice for innovation funding. Additionally, they are raising awareness to encourage people to integrate RRI in their project proposals. The question arose how the efforts in this direction will be continued and how RRI will be integrated in future funding.

“Co-evaluating project proposals by medical and ethical experts” Vienna Science and Technology Fund (WWTF) - Donia Lasinger
As a small funding organization, WWTF is currently rewriting their funding guidelines, while trying to include RRI principles. The new research topic of Digital Humanism was started, and the Lab is aiming to integrate more stakeholders, not only researchers but also civil society organizations. One of the main challenges is that WWTF has had its funding guidelines for 18 years. Now it’s time to include new criteria, but simultaneously they need to be careful not to overburden their own organization, because they are only a small team and have limited resources.

Potential collaboration partner: QiArrow - Juan de Blas Pombo
QiArrow https://qiarrow.com is a collaborative ecosystem for rapid actions on sustainability. They want to introduce sustainability in mid-sized industrial companies and administrations. The team consists of engineers and consultants. Their aim is to find specific solutions that can be readily applied in companies. QiArrow was invited by consortium partner Tecnalia and is interested in collaborating with Co-Change.

3- RRI experiences

Panel Discussion

In a panel discussion, three members of the Co-Change boards shared their concrete experiences with RRI in different contexts: Philine Warnke from the Fraunhofer ISI in Germany led JERRI, a project related to RRI in research performing organizations. Barbara Lohwasser from FFG, the largest research funding organization focusing on applied research in firms in Austria, focused on structural programs and their experiences with RRI-connected projects. Erik Fisher from Arizona State University has a long relation with RRI and engages academically with people that are in research and innovation. The following discussion was moderated by György Pataki (ESSRG).

Philine Warnke (Fraunhofer ISI) introduced the JERRI project connected ISI Fraunhofer and TNO (the Netherlands Organization for Applied Scientific Research), the largest research organizations in Europe. Several activities were conducted during JERRI, four of those were introduced in the Forum:

1. ISI's support on reflecting on societal impact: a three-hour **format for ethical reflection** within the research team was developed. First, ethical experts and philosophers were approached, then the approach was tailored to the research of the group. The ethics training was introduced to mid-level research managers to systematically put them in the shoes of different people so that they could understand different perspectives. The program was well-received, but institutionalization to make something long-lasting remains a challenge.
2. TNO developed an **ethics game** for the management, which made them reflect ethical dilemmas.
3. TNO developed an **implicit bias training** in the gender dimension and implemented it with 25 members of their HR staff.
4. ISI's Open Access initiative turned out to be the strongest in terms of institutionalization. A **repository** (https://fordatis.fraunhofer.de/) for storing open research data from Fraunhofer projects was developed and is still up and running.

Erik Fisher (Arizona State University) started as a Humanities advisor at an engineering school. Today, he is working with over 70 RTOs and RFOs around the world with the so-called STIR method. His conclusion on this extensive work is that people have both more and less discretion than they thought they did. Integrating **collaborative reflection** is easier and more productive than they thought. One of the main barriers is **skepticism**, but in his opinion, it should be embraced because skeptical people can become the best collaborators. Skepticism should be used as a strength for moving forward.

It is often assumed that reflecting on RRI will cause a loss in productivity, or that collaboration would be distracting and allows the stealing of information. Some people assume that reflection does not make a difference, but there seems to be a progression:

1. When reflecting about how they can make their research more inclusive and more beneficial for society, researchers often believe that they do not or cannot make decisions regarding their work.
2. When they speak about their work, they think that they make only basic decisions that do not affect society.
3. At the third stage they realize that their decisions have an impact, but they still don't have the time to reflect on ethics.

In summary, people often do not realize the impact they have. RRI researchers and consultants need to change that by using different methods.

Barbara Lohwasser (FFG – Austrian Research Promotion Agency) shared her perspective on research funding and RRI. At FFG, the structural programs are thematically open. Digitalization is an important topic and is included almost everywhere, which brings in lots of data-related problems. There are efforts to raise awareness within FFG, but these also need to be translated into funding. RRI is relatively easy to implement in research institutions, it is more difficult in companies.
She introduced two highlights of FFG's funding portfolio:

- The design of the "Fast Track Digital" funding program involved many people who were already part of RRI projects. Its basic idea is to speed up the process from the initial idea to market entry and to help companies meet their targets. The focus lies on cooperative RRI, trustworthy and safe digital services, open innovation and addressing small and medium enterprises. Ethical, legal and/or sustainability aspects should be taken into consideration before developing a product. Education/trainings and information are provided as well as support in building relevant networks. The program will last two years and include 10 to 12 projects.
- Another initiative by FFG are the **Innovation Labs & Maker Spaces**. The idea is to meet, do projects together, create services and share experiences while trying to fulfill standards like equality. Such an infrastructure needs to be independent from universities and RTOs, so participants can discuss freely. In the participatory design phase, international experts were brought in and the knowledge within the organization was used bottom-up.

Questions from participants

Question to Erik Fisher: How can you turn skepticism into a resource?

Skepticism gives the opportunity to demonstrate that the RRI researcher is listening and trusts the other researcher/innovator. Keeping a communication channel open is important and if the first thing brought forward is mistrust, listening is crucial, instead of proving people wrong. It is an opportunity for establishing understanding, trust, and collaborative learning.

Question to Philine Warnke: What are the strategies to overcome resistance to RRI?

There is still a lot of resistance, only a fraction has been overcome. RRI cannot be forced externally, it needs to be linked to existing motivations. The main argument is that ethical research gives better results. RRI can only be done if there are enough researchers that want to include it. If they do it because of their own motivation, it will carry on. Therefore, it needs to be understood what is driving people, then an invitation for collaboration can be offered.

Question to Philine Warnke: What kind of examples did you explore for implicit gender bias?

Intuitive judgements are natural, the training tries to counter them. In human resources males were assessed positively and females negatively, this was ingrained in judgements and hiring decisions. Since you do not hear these stereotype cognitions among colleagues, top managers were selected for this training.

Question to Erik Fisher: How do you measure impact of RRI on productivity?

To measure impact, modulations (=changes in a dynamic process) can be looked at. Those could be big or small changes. Three central modulations can be recognized: (1) learning/discovery, (2) value shifts/clarifications and (3) practical adjustments/ research design/technology design/growth strategy. Different tools were developed, e.g. existing KPIs (based on an RRI framework) were tracked over time to see the progress.

Question to Barbara Lohwasser: What kind of competences do you need in-house for RRI?

Experts and in-house/external trainings are crucial. If the trainings are interesting, lots of staff members participate. Trainings are a good chance to share experiences in the organization. The knowledge shared has to be state of the art. New formats can be initiated by colleagues, like gender workshops, special programs, etc., that help women in research while promoting equality in organizations.

Discussion sessions

After the panel discussion, two discussion sessions were conducted in break-out rooms. The aim was to reflect on and deepen the learning from the experiences in the previous session. For this purpose, participants were asked to discuss the RRI case lessons they had heard and if they could apply them in their own Lab. They shared their observations with others, each group was assigned a moderator who took notes. Discussion highlights were shared, including, but not limited to, the following points:

- One has to put oneself in the shoes of their vis-à-vis and look into the pressing questions in one’s environment.

- Differences between private companies and public organizations must be considered.
- Changes and the engagement of stakeholders take time.
- Concrete tools are needed. Some participants requested short descriptions of the tools mentioned by the speakers, so they could include them in their organizations.
- It is important to upgrade tools that were already created and give feedback to the institutions that developed them. RRI products fail if the tools are forgotten after a project. A culture of giving them life in other projects should be promoted.
- It is not only about tools, it is also about empathy.
- The journey, or process, is characterized by collective responsibility.
- Failures should be used as a guide. In the first phase of the project, Co-Change tried to sum this up in stocktaking workshops. Similar problems had been identified, but in different perspectives.
- Questions arose: “How do we translate what RRI is to clients?”; “How to motivate and incentivize people to use new aspects and to be open?”; “Why would someone engage with RRI?” It does not pay off to force someone to believe in RRI arguments. The why and the how are important issues.
- Politics can define regulations which play an important role in implementing RRI, e.g. by requiring a certification for RRI compliance. Bottom-up and top-down mechanisms are both needed.
- All discussed issues are external leverages (money, complying with regulations), but internal drivers and engagement are also important.

Feedback and observations by Board Members about Day 1 of Forum 2

Justine Lacey: RRI is a slippery fish. In Australia, the conversation is emphasizing on building RRI capacities within research (funding) organizations, but at the same time RRI is facing different firms/industry sectors. RRI in different sectors looks different, it is yet to be discovered why.

Philine Warnke: It is important to distinguish whether tools work in a certain context and if they support the institutionalization of RRI. Written down conclusions are needed here. If a tool worked well in five cases, the individual case must still be taken into consideration.

Eric Klemp: There were good examples: Ask the right questions, support organizations with unique selling points!

Zoltán Bajmócy: Because RRI needs social science, it should not be framed as a social science contribution. Organizations are not the sum of the people working there, they have their own structures and norms. Changing the mindset of individual researchers and changing organizations are different things and require different approaches.

Erik Fisher: The hunger for tools and search for right language and discourse should be applauded. RRI developed for decades and now there is a demand for RRI, so there have to be quick steps beyond RRI-theory. The Co-Change Forum voices demands and is aware of the need for tools.

4- Sustainable Development Goals

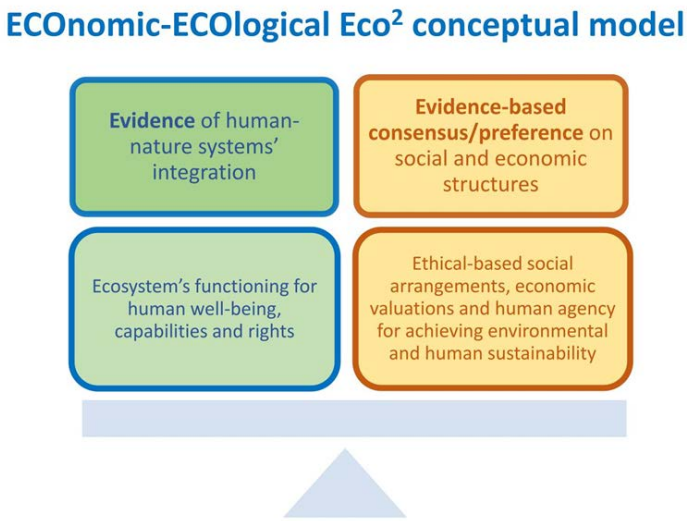
The guest speaker **Maurizio Sajeva** provided an introduction to and an outlook on the Sustainable Development Goals. The speaker from the Palermo Committee of Research has a PhD in Sustainability and Governance (UK), worked as a Scientific Officer at the European Commission (science for policy) and coordinated the Bonus Mares project about ecosystem services in the Baltic Sea area. He has developed the Sustainability Compass as a tool to implement the SDGs.

