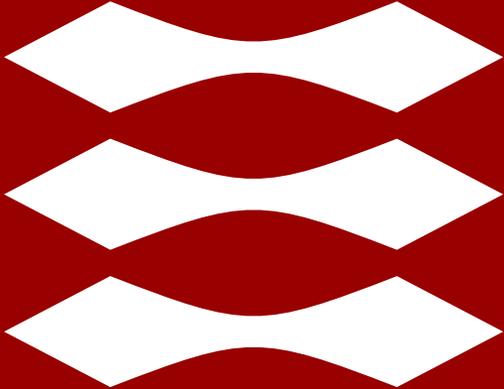


DTU



EU R&I funding perspective on ecosystem service science – recent developments

- Christian Riisager-Simonsen (DTU Aqua)

Disclaimer - Slightly aquatic perspective

Agenda

- 1) Background
- 2) Recent developments in EU
 - EU's Bioeconomy Strategy
 - Horizon Europe
- 3) DTU perspective

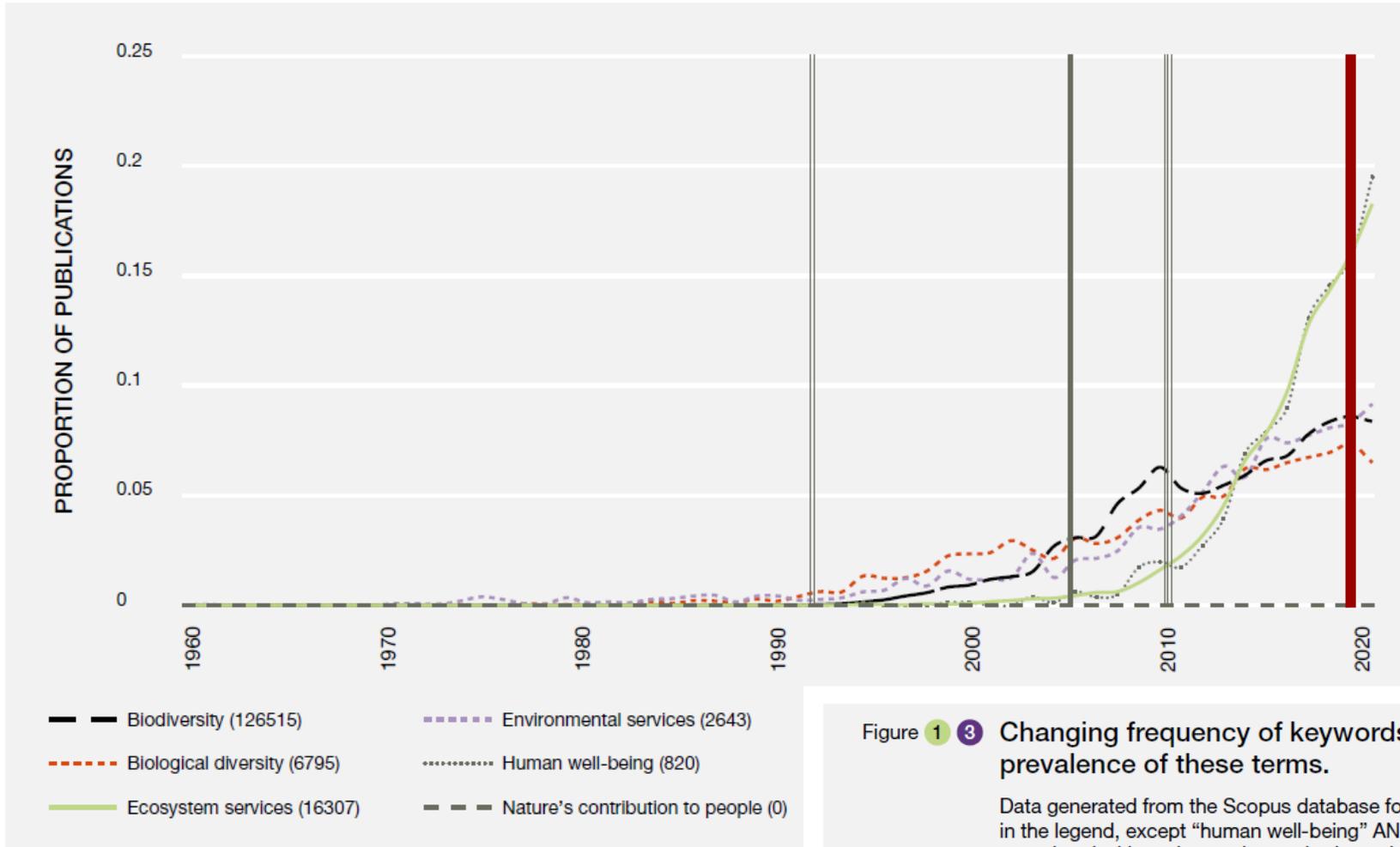
1) Personal experiences and background

Bachelor in biology + philosophy

Master in Biology at KU focused on marine biology / management

- 2015 - Introduced to the ecosystem service concept/terminology on IFRO
- 2016 - Wanted to look into its application on marine management – found noone
- 2017 - Thesis on ecosystem services from marine mammals
- 2017 - DTU Aqua (advice on: international research policy / collaboration / funding)

1) Personal experiences and background



IPBES global assessment for Europe and Asia

Figure 1 3 Changing frequency of keywords in the scientific literature to reflect the prevalence of these terms.

