

KPI

KII





COP21 - CMP11
PARIS 2015
UN CLIMATE CHANGE CONFERENCE

Societal Impact: Paris Agreement

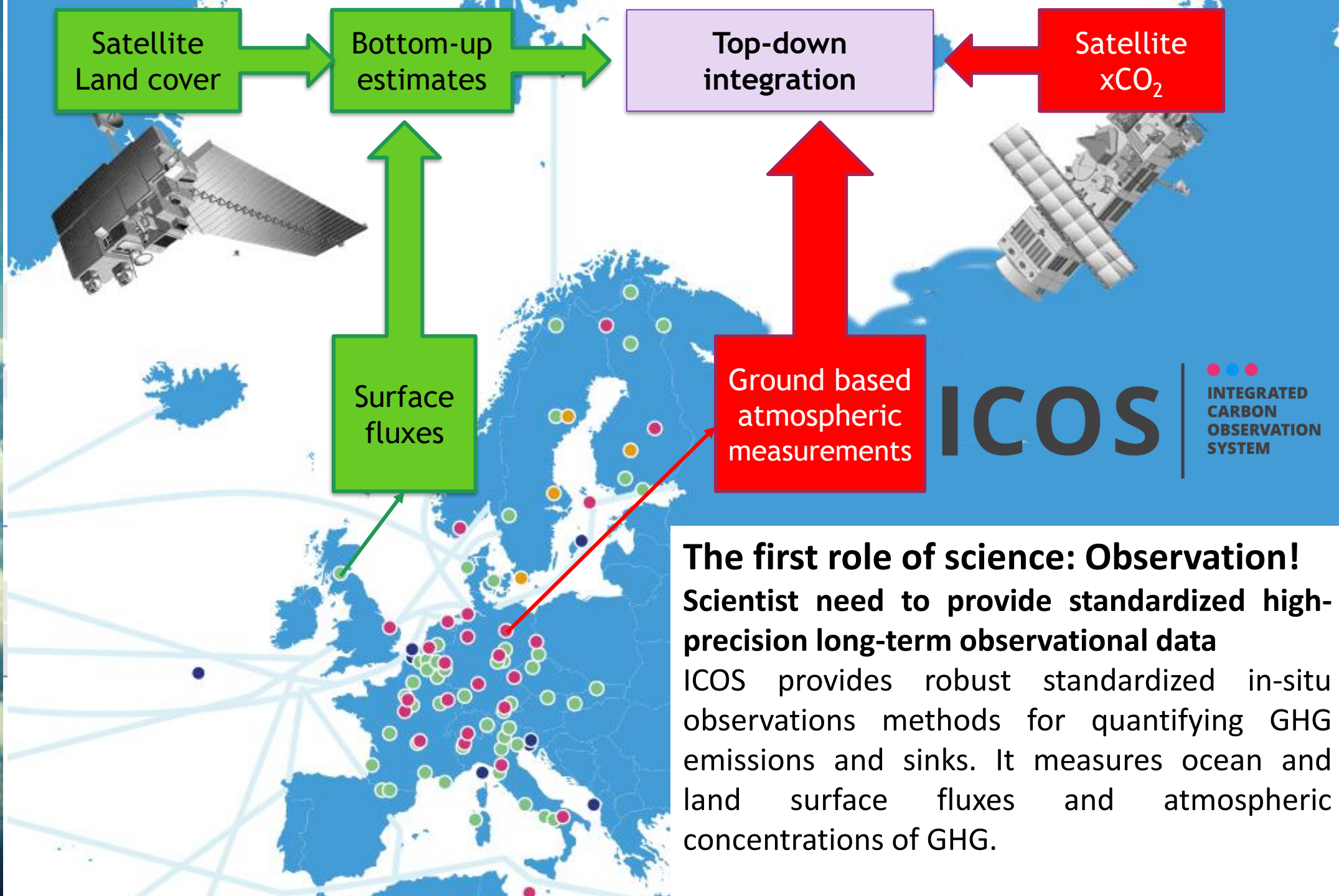
Conférence sur les Changements Climatiques 2015