Maurizio Sajeva introduced the **2030 Agenda** of the UN, and the **European Green Deal**, which has the general objective of well-being and environmental sustainability. It aims to decouple economic growth from the natural capital, which seems implausible because the financial capital greatly surpassed the real capital. In fact, the financial capital is a metric representing the other capitals in practice. The human capital in turn cannot just be seen as a factor of production, it needs to be addressed from a different perspective.

The **Bonus Mares** project included an evaluation scheme for methods for assessing ecosystem services. While ecological methods scored quite high, economic methods did not. The project also analyzed how the SDGs can be measured and approached. While there are a few publications talking about the benefits of ecosystem services for humans, there are very few economic papers linked to the ecological research. Economists focus rather on the benefits for society, not on natural habitats like ecologists. Interesting discussions between these two groups arose during the project. Although s**cience for policy** includes societal aims, goals are often pursued as an effect of growth, which means that growth is put first, then the needs of people are considered. According to Sajeva, some SDGs are not actually goals, but means, and some of them are even contradictory. Uncertainty in science leaves room for policy:

the more uncertain the science, the more subjective value judgements come into play. Science for policy favours evidence-based decision-making. Sometimes decisions are however made because of consensus, but science is about replicability and evidence, not consensus. Therefore, it is not appropriate to justify decisions stating that most scientists agree, because science is not about agreement. Also, some SDGs are actually policy and some are science. Finally, decision-making should leverage on ethics.

The **Eco² conceptual model** (ECOnomic-ECOlogical) distinguishes between basic human needs and consensus/preference on social and economic structures. In the model, one side is based on evidence, the other is based on consensus and preference. We have to use our resources for human benefit. We act through societal and individual choices to increase human well-being, but we also risk some losses. We should evaluate risk and take preventive action.



The **Five Capitals Model of Sustainability** is a scheme describing how the different sets of capital are integrated into one another:

- Natural Capital
- Human Capital
- Social Capital
- Manufactured Capital
- Financial Capital

Humans and nature are integrated, and social and economic choices are made in order to accomplish certain objectives. First, the human capital here is not defined as a production factor, but as a goal, increasing capabilities within system limits. The fulfilment of human needs is seen as non-negotiable. Second, the social capital is the infrastructure, and the physical infrastructure should be seen as part of the social capital instead of the manufactured capital as presented in the original model, since the manufactured capital is actually realized because of social priorities and choices. Last, the financial capital is the metric or the indicator of these other forms of capital. Therefore, the **Sustainability Compass** balances different aspects of the different capitals and is linked to the SDGs and to other goals from other literature.

Which SDGs are GOALS and which are MEANS?

To separate goals from means, we should see the means as negotiable, while the goals are non-negotiable. However, this division is not straightforward as some SDGs are both means and goals at the same time.

Discussion

The following questions guided the discussion sessions:

- Are new technologies always better than old ones? For example, the benefits of 5G are unclear. Investments in 5G technology are huge and impacts are ambiguous, such as certain health effects.
- Are digital systems based upon scientific evidence, uncertainty and precaution, on the primary goals of human well-being (needs and rights) and ecosystems' sustainability?
- Are digital systems useful and additional or compulsory irreversible changes? Are options of 'best old technologies' or 'doing nothing' considered? What are impacts of IT components and radiation?
- Is communication open, independent and free from stakes and dominant positions? Is it too complex?
- Is there a concentration of risks? How can we eliminate the risk of attacks on citizens? How to limit the complexity of these risks?

The discussions resulted in the following highlights which were shared in the plenary:

- Differentiation between **goals and means** can be helpful for Co-Change and for the strategy process of companies.
- **Critique** was voiced that SDGs are too wide and their application is not straightforward.

- **Practical view**: There is a need to simplify SDGs and adapt them to local contexts. The SDGs need to be discussed in one technology area at a time, like self-driving cars. At the same time the SDGs are very systemic in nature. The group voiced the need for protocols or tools, and it came up that consultancy services for SDGs are available already, for example in Denmark.
- Challenges of **designing measures** and assigning responsibility: “How can we choose the kind of measures and guiding paths for different goals?”; “How can we bring together competing visions and goals?” and “What obligations come with the SDGs?”.
- The role of rational principles and goals can be linked to the role of **emotions** within the SDGs since humans are driven by emotions. In today’s world, emotions have become too significant compared to facts. Emotions serve a purpose, but misuse has to be avoided.
- There is a **lack of democratic legitimization** of the SDGs; the principle of “think globally, act locally” is still valid.

The common thread running through the discussions was that **consensus is difficult.** There is democratic tension about the SDGs and identity politics, emotions and social psychology come into play. To democratically include civil society and still take expert knowledge into account are major challenges.

5- Impact Narratives

Mika Nieminen, principal scientist at VTT, and Jyrki Hakapää, a senior science advisor at the division of strategic research at the Academy of Finland, provided an introduction to the concept of impact narratives. First, Mika Nieminen shared his thoughts on the concept. Afterwards, Jyrki Hakapää talked about impact narratives as a possible tool for the monitoring of research projects.

Presentation by Mika Nieminen

An impact narrative is a story describing the process from planning an activity to concrete actions, considering the results and the potential impacts. It can be an instrument for learning and visualizing activities. The impact narrative helps to make sense of complex issues and different elements: while reflecting on planned actions and possible results, different paths come into consideration. They can also be used for communication purposes, for presenting a story to others (why, what, who, how, when) and inviting others to share their story that creates an impact already.

The impact narratives increase the researcher’s understanding of their actions, iteratively creating better practices. Qualitative changes arise as a result of each person’s actions, or as a result of changes in the behavior of individuals and organizations. However, to describe those changes proves to be a challenge. Researchers generally look at the processes and used resources of their research to create an output. Nevertheless, it has to be understood that there are different parallel processes at play at the same time, affecting the output and other processes.

The aim of impact narratives is to create a pathway which shows how impact can be created. Different situations and different possible usages of the research findings should be taken into account. A systemic view includes interactive elements, feedback

loops, different dimensions of the processes and the time component. This **systemic view** can be achieved by several steps:

1. The initial story is about setting goals, creating change, and drafting measures to understand how to proceed.
2. In the next round, more information has to be gathered and the results must be reflected on. This iteration can be done by writing a story and trying to learn from one's actions.
3. In the final round, the full story is finalized. Impact narratives are an instrument which can include different issues, readers, documents, pictures and all kinds of approaches.

Presentation by Jyrki Hakapää

The Academy of Finland research council funds strategic research, which means research with social impact. The Academy advises the government of Finland, launches open calls and monitors the projects which receive funding. The two basic objectives of the Academy are (1) building a research base for wicked societal problems (grand challenges) and (2) enhancing the use of research in decision-making. Five issues have proven to be crucial:

1. **Government commitment** is important because it makes funding decisions.
2. **Multi-disciplinarity** is a pre-requisite since challenges cannot be tackled by one ministry alone.
3. **Interaction with societal actors** has to be included in the planning.
4. **Relevance and ultimate impact** should be considered.
5. **Key stakeholders** need to be involved. The most important stakeholders are the ministries. All ministries are involved in research projects.

Since 2015, the Academy expects two different activities from project teams:

1. Each project team lists its activities, including publications, research, teaching and interaction activities, partners they are working with, and their key issues.
2. Each project team provides an impact narrative to monitor and review project outcomes and impacts. The task of creating the narrative is relatively free and collaborative. It can involve stakeholders, but usually it does not. It shows a record of the kind of research conducted. Each project writes three to five impact narratives throughout the project. Different questions are asked, e.g.:
   - How does the impact narrative fit in the project? What kind of means did they use? Where do they stand at the moment of writing the impact narrative?
   - What kind of activities have to be changed? What were positive achievements? What did not work?
   - Which impacts are the researchers aiming for? What did they want to achieve? What is "impact"?

The **IOOI** scheme guides the impact in four stages: **input - output - outcomes - impact.** Although IOOI hints a linear approach, these stages are not seen as a linear process. Impact is achieved when societal actors work with the research results and possibly change their behavior. In fact, societal impact is produced by stakeholders, not researchers.

Impact narratives are **employed** in three ways:

1. to monitor and review projects and programs.
2. to distribute knowledge of SRC programs to its stakeholders.
3. as a positive tool for the project teams themselves to reflect and learn, and to explore various routes to achieve impact.

The Academy of Finland requires impact narratives of six pages from twelve ongoing projects. Annually, the projects create around 100 impact narratives, which makes it difficult to use this vast data in a unified way. The impact narratives should be publicly accessible but may contain information that prohibits their opening. One main challenge is that social impact demands trust and continuity which is at risk when successes and failures are reflected in public.

Currently, there are three models for impact narratives:

1. Meta-narratives (have proven not to be practical)
2. Separate case studies (concrete, but might not cover everything)
3. Dividing activities into three to five impact narratives.

Positive assessments of this method are becoming more frequent. Due to limited resources, the Academy of Finland is not able to provide further support after a project finishes, but an annual workshop to exchange learnings with all the projects is arranged.

All in all, impact narratives are a free form of thinking, allowing researchers to describe and reflect on their vision of their work's impact. From the perspective of a research funding organization, these documents are very useful for the monitoring and assessment of projects.

Discussion

The discussions resulted in the following highlights which were shared in the plenary:

- **Similarities and differences between impact narratives and vision roadmaps** (as developed in Forum 1 (cf. D2.2)): The latter is only a starting point, a kind of tentative impact narrative. An impact narrative is an evolving story and can be used as a living diary, an instrument for learning and reflection.
- Narratives can be used to **translate between different epistemic communities** and other audiences. They can also be used to understand the point of view of different stakeholders. It is important to consider that different stakeholders have different stories. How can you include and engage stakeholders to create a common narrative?
- Narratives should also be used to discuss **failures and challenges**, not just successes.
- We need **narratives** which are sufficiently specific but also flexible and open.
- Impact narratives could be used to formulate **new KPIs**.
- **Graphics** could be a way to make the narrative more appealing or understandable to a broader audience.
- Providing **training** for the project partners could be a way of going forward.
- Impact narratives could be used for **policy briefs** regarding findings of the whole Co-Change project.