Data generated from the Scopus database for all publications from 1960 to 2016 (using search terms as shown in the legend, except “human well-being” AND each of the other terms). The actual number of publications associated with each search term is shown in parentheses. The vertical axis shows the proportion within each search term published in each year to show the changing use of search terms through time. Each vertical black line represents a key moment relevant for global policy: the Rio Conventions in 1992 (I); Millennium Ecosystem Assessment (II); The Economics of Ecosystems and Biodiversity (III).

1) Personal experiences and background

Who is funding this?

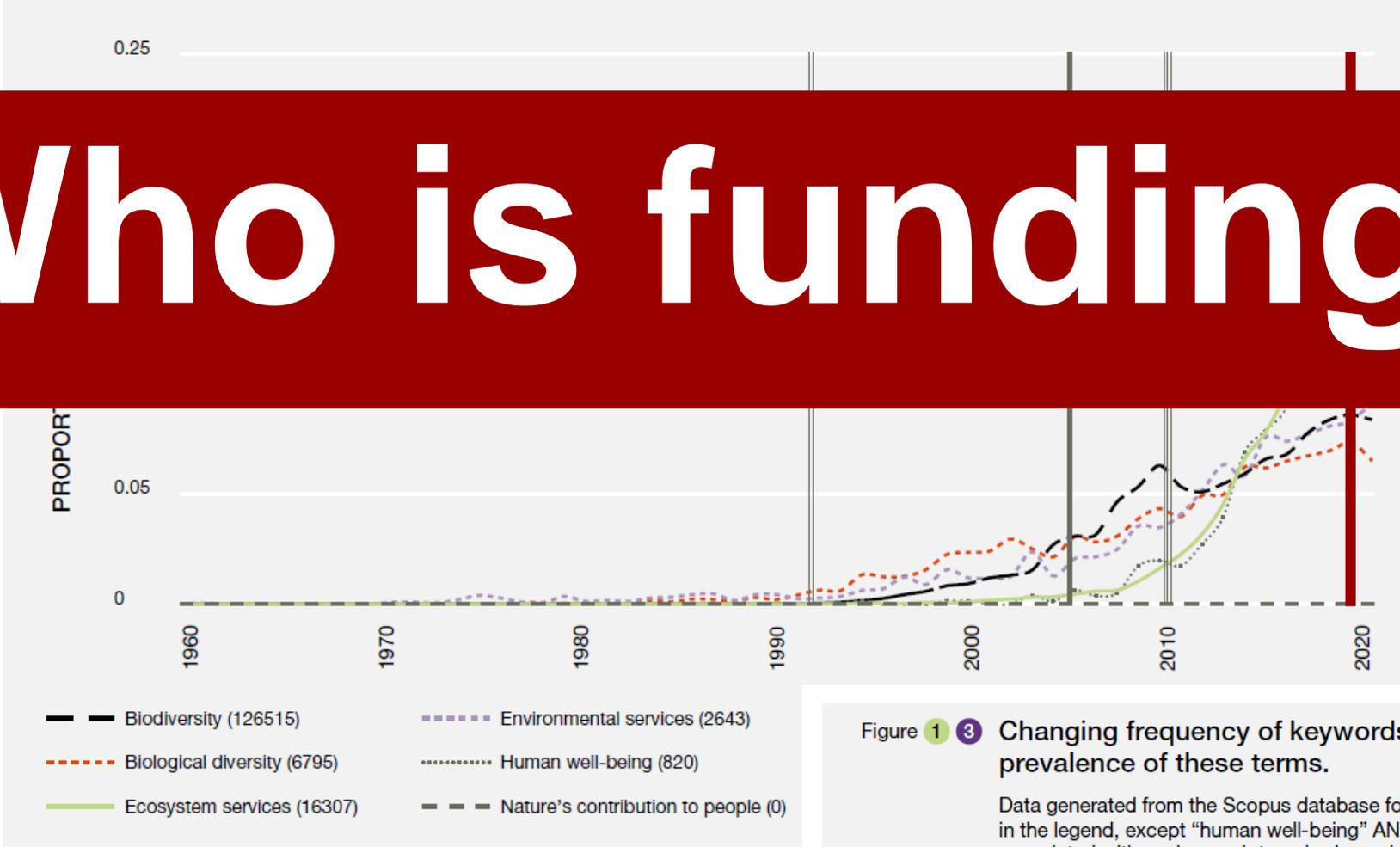
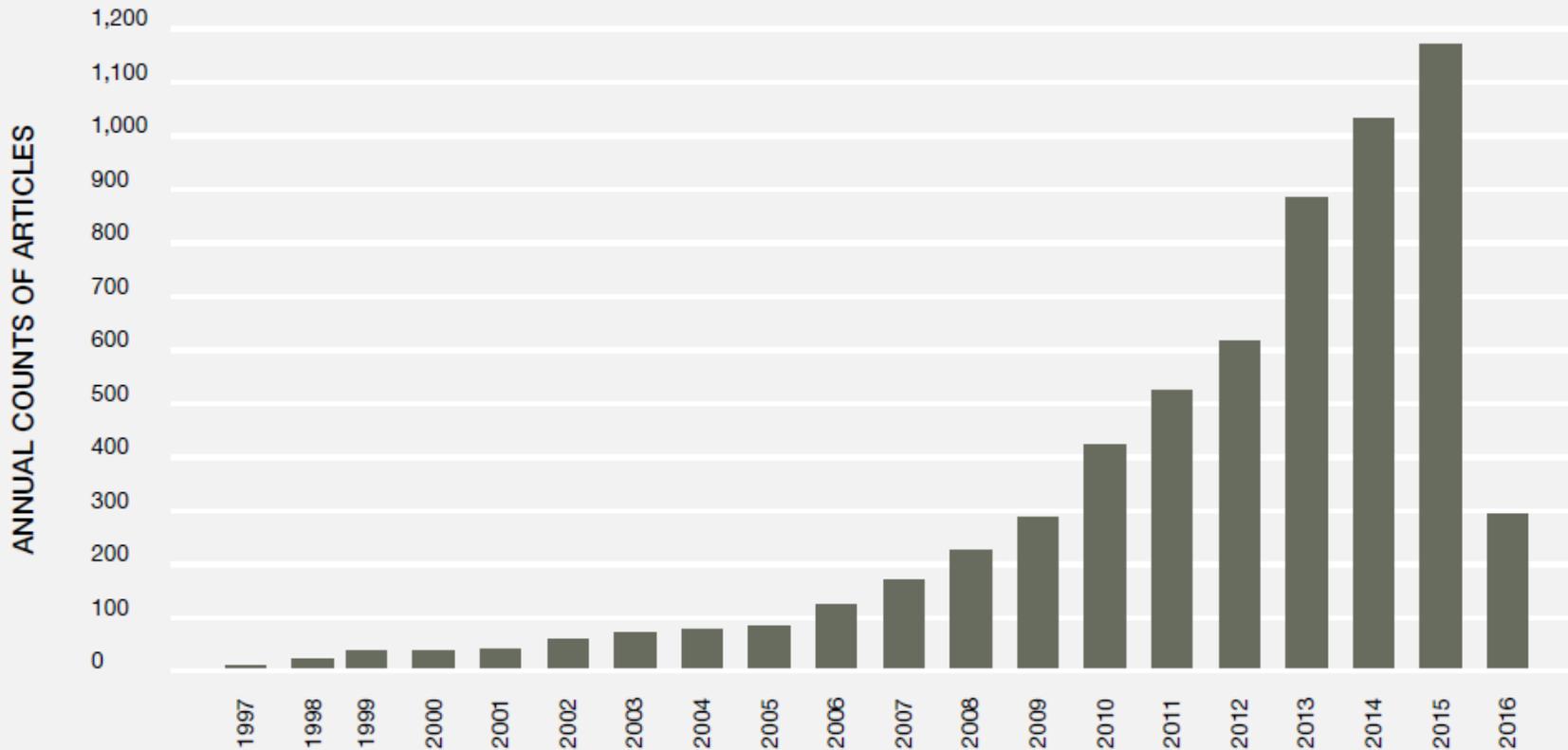