COP21/CMP11

Paris France

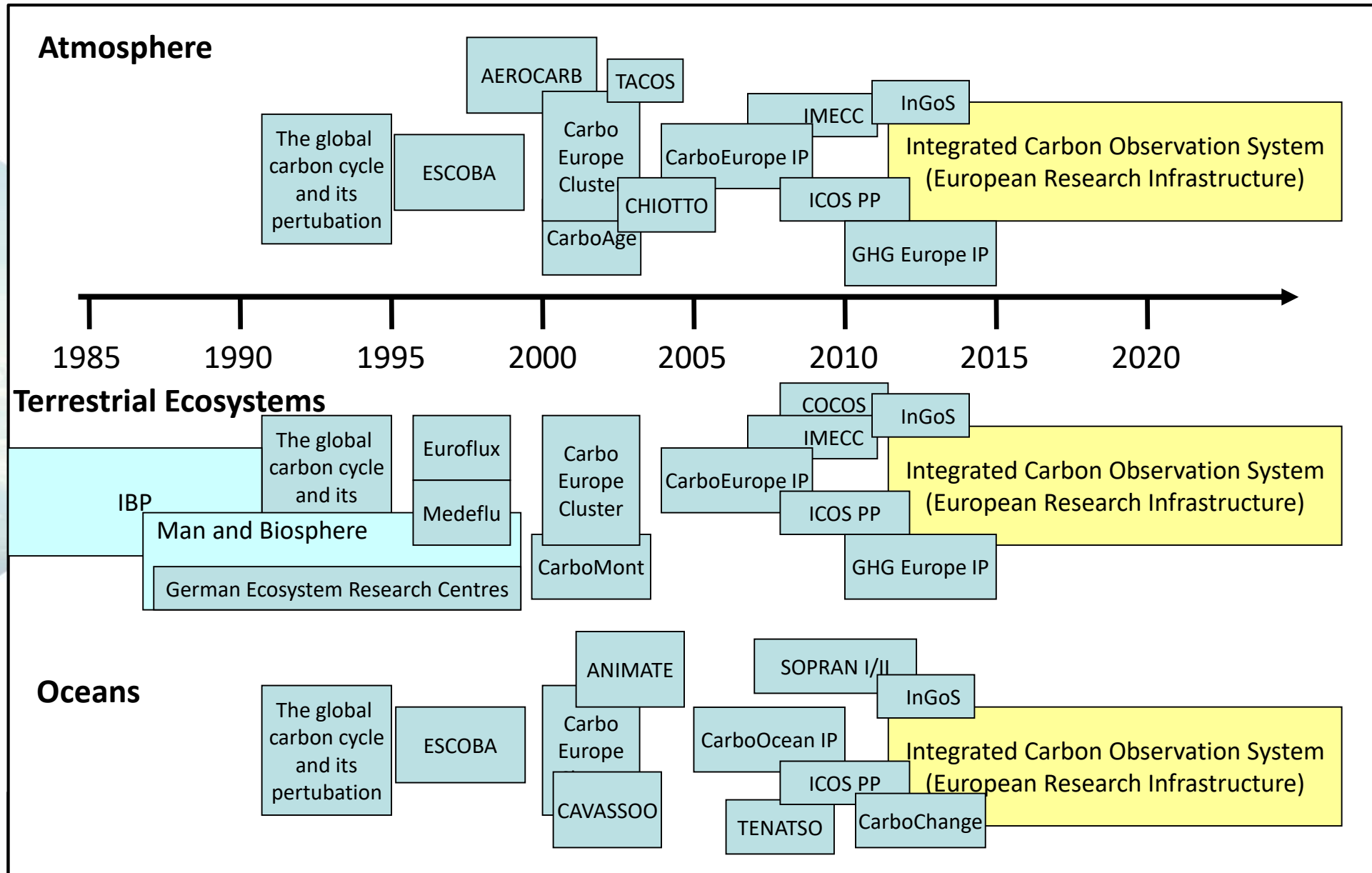


Every 5 years review each countries contribution and impact on climate change (Global Stocktake).



The first role of science: Observation!
Scientists need to provide standardized high-precision long-term observational data. ICOS provides robust standardized in-situ observations methods for quantifying GHG emissions and sinks. It measures ocean and land surface fluxes and atmospheric concentrations of GHG.

ICOS is built on long term scientific cooperation



The Integrated Carbon Observation System (ICOS) is a distributed research infrastructure operating standardized, high-precision, and long-term observations and

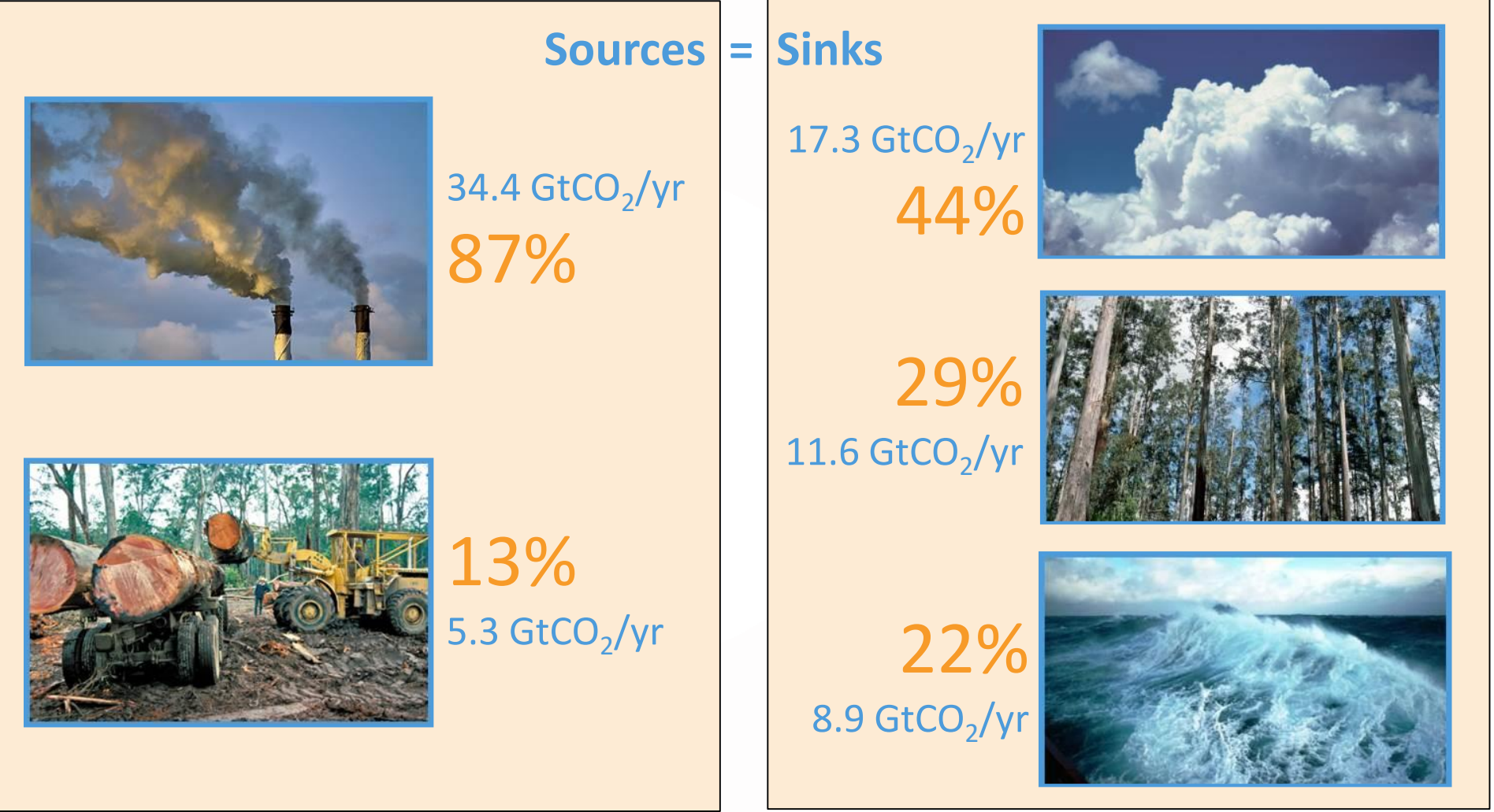
- facilitating research to understand the carbon cycle and to provide necessary information on greenhouse gases (GHG).**
- ICOS- based knowledge supports policy- and decision-making to combat climate change and its impacts.**
- ICOS is the European pillar of a global GHG observation system.**
- It promotes technological developments and demonstrations, related to GHGs, by the linking of research, education and innovation.**