6- Reflection on Forum 2 and Outlook

Synthesis and Feedback

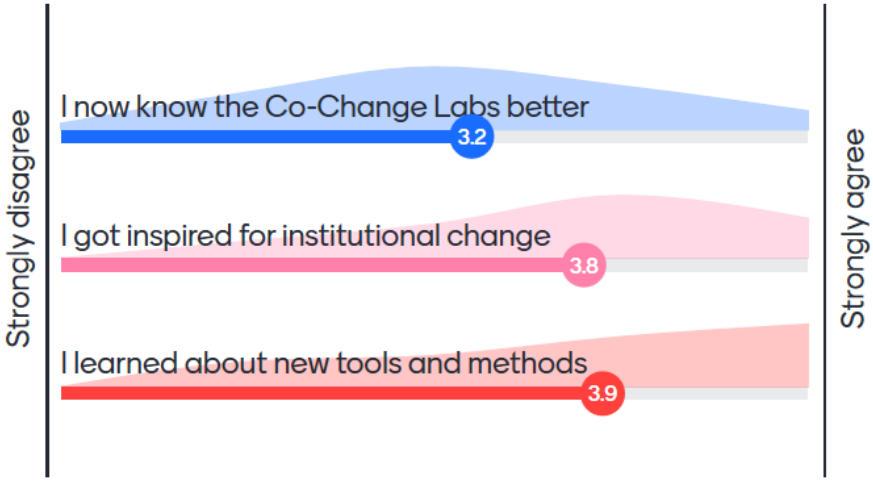
The Forum offered a space to discuss on how to communicate, how to involve RRI in different contexts and how to argue with and for RRI. The risk of not applying RRI came up as an argument, as well as the important differentiation between why and how. Convincing arguments have to provide answers to both of these questions. Intrinsic motivation has to be instilled in researchers and innovators, RRI cannot be forced externally. Measuring impact is another central discussion topic that arose during the Forum 2. Ultimately, the focus needs to remain on the aim to work together in a way that is meaningful and changes something for the better through the implementation of RRI principles.

In order to gather immediate feedback on Forum 2, a short survey with the online tool Mentimeter (www.menti.com) was conducted among all participants. First, the participants were asked what they found the most interesting about the Forum 2. Each person could give three answers, the results are shown in the word cloud below.

The results show that impact in general and impact narratives as a tool were the most interesting for a lot of participants. They also valued the opportunity to discuss and reflect in different groups.

The second question asked them whether they would like to see something changed. Answers were collected in free form. The overwhelming response was very positive. Some participants mentioned topics they would like to discuss in more detail, e.g. stakeholder engagement. The most frequent suggestion for improvement was that they would like to have more time for discussion in future meetings.

The third and final question was intended to assess whether the objectives of the Forum 2 were achieved. Participants were asked if they agreed with three different statements which are shown below:



The statement that received the most approval was that the participants indeed learned about new tools and methods. They also strongly agreed that they got inspiration to achieve institutional change, so the main aims of Forum 2 were reached. One explanation for the lower rating regarding the first question is that the Lab coordinators already know each other pretty well because of their monthly meetings since the start of the project in the beginning of 2020. Therefore, it was mostly the board members and associated partners who learned more about the Labs.

Overall, the Forum 2 organizers got mostly positive feedback for both the organization and the content of this online format, not only from the survey, but also personally. Nevertheless, they hope to connect in person again at Forum 3 in November 2021.

The way ahead

A **workshop for Co-Change Labs on "stakeholder identification**" using the new method STIRRI, which integrates the STIR method of Erik Fisher with specific RRI topics, will be conducted in April 2021.

To open the project to external collaborators, a **competition for ideas on institutional change** will be launched. Organizations interested in working on institutional change and ecosystem impact are invited to participate. A tight cooperation will help them to develop their ideas; in turn, it will open the Co-Change project to new ideas. The open call will be sent out to all Forum participants for dissemination in their research communities and beyond. The deadline for application will be at the end of March 2021 and three semi-finalists will be selected by the end of April 2021. Co-Change partners will then work with them, putting them in touch with experts and provide support.

Call for participation in

CO-CHANGE IDEA COMPETITION

At Co-Change we believe that as research organisations it is our responsibility to connect science with society. We call innovators (individuals, teams and organisations) from all over the world to come up with solutions tackling the SDGs or the societal challenges defined by the EC through an ecosystem approach. Any ideas that create change in terms of practices, procedures, routines or rules along the research cycle are very welcome.

We welcome submissions on a range of topics including, but not limited, to the following:

1. Meaningful changes in culture, structures and practices for more responsible R&I policies and practices, e.g. by bringing different levels and scales of change together;
2. Diversity and democratisation of governance in science and research;
3. Empowered communities of practice, e.g. through building coalitions or sharing access to resources;
4. Experiments, mechanisms and reflection formats that catalyse; create dialogue and understanding among stakeholders.

Please send your submissions with the following structure (around 500 words) to: **antonia.bierwirth@tecnalia.com** and **petra.wagner@ait.ac.at** by **March 31, 2021:**

When needed, participants will receive further clarifications about the topic and the terms of conditions. Out of the total of eligible entries received by the deadline, three semi-finalists will be selected by the end of April 2021. These teams will receive mentoring by the project team to further develop their initiatives. Their ideas will be published on the project website and will be included in the Co-Change final toolbox book. To be able to network with other organisations and potential partners in their field, the semi-finalists will be invited to take part in project meetings as well as in other relevant project events.

www.cochangeproject.eu

Co-funded by the Horizon 2020 programme of the European Union

Annex: Presentation slides

Maurizio Sajeva: Introduction to Sustainable Development Goals

The Sustainable Development Goals and the idea of 'science for policy'

A Sustainability Compass for wisdom and moral virtue?

Maurizio Sajeva, 23.2.2021

The 2030 Agenda (UN 2015) is a '*plan of action for people, planet and prosperity. It also seeks to strengthen universal peace in larger freedom [...], to realize the human rights of all and to achieve gender equality and the empowerment of all women and girls [...] and to free the human race from the tyranny of poverty and want and to heal and secure our planet [...] so that no one will be left behind*'.

- Agenda 2030: 17 Sustainable Development Goals (SDGs) and 169 indivisible targets.

- The EuropeanGreen Deal (EC 2019) '*aims to protect, conserve and enhance the EU's natural capital, and protect the health and well-being of citizens from environment-related risks and impacts*'

3

- The Green Deal rejects compromises and aims to make EU a fair and prosperous society based on a resource-efficient and competitive economy free from greenhouse gases by 2050

- Decoupling economic growth from the natural capital (the financial capital would not be increased by decreasing the natural capital).

- Human capital is promoted by a just and inclusive transition, that would put people, local communities and workers first, and pay attention to the regions, industries and workers who will face the greatest challenges.

- Active public participation for a joint governance

4

Eco-GAME meta-evaluation for valuation methods

(slightly modified from Sajeva, Lemon and Mitchell, 2020):

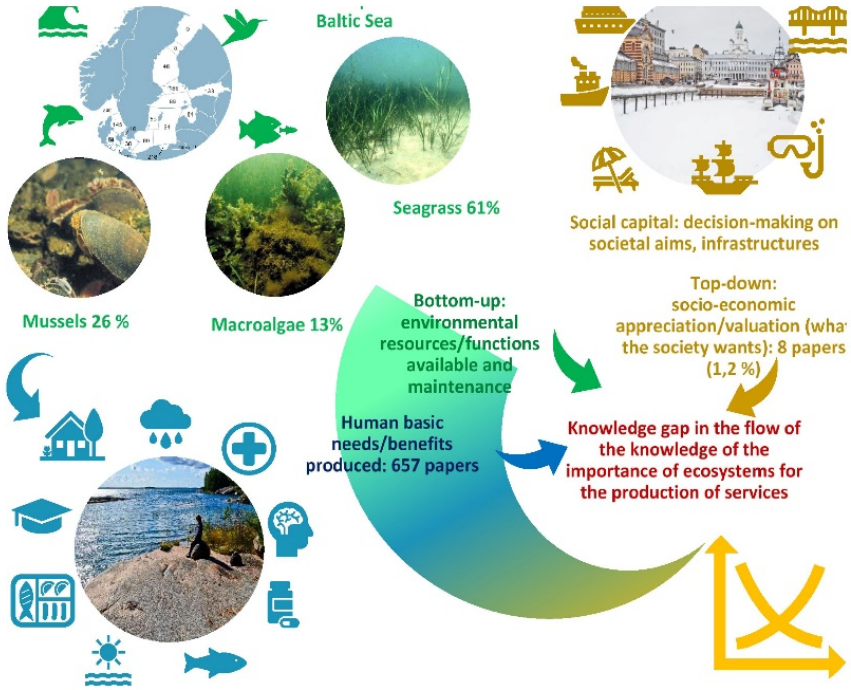
Eco-GAME meta-evaluation for metrics' relevance for SDGs based decision-making

Level of knowledge relevance		Example	Score Xi	xi^2
Human-nature system integration: analysis effectiveness for policy purposes according to SDGs	The metrics to practically and effectively assess performances in terms of UN Sustainable Development Goals (SDGs)	The metric can effectively provide metrics local employment, gender equality, health, well-being or environmental health deriving from fisheries activities, directly referred to SDGs	**7**	49
Dynamic multi-dimensional impact	The metric can valuate systemic impacts of ecosystem services across economic, human, social and natural dimensions	The metric can assess the revenue generated by fish markets and the improvements in population health, security or well-being (measurable impact).	**6**	36
Forecasting	The metric can forecast future systemic impacts of ecosystem services	The metric can forecast the state of health of the ecosystem in terms of fish population and/or the generated well-being (e.g. increased employment) in the long run	**5**	25
Dynamic uni-dimensional impact	The metric can valuate systemic impacts of ecosystem services within one dimension	The metric can assess the revenue generated in the fish market.	**4**	16
Static quantitative	The metric can assess quantitative aspects of ecosystem services	The metric can give fish a value, for instance through price	**3**	9
Static qualitative	The metric can assess qualitative aspects of ecosystem services	The metric can discover the species of fishes or provide uncountable valuations (high or low value)	**2**	4
Limited knowledge	The metric is able to discover knowledge	A metric can discover the presence of fish	**1**	1
No knowledge	The metric is unable to discover knowledge	A metric cannot discover whether there are fishes or not in the sea	**0**	0

Assign a number of attributes, corresponding to the scores from 0 to 7 to valuation methods or combinations of these

5

BONUS MARES: an adventure between ecologists and economists



BONUS MARES " an adventure between economists and ecologists – both 'eco' but in a different setting and fashion. A lot to experience and learn from such an approach"

Isolation of different sciences: deep diverging philosophies.

Ecology focuses on habitats, ecosystems and the functions and benefits these provide (bottom-up), which economics should consider.

For economists the value of habitats is not relevant. The aim is to valuate the final ecosystem services for anthropocentric societal/political aims, not necessarily related to evidence-based and non-negotiable human needs.

SDGs: consensus-based science for policy?

- Goals known since long time, yet pursued as **a residual effect of growth and dominant interest**
- Hard to make an overall evaluation for different sectors
- Goals possibly in contrast with one another, and current trends do not look promising

- Amartya Sen **confusion of means and goals of development: human sustainable development is the goal, socio-economics are the means**

- Already about 30 years ago EC advocated for science to come down from their disciplinary silos to build interfaces with society and inform evidence-based decision making: *science uncertainty leaves room to subjective value judgements*

-The more I know the more I understand I do not know; **uncertainty is not a bad, rather a good for awareness and precaution: understanding key factors**

7

The problem of SDGs and science for policy

1. **Science is about replicability of results**. Ecology and human well-being are evidence-based and are 'non-negotiable'. One can refute with evidence the theories of many, those ones were the best scientists, historically named as heretics
2. Science is not consensus nor democracy, which are the bases for policy. Policy and socio-economics are consensus-based.
3. **SDGs mix means with goals, evidence with consensus**
4. **Policy, based on science consensus, and a science-policy language, may be dangerous** for free speech: science can be refuted by good arguments, moral virtue can challenge unjust decision
5. **Science requires wisdom, good governance requires ethical values and moral virtue (Aristotle)**. Both are based on uncertainty and freedom.