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Figure 1 ¹² The exponential rise in numbers of scientific articles on the Web of Science produced from the search term [biodiversity AND ecosystem services] (accessed on 26 April 2016).

The vertical axis shows the annual counts of articles, the horizontal axis the year. In total 7,145 papers were located. Although not a perfect index of the geographical spread of knowledge, the mention of a country (either by the location of authors, e.g. host institution, or the location of the study) gives a reasonable measure of expertise and focus of study on this topic. The countries associated with the most articles were, in descending order: USA, England, Germany, Australia, France, Canada, Netherlands, Spain, Sweden, Italy. Of these, 3,483 papers were associated with European countries, but none were associated with the five countries of Central Asia (limitations ensuing from this biased representation is discussed in 1.7).



→ EU's role?

2) Recent developments in EU

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23 May 2019, Brussels

Speech by Commissioner Vella (ENV + MARE)

at High-level Conference on Biodiversity and Ecosystem Services



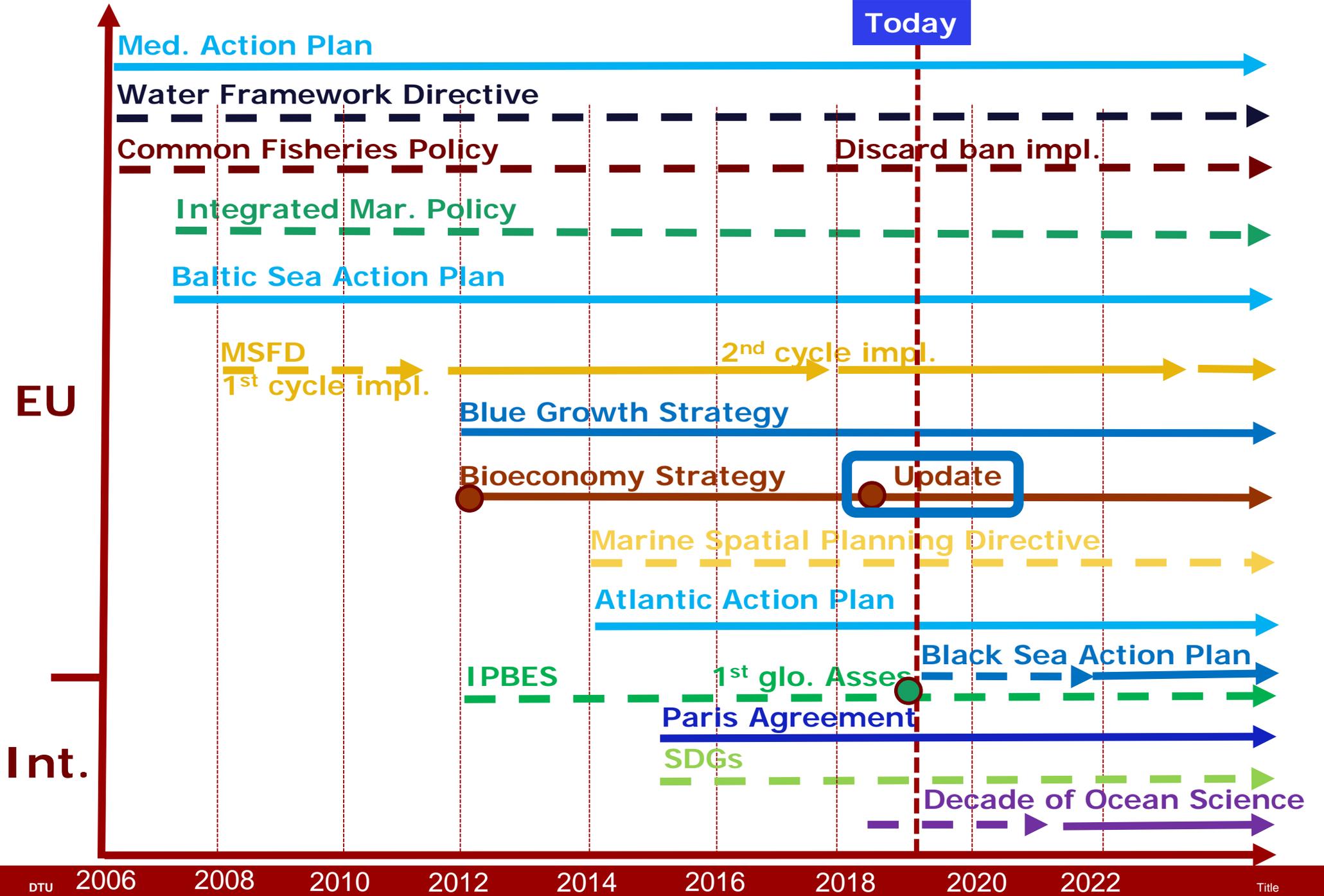
*“The newspapers are reporting the research that one million species are on the verge of extinction – sometimes on the front page. The latest **Eurobarometer** puts environment amongst the top five concerns of EU citizens – even **above unemployment!**”*

*“Nature protection cannot stop at the borders of Natura 2000 sites. This is why the **forthcoming guidance on ecosystem services** is so important. It will provide a means to broaden perspective in how nature is valued in **everyday decision-making**. As the science evolves, I could see this guidance transforming into a more robust framework to **apply to all – from local to global!**”*

2) Recent developments in EU

Directives: Marine Strategy Framework Directive (MSFD), Marine Spatial Planning Directive

Strategies: Biodiversity Strategy, Bioeconomy Strategy



2) Recent developments in EU

Directives: Marine Strategy Framework Directive (MSFD), Marine Spatial Planning Directive

Strategies: Biodiversity Strategy, **Bioeconomy Strategy**



Definition of the “bioeconomy”



*“The Bioeconomy Strategy aims to improve the knowledge base and foster innovation to achieve productivity increases while ensuring sustainable resource use and alleviating stress on the environment. Declining biodiversity can significantly degrade the quality of resources while constraining the yields of primary production, particularly in forestry and fisheries. The Strategy will thus **support the implementation** of an **ecosystem-based management**. It will **seek synergies and complementarities** with the CAP, the CFP, the IMP and EU environmental policies on resource efficiency, sustainable use of natural resources, protection of biodiversity and habitats, as well as provision of **ecosystem services**.”*