Mission statement in the ICOS Strategy

Fate of anthropogenic CO₂ emissions (2008–2017)

Challenge 1:
Not all emissions stay in the atmosphere.



INTEGRATED CARBON OBSERVATION SYSTEM

Budget Imbalance: 5%
(the difference between estimated sources & sinks) 1.9 GtCO₂/yr

Source: [CDIAC](#); [NOAA-ESRL](#); [Houghton and Nassikas 2017](#); [Hansis et al 2015](#); [Le Quéré et al 2018](#); [Global Carbon Budget 2018](#)



Global GPP

440 GtCO₂/yr

Global Resp

440 GtCO₂/yr



Anthropogenic
CO₂ emissions

39,7 GtCO₂/yr

29%
11.6 GtCO₂/yr

22%
8.9 GtCO₂/yr



Fossil fuels
CO₂ emissions

34.4 GtCO₂/yr



Challenge 2:

The anthropogenic CO₂ emissions are embedded into much bigger natural fluxes.

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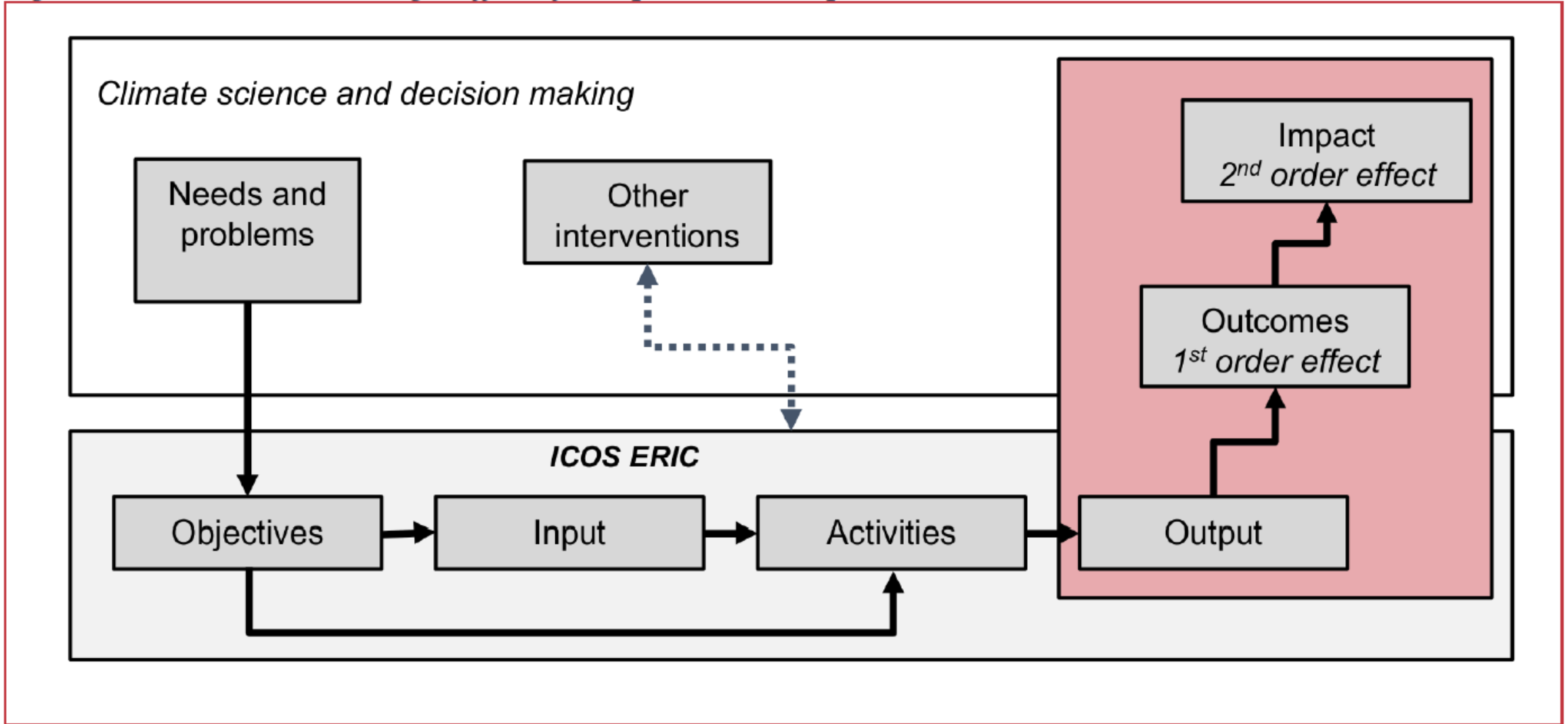
The ICOS impact assessment report The first impact study of a distributed environmental research infrastructure