8

Socrates describes wisdom as the humility to admit own ignorance.

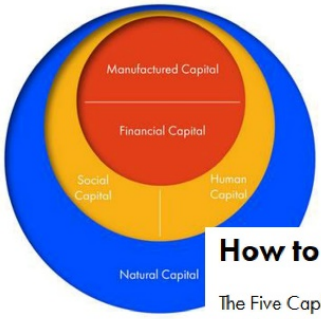
For Aristotle knowledge and wisdom cannot be translated into action without moral virtue and ethics

Flybjerg phronesis describes levels of wisdom: knowing the basic rules, be able to make exceptions and be able to develop a natural instinct

9

The Five Capitals

There are five types of sustainable capital from where we derive the goods and services we need to improve the quality of our lives.



How to use the Five Capitals model

The Five Capitals Model can be used to allow organisations to develop a vision of what sustainability looks like for its own operations, products and services. The vision is developed by considering what an organisation needs to do in order to maximise the value of each capital. However, an organisation needs to consider the impact of its activities on each of the capitals in an integrated way in order to avoid 'trade-offs'. Using the model in this way for decision-making can lead to more sustainable outcomes.

Sustainable development is the best way to manage these capital assets in the long-term. It is a dynamic process through which organisations can begin to achieve a balance between their environmental, social and economic activities. We believe the best way to achieve a sustainable future is through system change.

of Natural Capital

- In their extraction and use, substances taken from the earth do not exceed the environment's capacity to disperse, absorb, recycle or otherwise neutralise their harmful effects (to humans and/or the environment)
- In their manufacture and use, artificial substances do not exceed the environment's capacity to disperse, absorb, recycle or otherwise neutralise their harmful effects (to humans and/or the environment)
- The capacity of the environment to provide ecological system integrity, biological diversity and productivity is protected or enhanced

of Human Capital

- At all ages, individuals enjoy a high standard of health
- Individuals are adept at relationships and social participation, and throughout life set and achieve high personal standards of their development and learning
- There is access to varied and satisfying opportunities for work, personal creativity, and recreation

of Social Capital

- There are trusted and accessible systems of governance and justice
- Communities and society at large share key positive values and a sense of purpose
- The structures and institutions of society promote stewardship of natural resources and development of people
- Homes, communities and society at large provide safe, supportive living and working environments

of Manufactured Capital

- All infrastructure, technologies and processes make minimum use of natural resources and maximum use of human innovation and skills

of Financial Capital

- Financial capital accurately represents the value of natural, human, social and manufactured capital

Financial Capital plays an important role in our economy, enabling the other types of Capital to be owned and traded. But unlike the other types, it has no real value itself but is representative of natural, human, social or manufactured capital; e.g. shares, bonds or banknotes.

We are facing a sustainability crisis because we're consuming our stocks of natural, human and social capital faster than they are being produced. Unless we control the rate of this consumption, we can't sustain these vital stocks in the long-term.

We believe that by maintaining and trying to increase stocks of these capital assets, we can live off the income without reducing the capital itself. But for this to happen, **it is the responsibility of every organisation, business or otherwise, to manage these capital assets sustainably.**

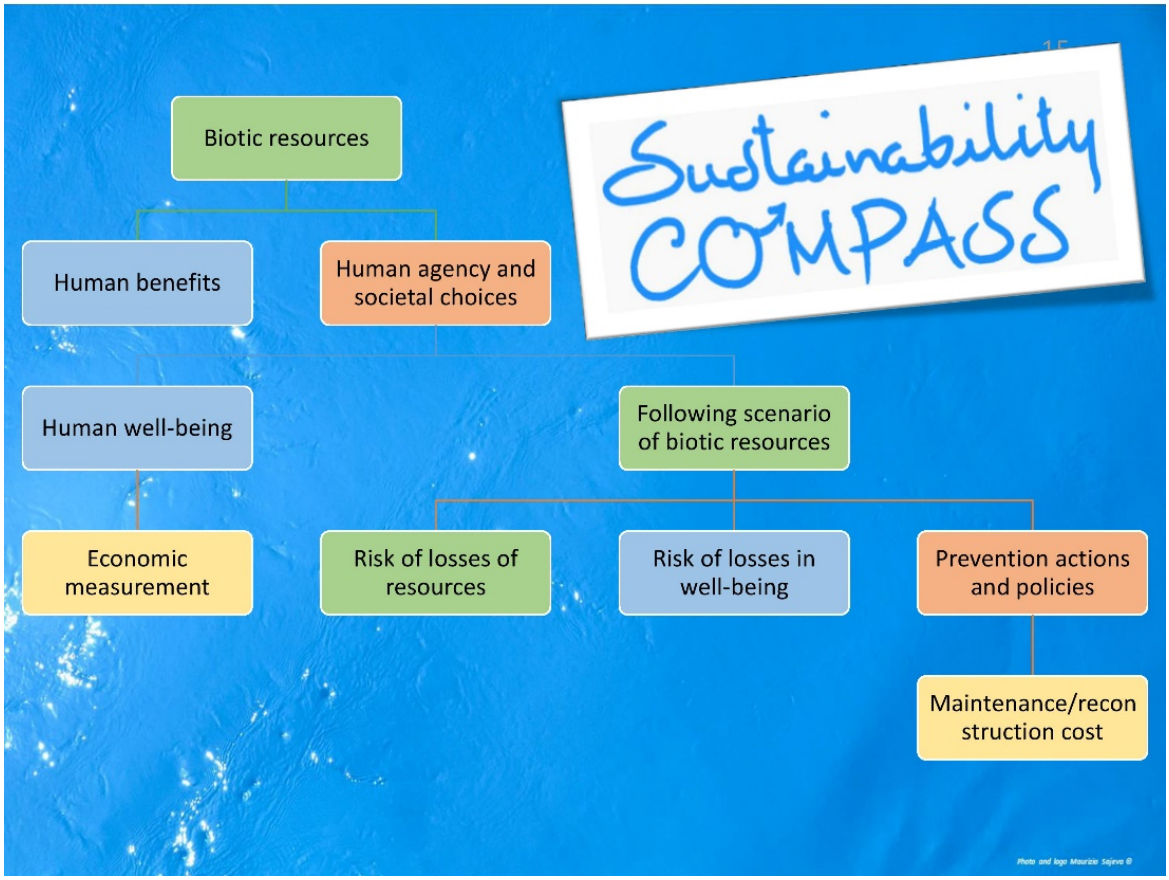
ECOnomic-ECOlogical Eco^2 conceptual model

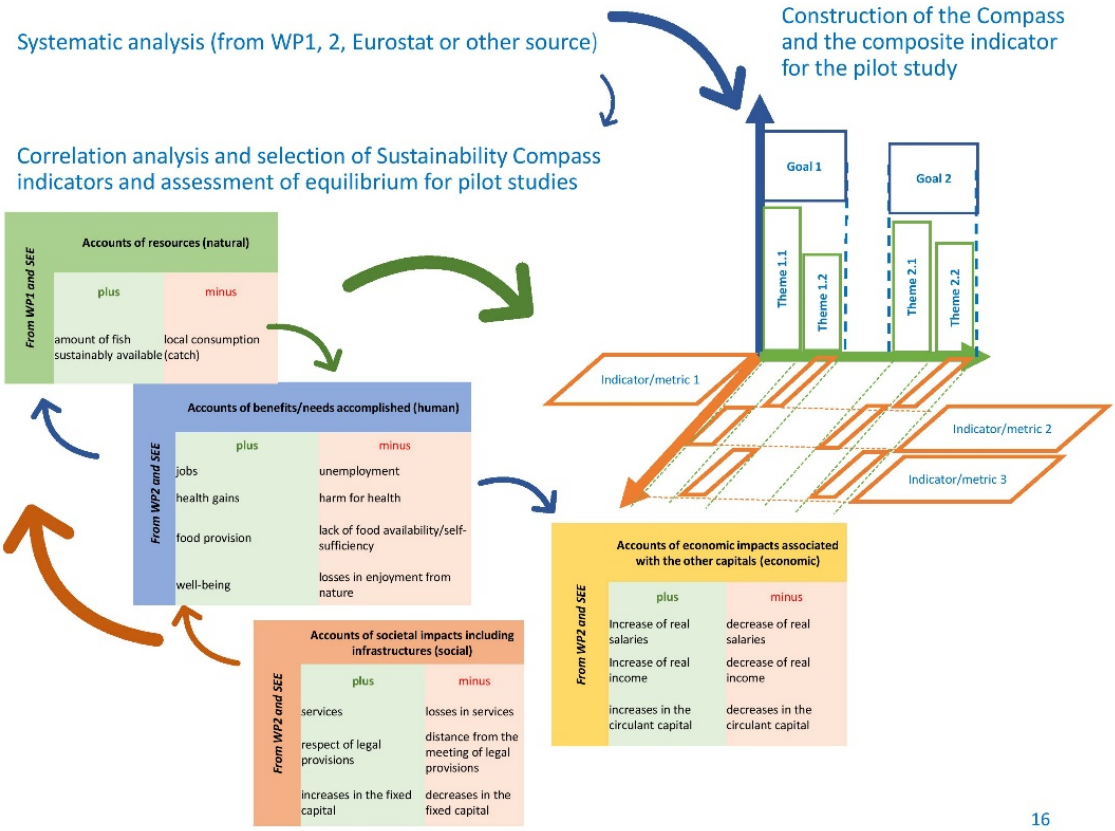
Evidence of human-nature systems' integration