2012: NO definition – No direct inclusion of ecosystem services

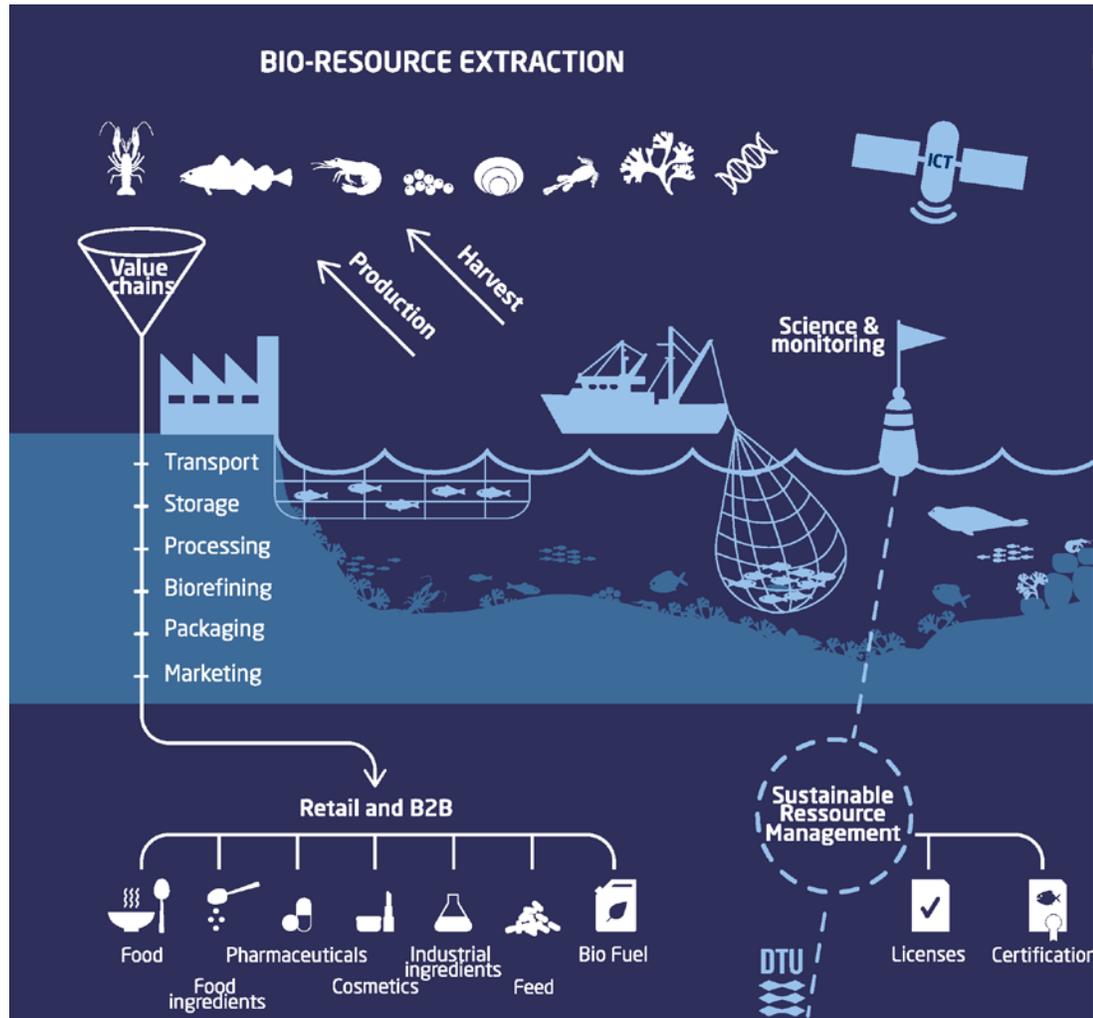


*“The bioeconomy covers all sectors and systems that rely on biological resources (animals, plants, micro-organisms and derived biomass, including organic waste), their functions and principles. **It includes and interlinks: land and marine ecosystems and the services they provide**; all primary production sectors that use and produce biological resources (agriculture, forestry, fisheries and aquaculture); and **all economic and industrial sectors that use biological resources and processes to produce food, feed, bio-based products, energy and services**.”*

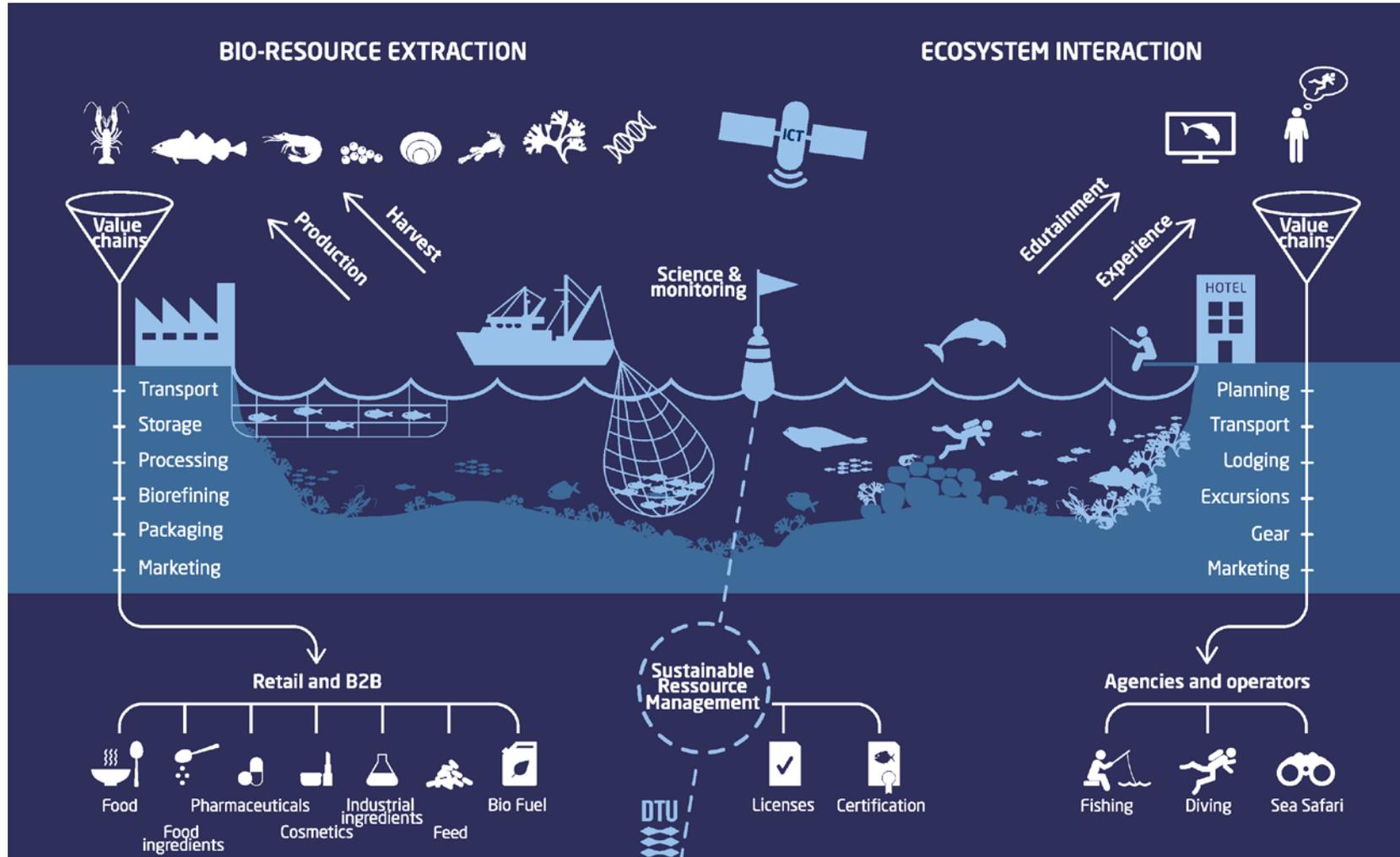
2018: Definition + direct integration of ecosystem services