Werner Leo Kutsch¹, Janna Van Belle², Evi-Carita Riikonen¹, and
Janne-Markus Rintala¹

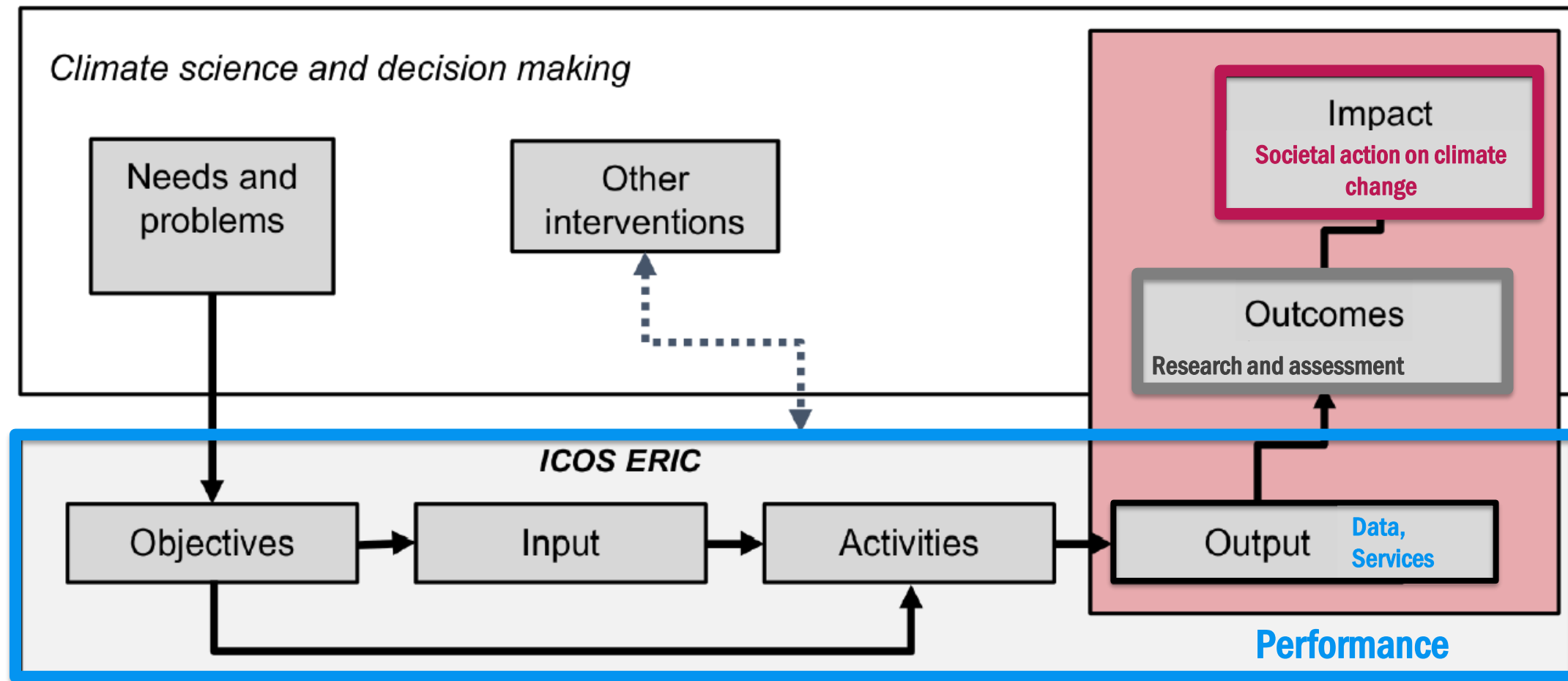
¹ICOS ERIC

²Technopolis Group

The basic framework: a definition of impact and its relation to performance



The basic framework: a definition of impact and its relation to performance



ICOS Key Impact Indicators

(related to science)