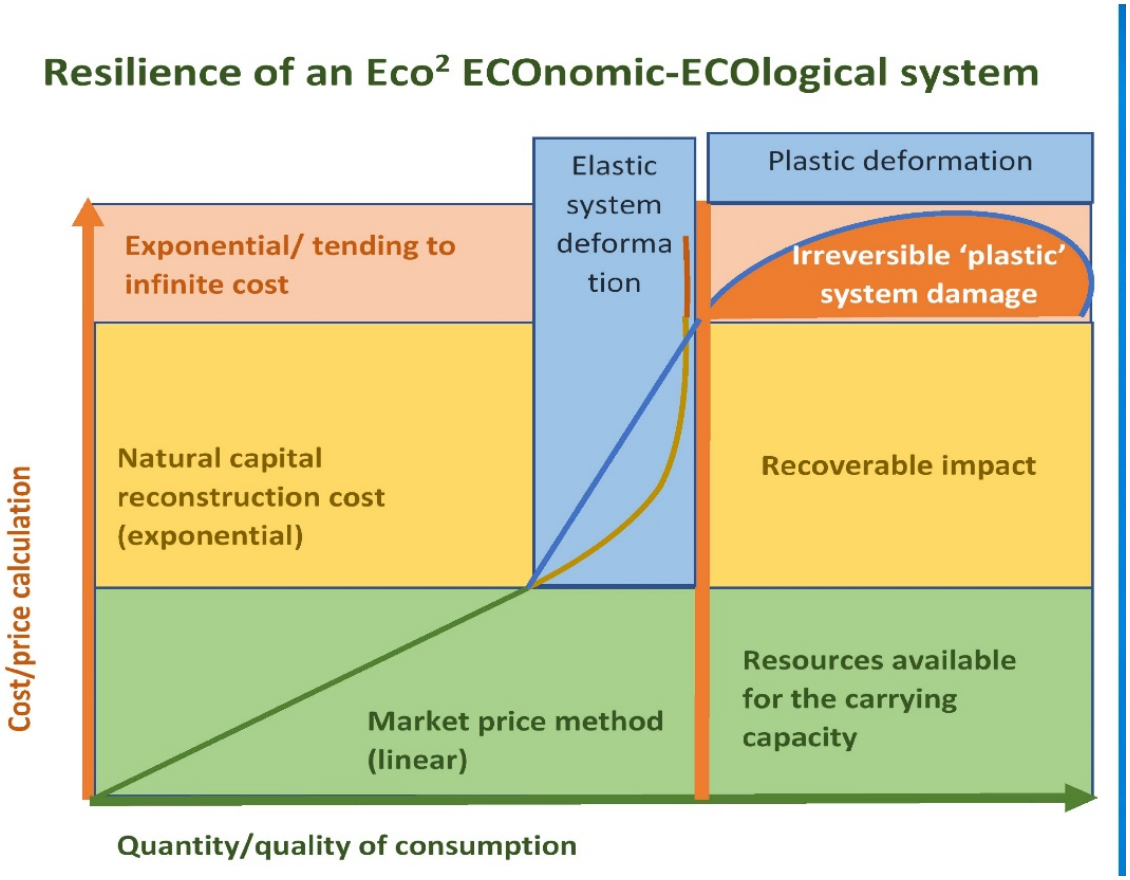
Evidence-based consensus/preference on social and economic structures

Ecosystem's functioning for human well-being, capabilities and rights

Ethical-based social arrangements, economic valuations and human agency for achieving environmental and human sustainability



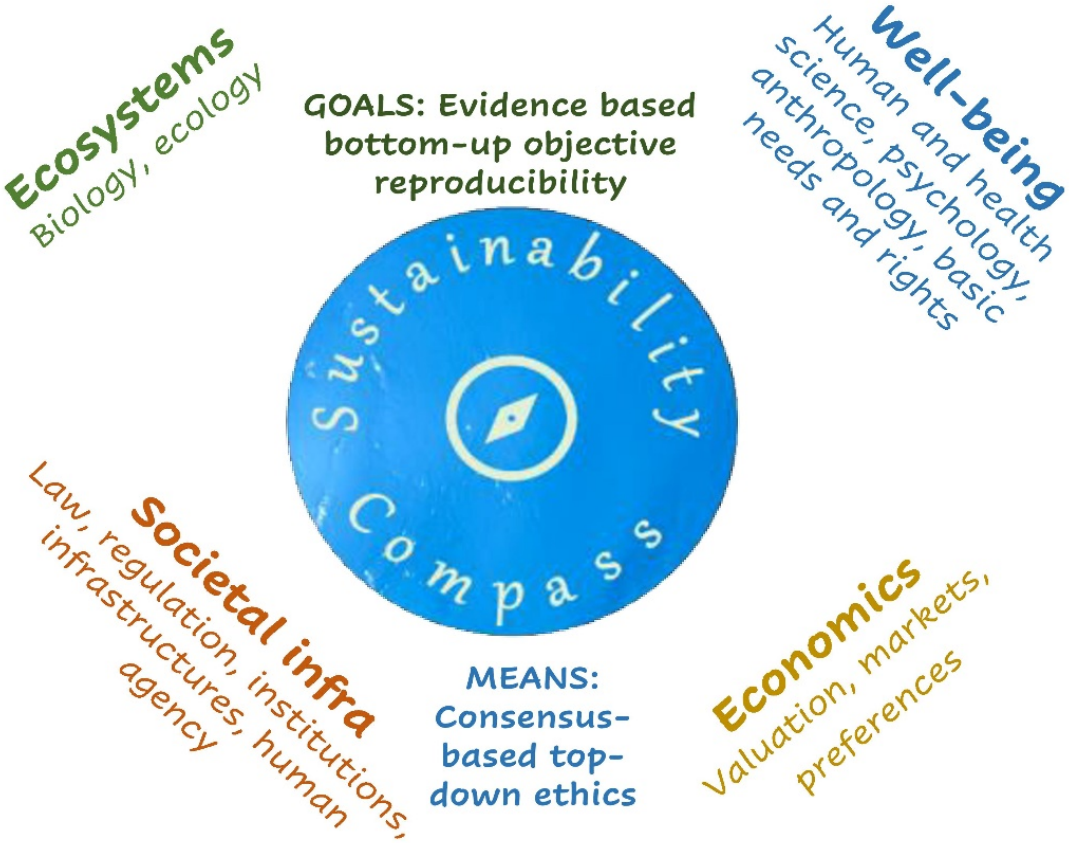

Systematic analysis (from WP1, 2, Eurostat or other source)
Construction of the Compass and the composite indicator for the pilot study
Correlation analysis and selection of Sustainability Compass indicators and assessment of equilibrium for pilot studies
Accounts of resources (natural)
From WP1 and SEE
plus
minus
amount of fish sustainably available
local consumption (catch)
Accounts of benefits/needs accomplished (human)
From WP2 and SEE
plus
minus
jobs
unemployment
health gains
harm for health
food provision
lack of food availability/self-sufficiency
well-being
losses in enjoyment from nature
Accounts of societal impacts including infrastructures (social)
From WP2 and SEE
plus
minus
services
losses in services
respect of legal provisions
distance from the meeting of legal provisions
increases in the fixed capital
decreases in the fixed capital
Accounts of economic impacts associated with the other capitals (economic)
From WP2 and SEE
plus
minus
Increase of real salaries
decrease of real salaries
Increase of real income
decrease of real income
increases in the circulant capital
decreases in the circulant capital
Goal 1
Goal 2
Theme 1.1
Theme 1.2
Theme 2.1
Theme 2.2
Indicator/metric 1
Indicator/metric 2
Indicator/metric 3
16

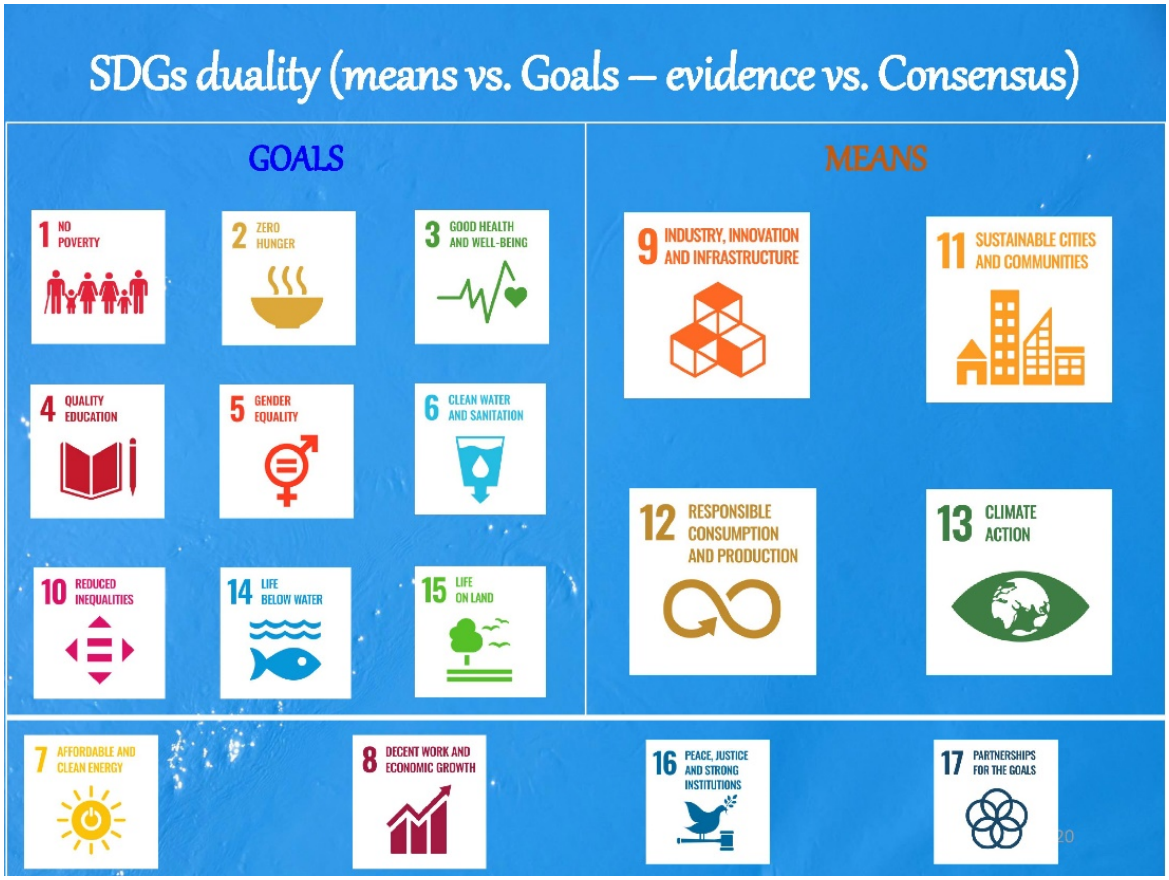

Resilience of an Eco² ECOnomic-ECOlogical system
Elastic system deformation
Plastic deformation
Exponential/ tending to infinite cost
Irreversible 'plastic' system damage
Natural capital reconstruction cost (exponential)
Recoverable impact
Market price method (linear)
Resources available for the carrying capacity
Cost/price calculation
Quantity/quality of consumption