Interesting from DTU Aqua's perspective

Blue Bioeconomy in v1

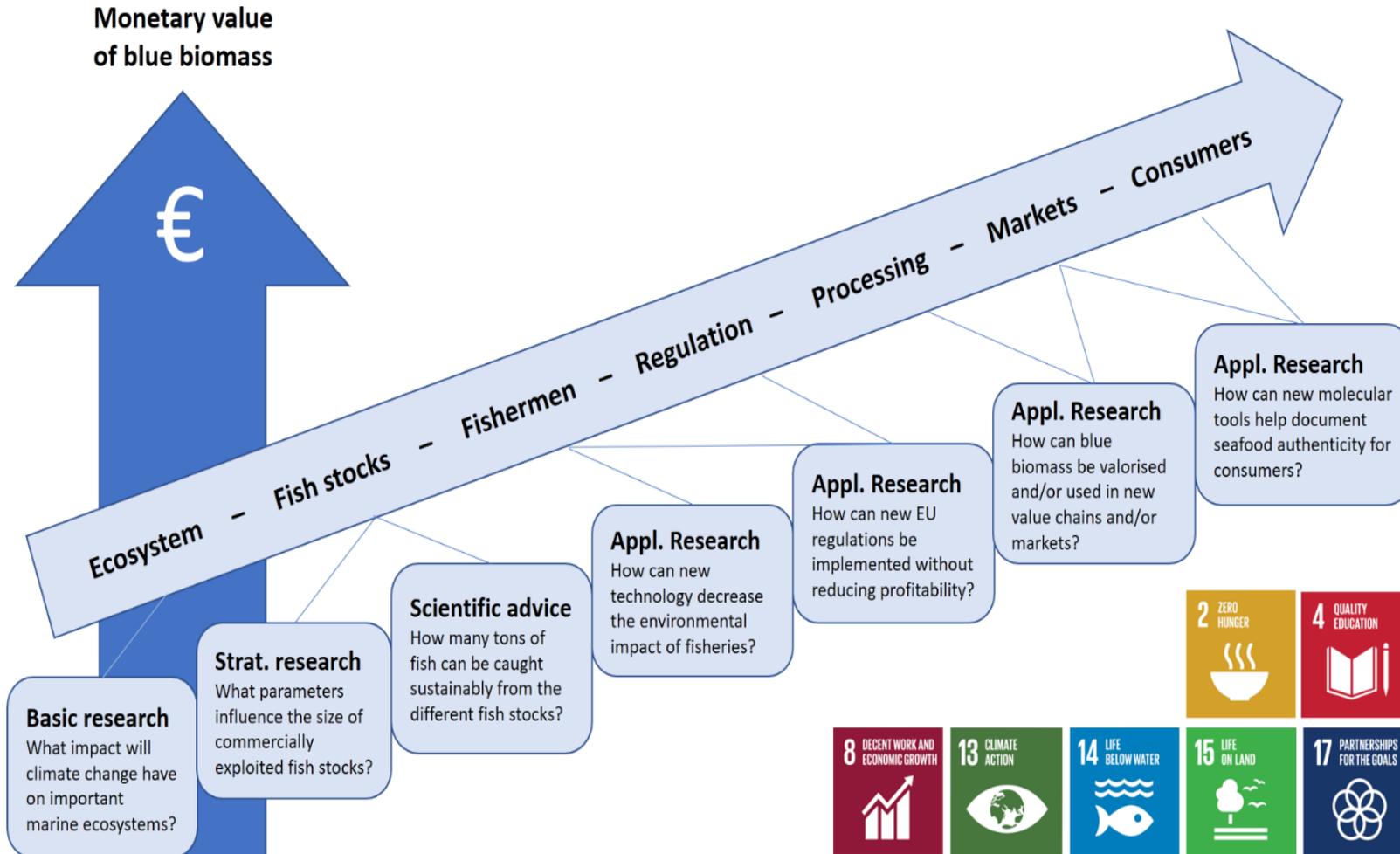


Blue Bioeconomy in v2



- 1) The value of R&I + scientific advice becomes much easier to illustrate
- 2) Cross-sector trade-offs, and need for management is more visible
- 3) Intuitively shows what value chains scientists directly or indirectly contribute to (- intrinsic?)