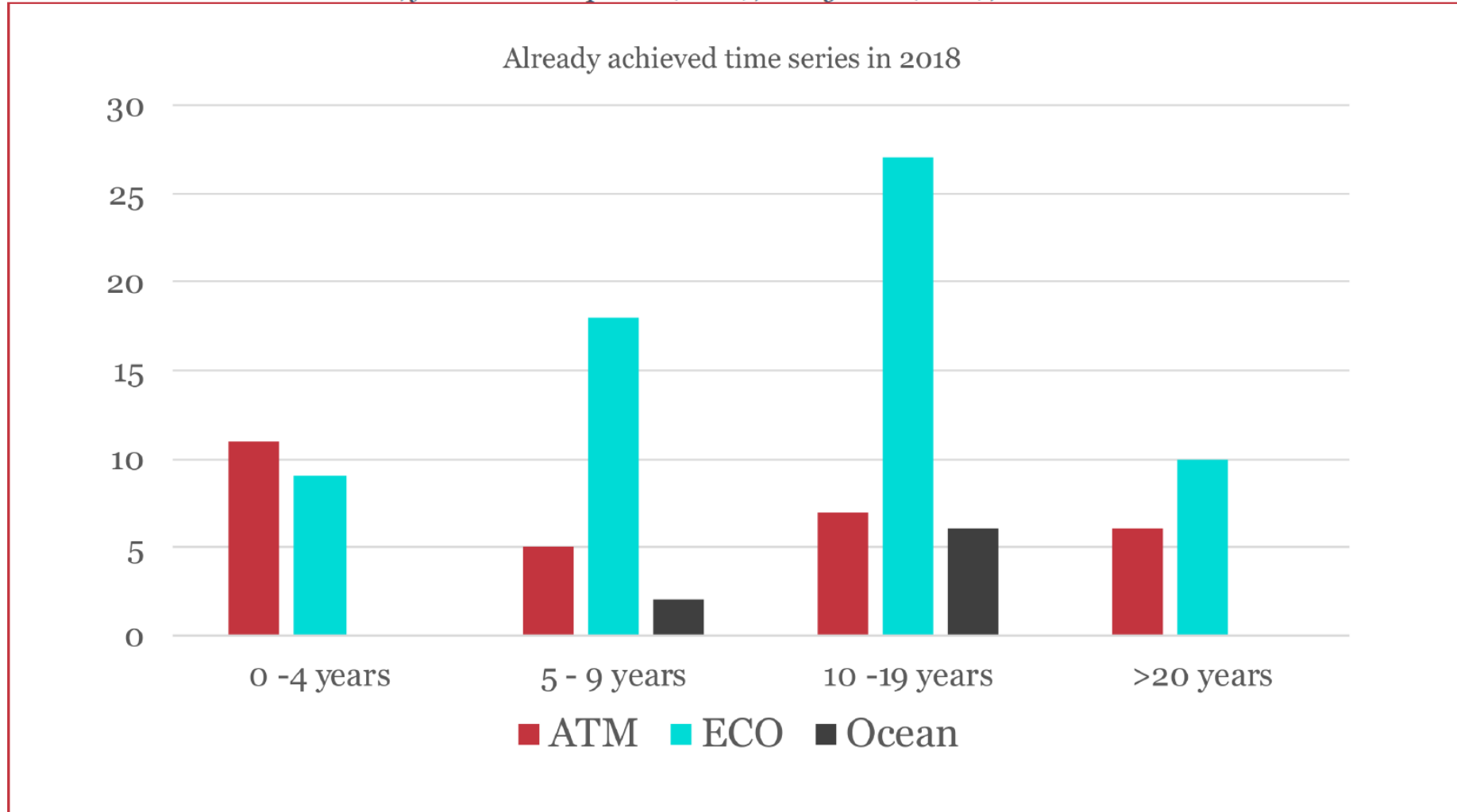
- 1. Longer time series of data.** Quantitative description of the length (average, median, max, min) of timeseries across ICOS measurement stations.
- 2. Global harmonisation of data sets, methods, algorithms or instruments.** Narrative based on information obtained through interviews
- 3. Number of ICOS related articles published.** Bibliometric analysis of the 465 publications provided by ICOS. From 2018 onwards based on DOI minted ICOS publications available through the CP.
- 4. Number of (global) services provided.** This is an overview and count of the different types of services linked to the ICOS infrastructure. Analysis of data-related services such as calibration, Obspack products and instrument testing.
- 5. Popularity of ICOS data.** The number of downloads from the Carbon Portal, based on data provided by the CP.

See p. 21 of the report for full list & description of 17 KII.