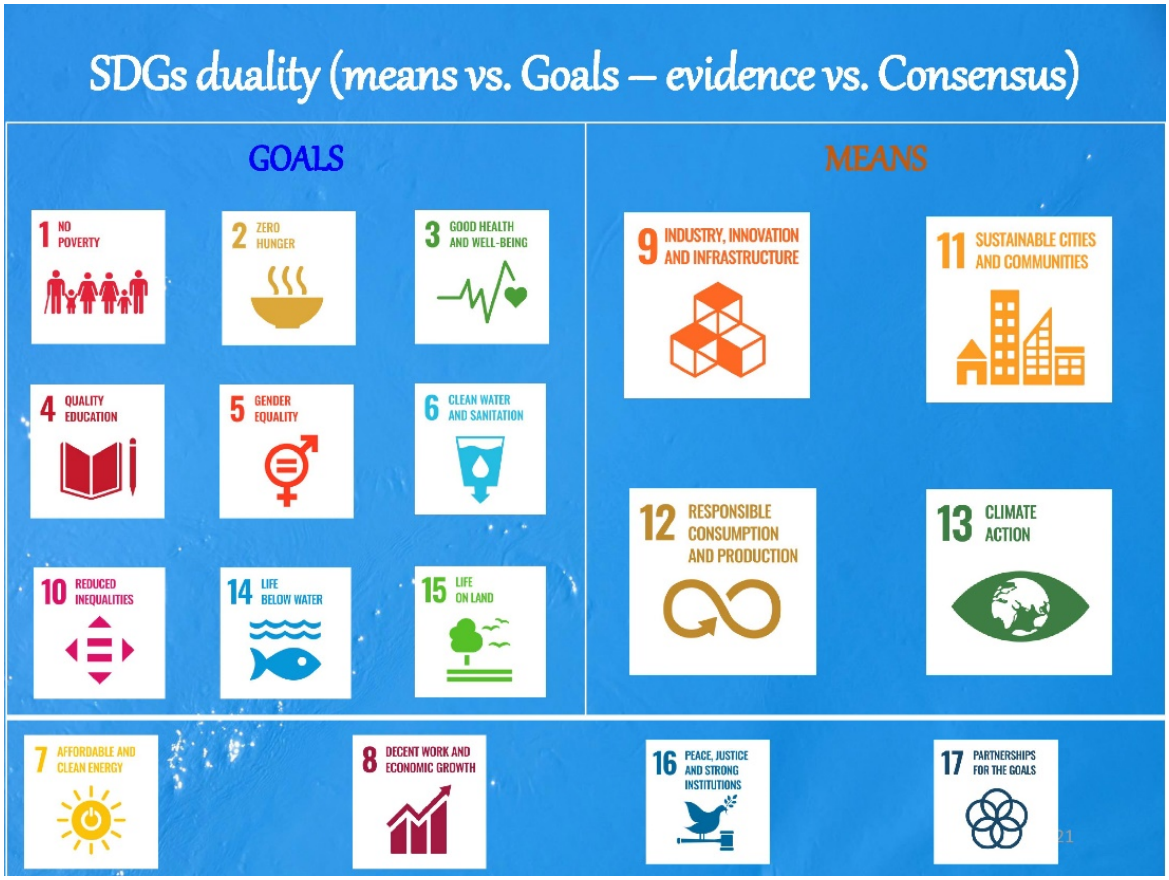
Some general questions for thinking on SDGs

1. **Scientific evidence perspective (GOALS)**: natural and human systems and their interconnection are complex, the unknown is much more than the known.
   1. Which are the **key aspects** on which systems' sustainability are dependent?
   2. **How to measure** these in order to concretely improve and maintain them?
   3. Which are the main **uncertainties** and risks?
2. **Policy consensus perspective (MEANS)**: how to make decisions according to wisdom ethics and moral virtue?
   1. Which are the **concrete actions** to implement in everyday life for sustainable futures of selected specific contexts?
   2. Are decisions made based **upon scientific evidence, uncertainty and precaution**, on the primary goals of **human well-being (needs and rights) and ecosystems' sustainability**?
   3. Do socio-economic structures measure well the goals above?
   4. Are decisions are made for **the common good and for the weakest**?
   5. Are decisions **independent** and free from external interest?
   6. **Is communication fair, independent and free** from stakes?

18




SDGs duality (means vs. Goals – evidence vs. Consensus)
GOALS
MEANS
1 NO POVERTY
2 ZERO HUNGER
3 GOOD HEALTH AND WELL-BEING
4 QUALITY EDUCATION
5 GENDER EQUALITY
6 CLEAN WATER AND SANITATION
10 REDUCED INEQUALITIES
14 LIFE BELOW WATER
15 LIFE ON LAND
9 INDUSTRY, INNOVATION AND INFRASTRUCTURE
11 SUSTAINABLE CITIES AND COMMUNITIES
12 RESPONSIBLE CONSUMPTION AND PRODUCTION
13 CLIMATE ACTION
7 AFFORDABLE AND CLEAN ENERGY
8 DECENT WORK AND ECONOMIC GROWTH
16 PEACE, JUSTICE AND STRONG INSTITUTIONS
17 PARTNERSHIPS FOR THE GOALS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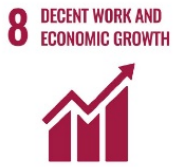
8 DECENT WORK AND ECONOMIC GROWTH
16 PEACE, JUSTICE AND STRONG INSTITUTIONS
17 PARTNERSHIPS FOR THE GOALS

Some questions

Does consensus-based and scientific evidence-based free debate on SDGs exist or SDGs are final?

Goal 13 about climate action is about CO_2 emissions from human being responsible of climate change. On the issue there is still scientific debate. What about dangerous pollutants?



Goal 8: economic growth is promoted as the mean to achieve decent work. But is it always so?

Goal 17 is about trade, finance and technology. What about human rights and needs, identity, individual privacy and freedom?

FOUR BASIC RULES DEFINE SUCCESS…

We call these rules 'Sustainability Principles'.

In a sustainable society, nature is not subject to systematically increasing…

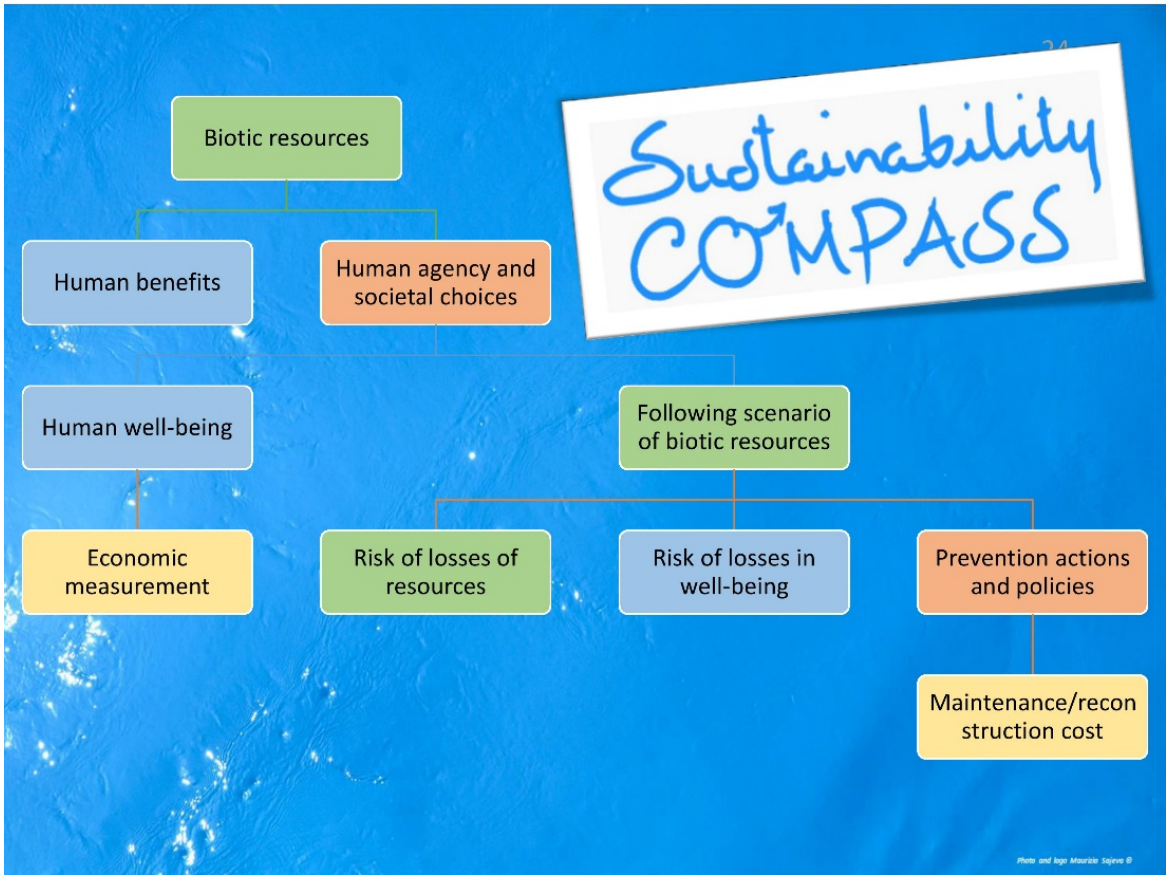
The Natural Step
https://thenaturalstep.org

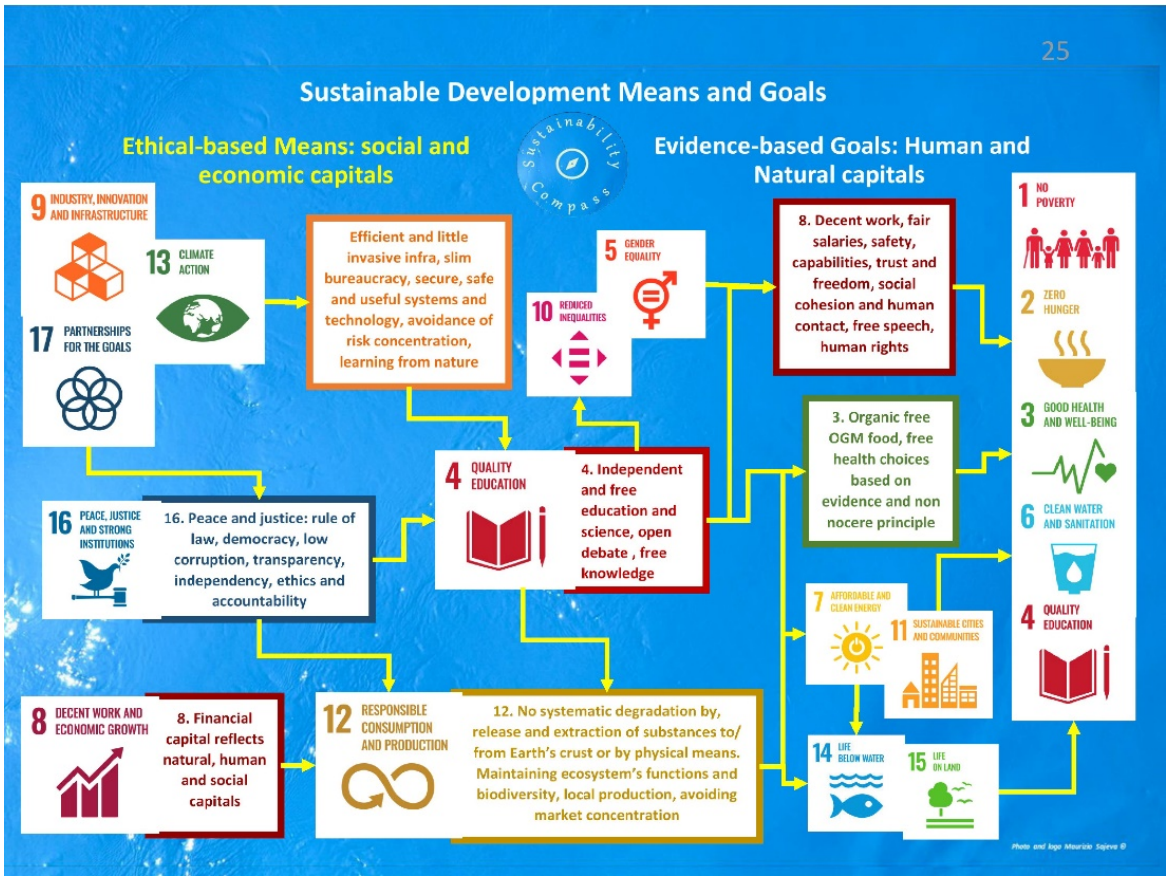
1… concentrations of substances from the earth's crust (such as fossil CO_2, heavy metals and minerals)

2… concentrations of substances produced by society (such as antibiotics and endocrine disruptors)

3… degradation by physical means (such as deforestation and draining of groundwater tables).