Obviously interesting for DTU Aqua



2) Recent developments in EU

Directives: Marine Strategy Framework Directive (MSFD), Marine Spatial Planning Directive

Strategies: Biodiversity Strategy, **Bioeconomy Strategy**

Bioeconomy Funding:

- Blue Bioeconomy COFUND



More calls coming

- Bio-Based Industry Joint Undertaking (BBI) WP 2019 (135 Mio Euro)



“all proposals should describe the potential ecosystem service gain that could be achieved by the implementation of the project, as well as take into account biodiversity preservation in the targeted value chains” – HOW is not mentioned directly

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Other funding: BIODIVERSA

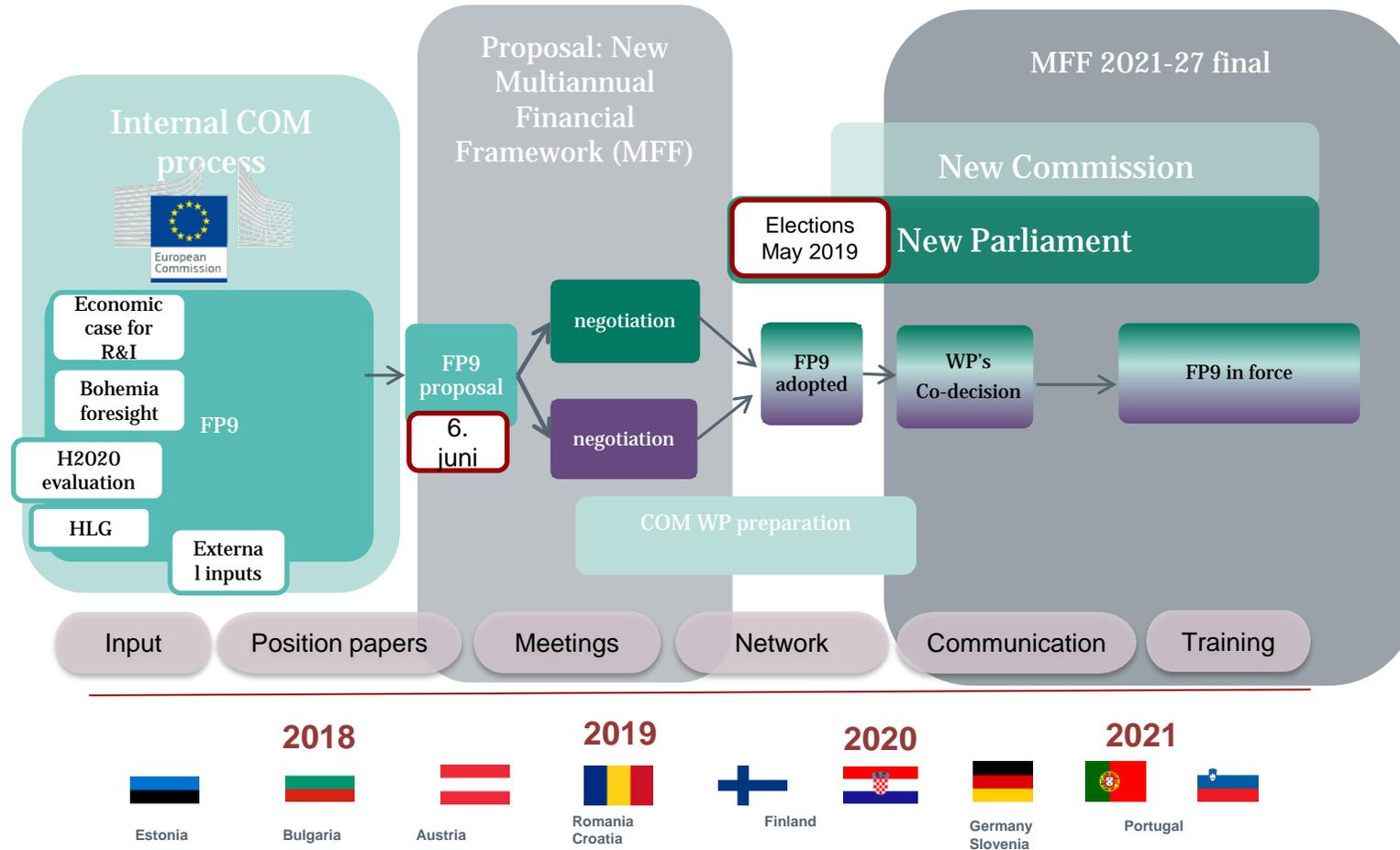


DK now partner



Calls will come

2) Recent developments in EU – Horizon Europe



2) Recent developments in EU – Horizon Europe

Suggested structure



2) Recent developments in EU – Horizon Europe

EC suggest 42 CO-financed partnerships with member states/industry in proposal (in hearing)

2) Recent developments in EU – Horizon Europe

- 4 explicitly talk about ecosystem services (30 – will directly support IPBES work)