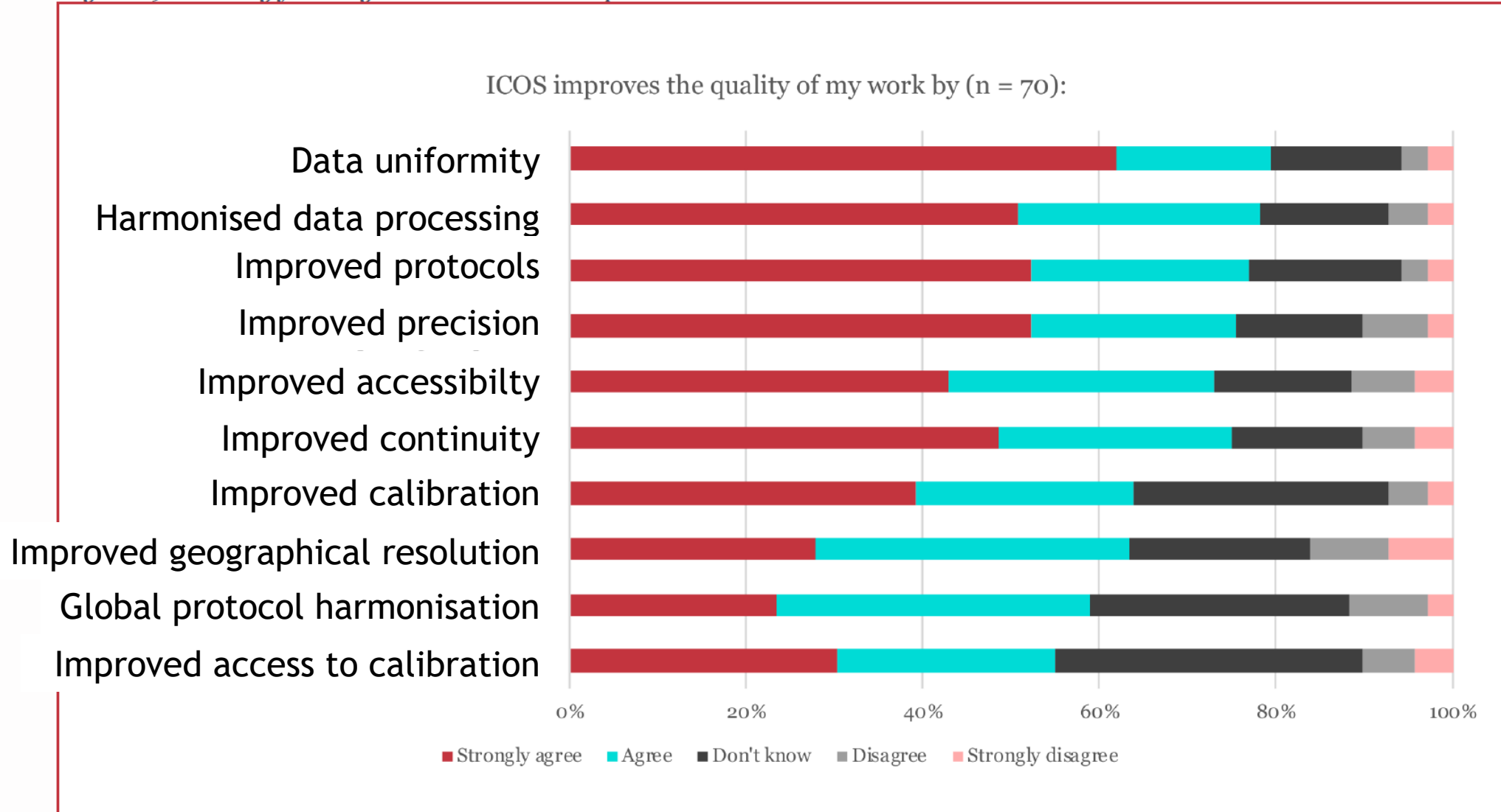
Length of time series

Figure 8: number of measurement stations (y-axis) and length of timeseries (x-axis) held by ICOS measurement stations in 2018, for the atmosphere (ATM), ecosystem (ECO), and Ocean domain