4. And in that society there are no structural obstacles to people's health, influence, competence, impartiality and meaning.


Sustainability COMPASS
Biotic resources
Human benefits
Human agency and societal choices
Human well-being
Following scenario of biotic resources
Economic measurement
Risk of losses of resources
Risk of losses in well-being
Prevention actions and policies
Maintenance/reconstruction cost


25
Sustainable Development Means and Goals
Ethical-based Means: social and economic capitals
Evidence-based Goals: Human and Natural capitals
9 INDUSTRY, INNOVATION AND INFRASTRUCTURE
13 CLIMATE ACTION
17 PARTNERSHIPS FOR THE GOALS
Efficient and little invasive infra, slim bureaucracy, secure, safe and useful systems and technology, avoidance of risk concentration, learning from nature
5 GENDER EQUALITY
10 REDUCED INEQUALITIES
8. Decent work, fair salaries, safety, capabilities, trust and freedom, social cohesion and human contact, free speech, human rights
1 NO POVERTY
2 ZERO HUNGER
3. Organic free OGM food, free health choices based on evidence and non nocere principle
3 GOOD HEALTH AND WELL-BEING
6 CLEAN WATER AND SANITATION
16 PEACE, JUSTICE AND STRONG INSTITUTIONS
16. Peace and justice: rule of law, democracy, low corruption, transparency, independency, ethics and accountability
4 QUALITY EDUCATION
4. Independent and free education and science, open debate , free knowledge
4 QUALITY EDUCATION
7 AFFORDABLE AND CLEAN ENERGY
11 SUSTAINABLE CITIES AND COMMUNITIES
8 DECENT WORK AND ECONOMIC GROWTH
8. Financial capital reflects natural, human and social capitals
12 RESPONSIBLE CONSUMPTION AND PRODUCTION
12. No systematic degradation by, release and extraction of substances to/ from Earth's crust or by physical means. Maintaining ecosystem's functions and biodiversity, local production, avoiding market concentration
14 LIFE BELOW WATER
15 LIFE ON LAND

Security of Critical Networked Infrastructures

Scientific evidence on goals and risks	Ethical consensus for decision making
Assuring freedom, needs and human rights within ecological boundaries	More sophisticated technologies not forcely better: assessment of real needs and impacts Financial valuation reflecting human and natural capitals. Societal means to reach the goals
High **complexity and risk of unpredictable cascading effects** in propagation direction, frequency and magnitude	Security management, i.e. isolation of local interconnections
Concentration of risk and interconnection overcoming national borders and administrative responsibilities	Governance as joint integrated management of common affairs; older simpler technologies and spreading of the risk, roles and responsibilities among a plurality of actors for the goals
High presence of **unknown knowns and unknown unknowns**, wild cards	Communicating uncertainty, eliminating the possibility of harm and malicious control

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Questions in Security Digital Humanism Infrastructures

GOALS: Scientific evidence on goals and risks	MEANS: Ethical consensus for decision making
Humanism: freedom, needs and human rights within ecological boundaries	More sophisticated technologies not forcely better: assessment of real needs and impacts Financial valuation reflecting human and natural capitals. Societal means to reach the goals
High **complexity and risk of unpredictable cascading effects** in propagation direction, frequency and magnitude	Which are the key aspects on which digital systems are dependent? What are the risks for nature (i.e. IT resources and waste)? What are the risks for humans? Which unknowns can be found?
Concentration of risk and interconnection overcoming national borders and administrative responsibilities	Governance as joint integrated management of common affairs; older simpler technologies and spreading of the risk, roles and responsibilities among a plurality of actors for the goals
High presence of **unknown knowns and unknown unknowns**, wild cards	Communicating uncertainty, eliminating the possibility of harm and malicious control

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Questions in Security Digital Humanism Infrastructures

Questions on scientific evidence

Humanism: goals of human rights, needs, capabilities and freedom within ecological boundaries. Which are the key risks and opportunities for humans and nature of digital systems'? How to measure them?

Complexity and concentration of cascading risk. Which are the possible opportunities, risks and uncertainties in the propagation of impacts? Which uncertainties, unknown unknowns and unknown unknowns (wild cards) could be? How to measure them?

Questions for ethical consensus and decision making

Are digital systems based upon scientific evidence, uncertainty and precaution, on the primary goals of human well-being (needs and rights) and ecosystems' sustainability?

Are digital systems useful and additional or compulsory irreversible changes? Are options of 'best old technologies' or 'doing nothing' considered'? What are impacts of IT components and radiation?

Which concrete actions? Are decisions made for the common good and for the weakest, and local communities? Are decisions independent and free from external interest?

Is communication on good and bads open, independent and free from stakes and dominant positions?

What security and safety management measures can be implemented in everyday life for sustainable futures of selected specific contexts?

How to limit data collection and eliminate the risk of malicious control on citizens?

How to limit/reduce complexity and concentration of risk?

How to address potential systems' failure, spread the risk, and assure appropriate roles and responsibilities?

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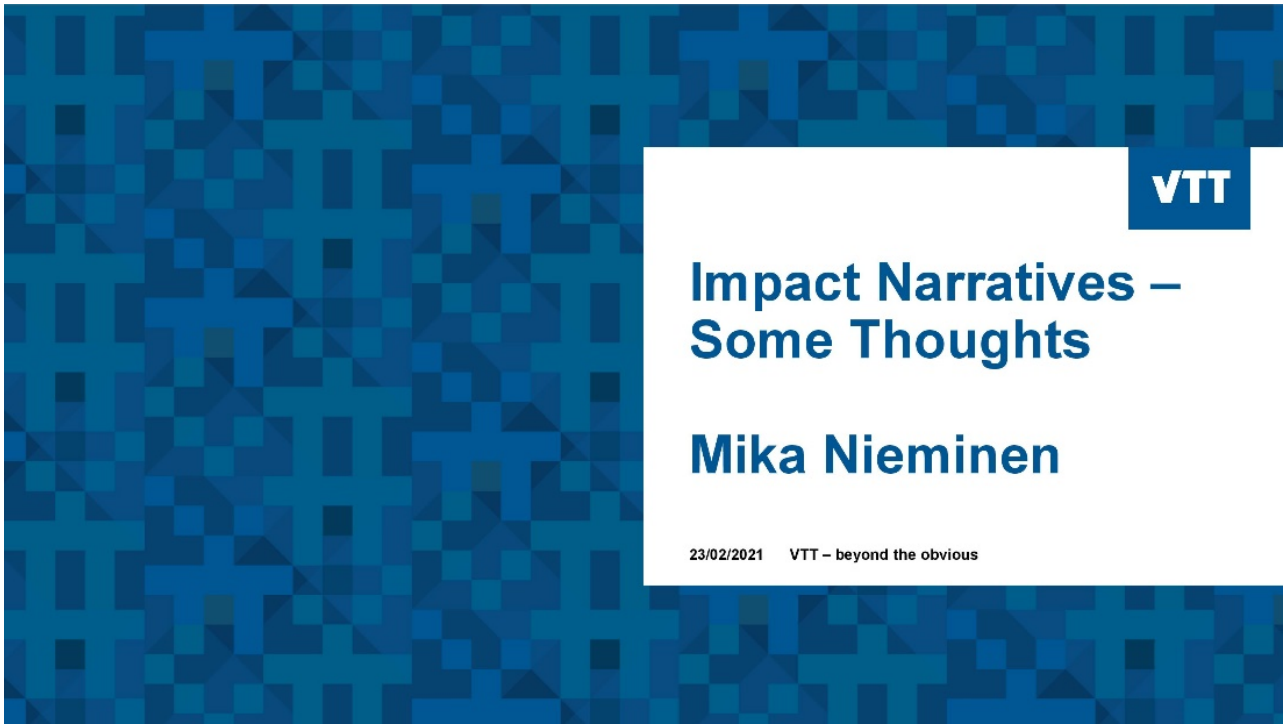
Related peer-reviewed publications

1. Sajeva, M., M. Maidell, J. Kotta and A. Peterson (2020). *An Eco-GAME meta-evaluation of existing methods for the appreciation of ecosystem services.* Sustainability Journal, MDPI. Biodiversity and Ecosystem Service: Challenges for the Future.
2. Sajeva, M., M. Maidell and J. Kotta (2020). *A participatory geo-spatial toolkit for science integration and knowledge transfer informing SDGs based governance and decision making.* Sustainability Journal, MDPI. Human Geography and Social Sustainability
3. Heckwolf M.J., A. Peterson, H. Jänes, P. Horne, J. Künne, K. Liversage, M. Sajeva, T.B.H. Reusch, J. Kotta (2020). *From ecosystems to socio-economic benefits: a systematic review of coastal ecosystem services in the Baltic Sea.* Science of the Total Environment Journal
4. Sajeva, M., M. Lemon and A. Mitchell (2020). *Making 'Soft' Economics a 'Hard Science': Planning Governance for Sustainable Development Through a Sustainability Compass.* In: Mattas K., Kievit H., van Dijk G., Baourakis G., Zopounidis C. (eds) Sustainable Food Chains and Ecosystems. Cooperative Management. Springer, Cham, 103-133.
5. Sajeva, M., M. Valonen, M. Maidell, M. Lemon, A. Mitchell, (2019). *Are we lost in the ocean of human development? Finding our way through a SUSTAINABILITY COMPASS.* Article accepted for publication in the Proceedings at Energising the Sustainable Development Goals through Appropriate Technology and Governance International Conference, De Montfort University in Leicester (UK) https://dora.dmu.ac.uk/handle/2086/18646 - ISBN : 9781857214413
6. Sajeva, M., A. Mitchell and M. Lemon (2019). *Reconfiguring Household Management in Times of Discontinuity as an Open System: The Case of Agro-food Chains.* International Journal of Food and Beverage Manufacturing and Business Models, 4(1), 1–19. http://doi.org/10.4018/IJFBMBM.2019010101

Mika Nieminen: Impact Narratives



What is an impact narrative and why it might be a good idea to use them?