Food, Bioeconomy, Natural Resources, Agriculture and Environment	<p>30. Rescuing biodiversity to safeguard life on Earth Halting biodiversity loss, maintaining and restoring natural capital is essential for the transition towards sustainability, climate neutrality and for respecting the planetary boundaries. The partnership aims to deploy solutions to stop the ongoing mass extinction of species caused by human activity by upscaling, aligning and integrating European R&I efforts and investment, guiding actions to protect, restore and sustainably manage ecosystems and natural capital.</p>	Co-funded	ERA-NET Biodiversity, EKLIPSE, ESMERALDA	MS/AC (RFOs, national/regional authorities)	Climate, energy and mobility	<p>24. Mobility and Safety for Automated Road Transport Long-term framework to the strategic planning of research and pre-deployment programmes for connected and automated driving on roads at EU and national levels in a systemic approach (vehicle, interactions, infrastructure, technical and non-technical enablers and societal impact)</p>	Article 187 or Co-programmed	n.a. related: 5G, Big Data, ECSEL, S2R, SESAR, batteries, 2ZERO	Industry
	<p>31. A climate neutral, sustainable and productive Blue Economy The objective is to sustainably unlock, demonstrate and harvest the full potential of Europe's Oceans and Seas through a well-structured, sustained and simplified joint effort in this borderless domain with the aim to support the transition to a strong, climate neutral and sustainable blue economy by 2050.</p>	Co-programmed or Co-funded	BONUS, MARTERA, JPI Oceans, ERA_NET Cofund BlueBio	MS/AC (research funders, national/regional authorities), EU Agencies		<p>25. Batteries: Towards a competitive European industrial battery value chain Development of a world-class European R&I system on batteries, with a view towards European industrial leadership. It will bring together all Horizon Europe activities to develop a coherent strategic programme, in cooperation with industrial players and research community, making a substantial contribution to fulfilling the Paris Agreement, and enhance the competitiveness of current and emerging European industries along the battery value chain.</p>	Co-programmed	n.a.	Industry
	<p>32. Safe and Sustainable Food System for People, Planet & Climate Fixing our food system is central to the transition to a 'Sustainable Europe by 2030', and key to meeting the IPCC climate targets and operating within key planetary boundaries. This partnership will deploy FOOD 2030 and deliver the Food Safety System of the future, ensuring consumer trust, safety, quality and traceability; (and) Sustainable Food Systems, providing alternative proteins sources, dietary shifts, the halving of food waste, and exploit the potential of microbiomes for sustainable and healthy food systems.</p>	Co-programmed or Co-funded	FACCE Supplus, ICT Agri2, Core-Organic, ERA GAS, SUSAN, ERA HDL, SusFood2	MS/AC (research funders, national/regional authorities), EU Agencies		<p>26. Clean Energy Transition Respond to the call for decarbonisation in medium- and long-term in a holistic way, synthesizing all fragmented actions to allow for greater integration of relevant research & innovation areas and provide greater impact.</p>	Co-funded	Around 10 existing ERA-NET Cofund actions	MS/AC (RFOs and RPOs)
	<p>33. Circular bio-based Europe: sustainable innovation for new local value from waste and biomass (Sustainable, inclusive and circular bio-based solutions) The goal is to drive sustainable and climate-neutral solutions accelerating the transition to a healthy planet, where renewable products and nutrients will be produced from biomass and waste instead of non-renewable fossil and mineral resources. The partnership will create awareness, capacities and appropriate structures in a systemic approach extending beyond industry partners, also mobilising producers of biological resources and end users.</p>	Art.187 or Co-programmed	BBI JU	MS/AC (research funders, national/regional authorities)		<p>27. Accelerating farming systems transition: agro-ecology living labs and research infrastructures The partnership will enable to grasp short to long-term agroecological processes at landscape level and accelerate the transition towards sustainable climate and environment-friendly farming practices by boosting place-based innovation in a co-creative environment accelerating the adoption of innovation by farmers and other actors.</p>	Co-funded	n.a.	MS/AC (RFOs/regional authorities)
	<p>34. Water4All: Water security for the planet The partnership aims at securing all water demands in terms of quality and quantity, and that both economic and natural systems, as well as people are protected from water-related hazards. This is essential to support the transition to a healthy planet and to ensure a resilient Energy Union, EU climate neutral policy and respect of planetary boundaries.</p>	Co-programmed or Co-funded	Water JPI	MS/AC (research funders, national/regional authorities)		<p>28. Animal health: Fighting infectious diseases The partnership aims to bring sustainable and innovative solutions to tackle infectious animal diseases, including those transmitted between animals and humans (zoonoses) and to contribute to the fight against anti-microbial resistance, implementing the One Health concept. It will support sustainable animal production, reduce trade barriers, and protect consumers.</p>	Co-programmed, Co-funded	A small number of current ERA-NETs	Either MS/AC or Industry, and regulatory agencies
Food, Bioeconomy, Natural Resources, Agriculture and Environment	<p>29. Environmental Observations for a sustainable EU agriculture The objective of the initiative is to support the delivery of a sustainable CAP. This will be done through the improvement of agricultural practices and farm profitability, by using the possibilities the current digital data techniques in the field of EO offer. In line with the digitalisation of the EU's farming sector, new services and applications will be developed enabling more efficient, environmentally friendly and profitable production systems.</p>	Co-funded			Co-funded	EuroGEOSS	MS/AC (research funders, national/regional authorities)		

2) Recent developments in EU - summary

High level awareness/focus on ecosystem service concepts / terminology in EU

Apparently supported by funding in the future

- The updated Bioeconomy Strategy (and its related funding streams = BlueBio, BBI)
- Support to IPBES
- First drafts for Horizon Europe

Additional push from stakeholder groups

- E.g. European Marine Board



Thanks

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