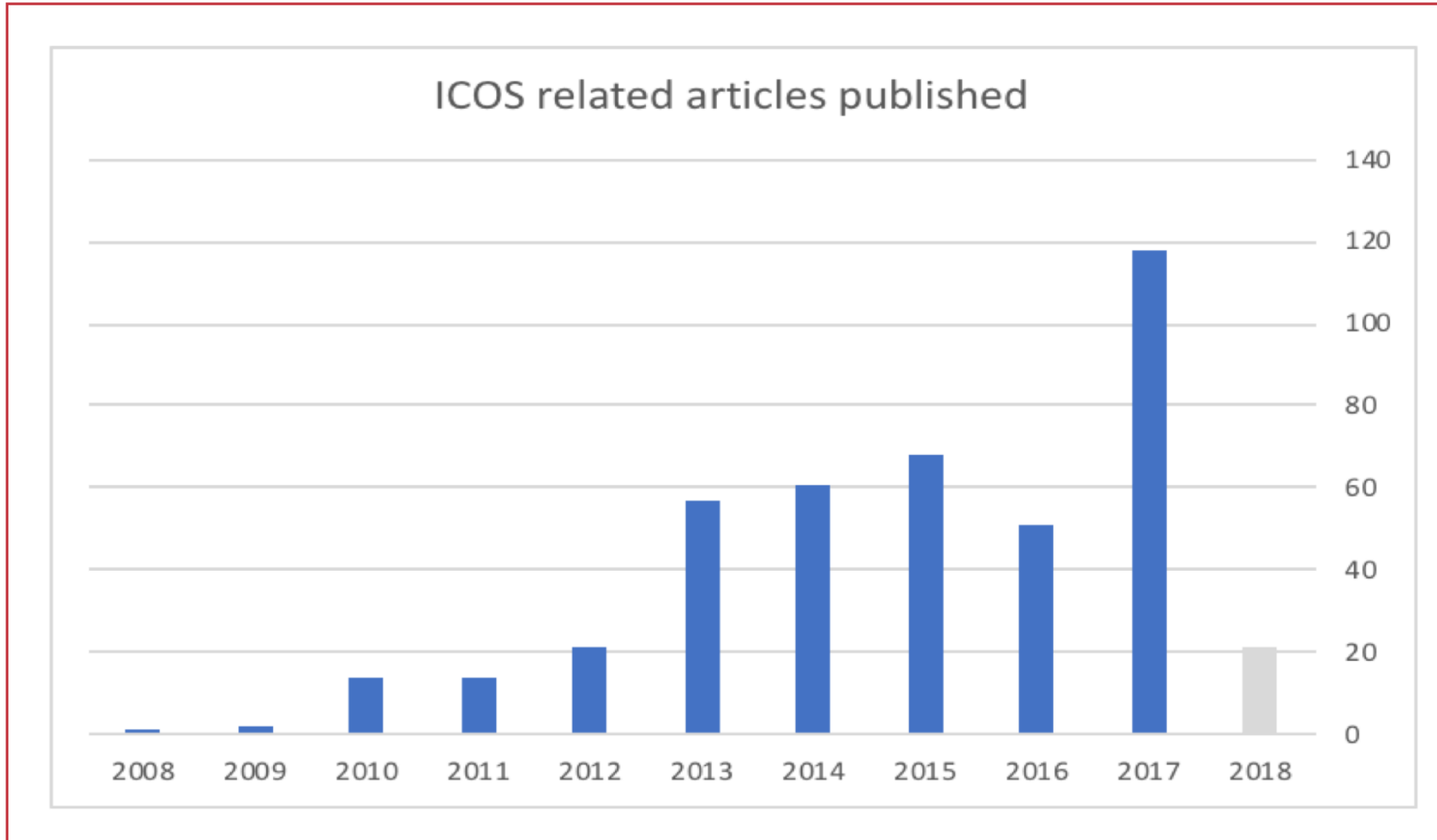
Improvement of scientists' work

Figure 9: Survey findings on how ICOS improves climate scientist's work



Improvement of scientists' work

Figure 10: ICOS related articles published per year

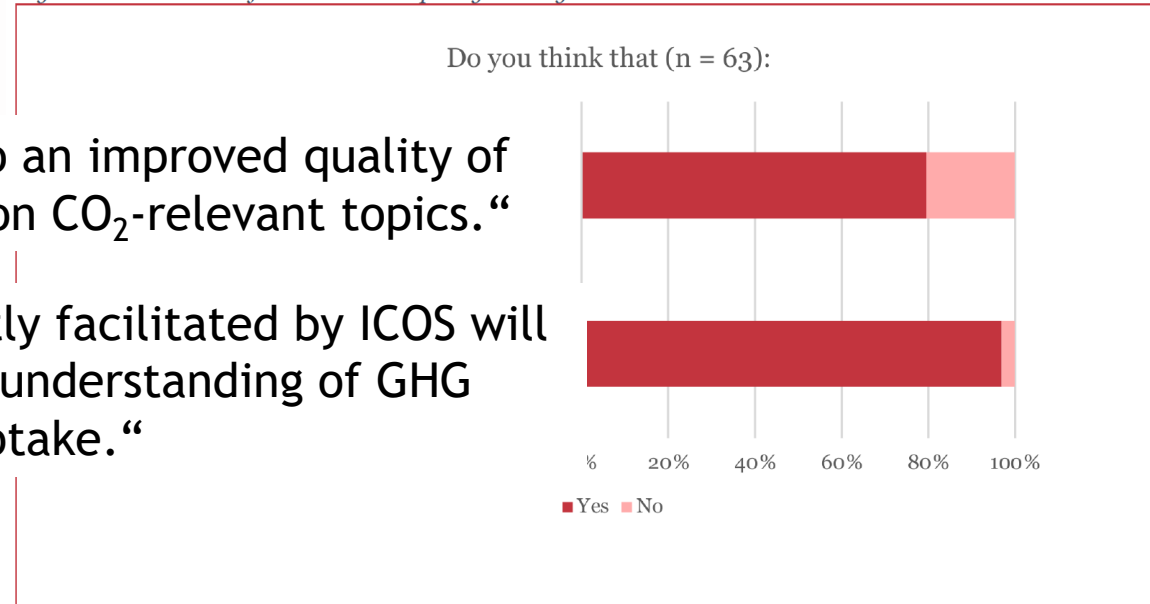


KPI 11: Improved long-term decisions through enhanced political discourse based on evidence

„ICOS will lead to an improved quality of decision making on CO₂-relevant topics.“