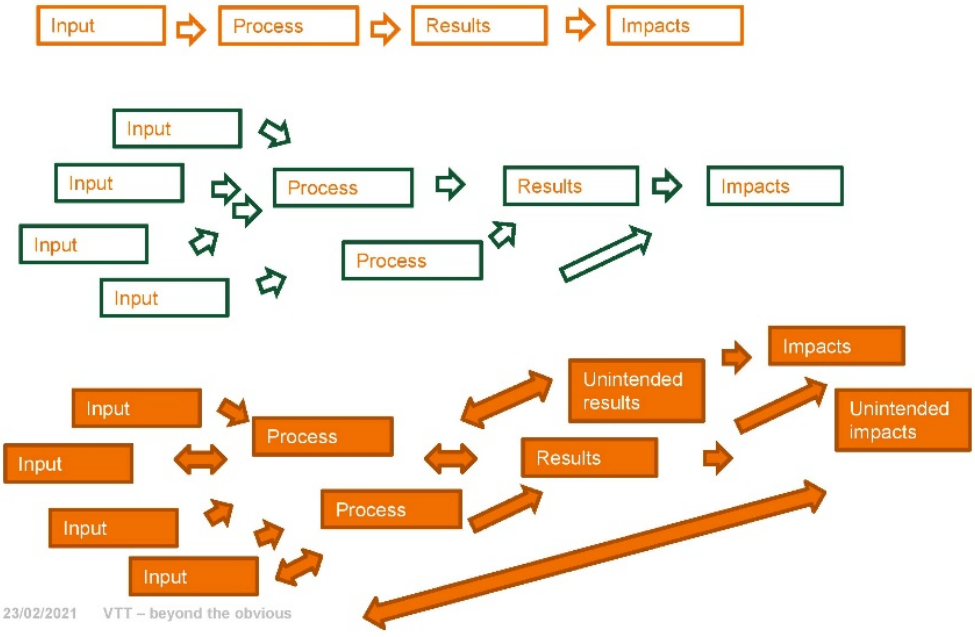
VTT

- IN is a story which develops the sequence of events, from planning the activity (like pilot) to actions, results, and perceived impacts
- IN can be an instrument for us:
  - to reflect our planned and implemented actions already during the action
  - to learn from our actions
  - to create engagement to our action
  - to communicate a coherent and understandable story what we are doing: what we have aimed to do, what we have done to achieve that goal and our assessment of the results (why/who/what/how/where/when…)
  - to assist identifying evidence of actions, results and impacts
  - A relatively easy and focused way to increase our own understanding of the actions, make them visible, identify needed actions and assess results critically (and create iteratively better practices) especially when they are mostly qualitative and hard to measure exactly (measurements are useful, however)

23/02/2021 VTT – beyond the obvious

Various approches to understand the path to impact…

- We may have different views on creating impacts (and telling the stories) e.g.:
  - Log-linear models (input-processes-output-impacts)
  - Contribution analysis (how an action together with some other actions and developments contributes to an impact)
  - Systemic view of impacts (impacts are created by complex interactions and feedback loops of various elements, dynamics and actions)
  - Creating impact pathways (as a ”theory of change”: of how we assume impacts will happen/have been created) can be a combination of various approches



23/02/2021 VTT – beyond the obvious

How to get there?

- The initial story is more about setting the goals, creating the theory of change, drafting the needed actions and the needed resources, collaboration, aid…etc.
- Developing story: During next iteration round perhaps more detailed description of inputs, parallel actions contributing to the process and goal achivement, first descriptions of actions and thier success etc. There can be several iteration rounds.
- Only during the final round after all the actions (in the end of the project) a full story with evidence

Evidence?

- Observations e.g. participatory action, videos…
- Qualitative evidence e.g. interviews, documents, pictures…
- Quantitative data e.g. statistics, allocation of money…

Further reading

- For instance:
  - https://www.socialsciencespace.com/2019/02/the-impact-chain-how-to-craft-an-effective-impact-narrative/
  - https://www.theinternationalschoolonria.com/uploads/resources/melbourne_school_2016/16_11_Block_5_Effective_communication_strategy.pdf
  - https://researchmanitoba.ca/impact-narratives/
  - https://link.springer.com/chapter/10.1007%2F978-981-15-0069-5_5

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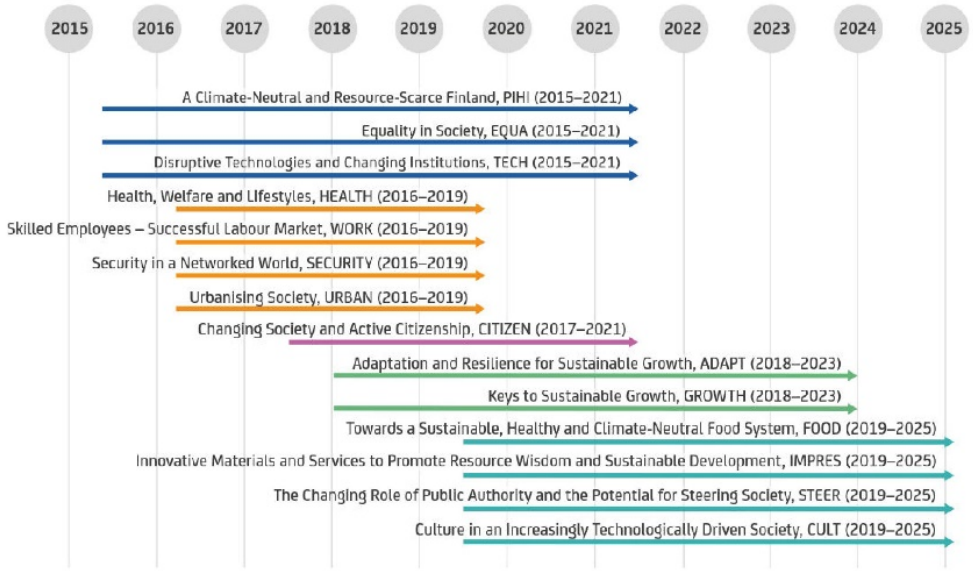
Jyrki Hakapää: Impact narratives

SRC PROGRAMMES



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Two Objectives, Five Novel Approaches
Combination of Top-down and Bottom-up

Objectives / novel approaches	Committing the Government	Multidisciplinarity	Strong weight on interaction	Societal relevance, impact and research quality	Mainstreaming public engagement
Building a research base for wicked societal problems (grand challenges)					
Enhancing the use of research in decision making					

Programme aims & implementation combine top-down priorities and aims & bottom-up creativity

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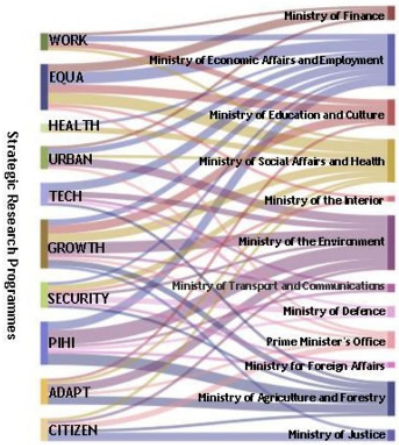
Interaction Partners

All projects in strategic research programmes have interaction partners, that co-operate with the research teams during the initiative planning, actual research work and interaction activities and creating or achieving societal impact.

Since 2015, 399 different societal organizations, societies and networks etc. have been named to co-operate with the research projects.

The most important collaborators are the 12 ministries. All ministries are linked to multiple strategic research programmes, and similarly all programmes are working with multiple ministries.

The flow chart shows which ministries are co-operating with one or more research projects of the particular strategic research programme



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Monitoring and Reviewing Strategic Research Programmes

- **Strategic research council task: to monitor and review funded programmes**
  -> From 2015 onwards each project submits annually impact narratives and indicators

- **Indicators: lists of outputs relating to projects' research and interaction activities**
  - For example: publications (scientific and non-scientific), research data, teaching, events, media, social media, business and industry etc.
  - Can be used as an overview of project activities, various statistic presentations, and verifying impact narratives
  - In Academy of Finland settings a traditional method to monitor how funds are used.

- **Impact narratives: free form narratives on outcomes and impact, or creating possibilities in order to achieve them, that the project has supported or created.**
  - Collaborative task by the research project, may involve stakeholders
  - Early development followed REF's impact narratives

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Impact Narratives - Contents

1. Title of impact case study
2. Impact objective
3. What programme objective does the impact case study address?: overall impact of the project or targeted impact aim?
4. Means: Describe what has been done to achieve the impact objective.
5. Findings on concrete impacts
6. Impact pursued and current achievements
7. Unintended effects and changes in the consortium's practices
8. Research carried out to achieve impact

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What is "Impact"?

- Or especially "societal impact" – SRC supports research that solves grand societal challenges.
- IOOI-method: input – output – outcomes – impact
  - But in order to understand and describe the research project's impact or or its potential impact, one need to cover whole IOOI-method
- Impact takes place when societal actors change their understanding and/or behaviour and/or decision-making and as a result, the overall impact aim is achieved or its possibility is created.
  - Research projects do not create impact by themselves, but make it possible or participate.
  - Each research programme have separate and more concrete description of the challenges and means that can be used for achieving societal impact.

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How to Use ”Impact Narratives”

- SRC uses them to monitor and review projects and programmes
  - For example: projects’ mid-term review and programme review
- Programmes and SRC uses them to distribute knowledge on SRC programmes to its stakeholders
  - Prime minister’s office and other ministries
  - General public
- Projects and programmes can self-evaluate and reflect their own actions and methods
  - Various ”routes” and methods for achieving impact, constantly changing landscape
  - Tool for program directors to follow projects’ development

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Experiences on Impact Narratives

- Currently the 12 ongoing programmes create annually ca. 100 impact narratives
  - Vast data resource, somewhat difficult to comprehend and use in a unified way
- SRC encourages public impact narratives, but narratives may hold information that prohibits this.
  - Examples: http://www.collaboration.fi/ratkaisut/vaikuttavuustarinat/ and https://www.agilecities.fi/vaikuttavuustarinat/
  - Challenges: Creating societal impact demands trust and continuity, and reflecting your successes and mishaps is difficult when done publicly
- Defining a unified model is difficult, currently three models for impact narratives:
  1. ”meta-narrative”
  2. separate case studies, that do not cover all project activities
  3. dividing project activities in 3-5 impact narratives
- PI Heidi Westerlund (Artsequal) study on impact narratives.
  - Similar positive views are becoming more frequent.

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