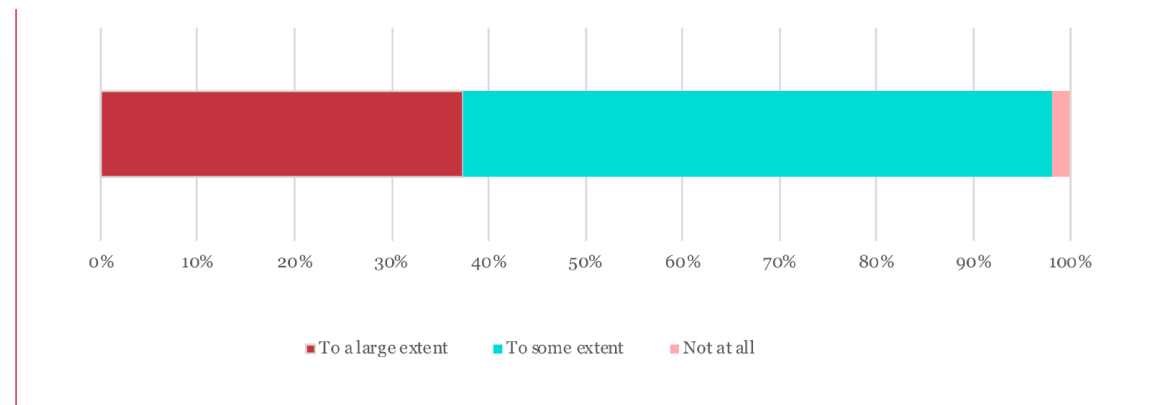
„Research directly facilitated by ICOS will lead to a better understanding of GHG emissions and uptake.“

Figure 22: Potential influence ICOS on policy making I



The challenge to “measure” socio-economic impact.

„To what extent do you think ICOS contributes to delivery or production of timely information relevant to the GHG policy and decision making?“



Perhaps the biggest impact

A list of rules and recommendations for those on schoolstrike for climate:

- No violence
- No damage
- No littering
- No profit
- No hate
- Minimise your carbon footprint
- Always refer to science

Our demand:
Follow the Paris Agreement and the IPCC report.
Stay below 1,5°C.
Focus on the aspect of equity and climate justice, clearly stated throughout the Paris Agreement.
Because no manifesto can be more radical than that.

Unite behind the science.



#FridaysForFuture #SchoolStrike4Climate

KPI 11: Improved long-term decisions through enhanced political discourse based on evidence



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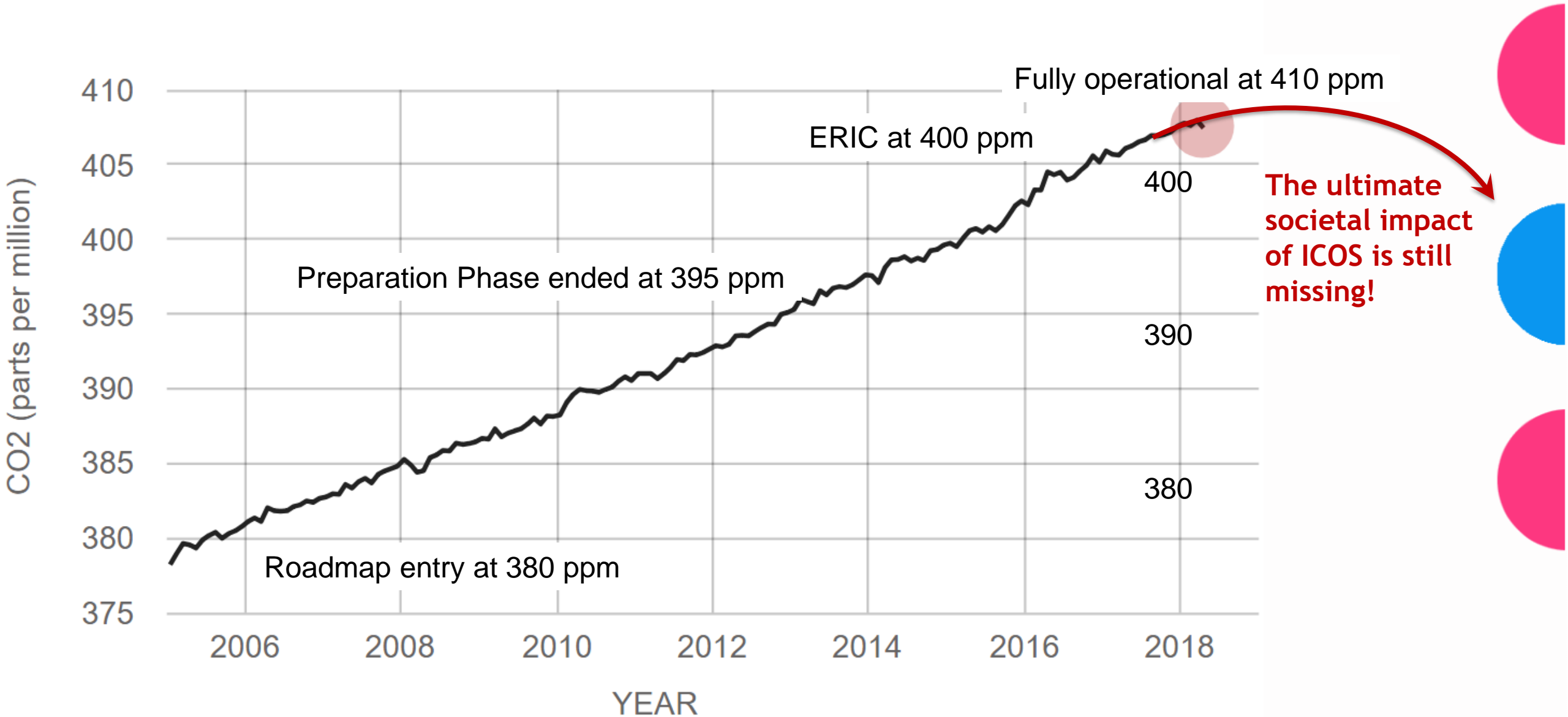
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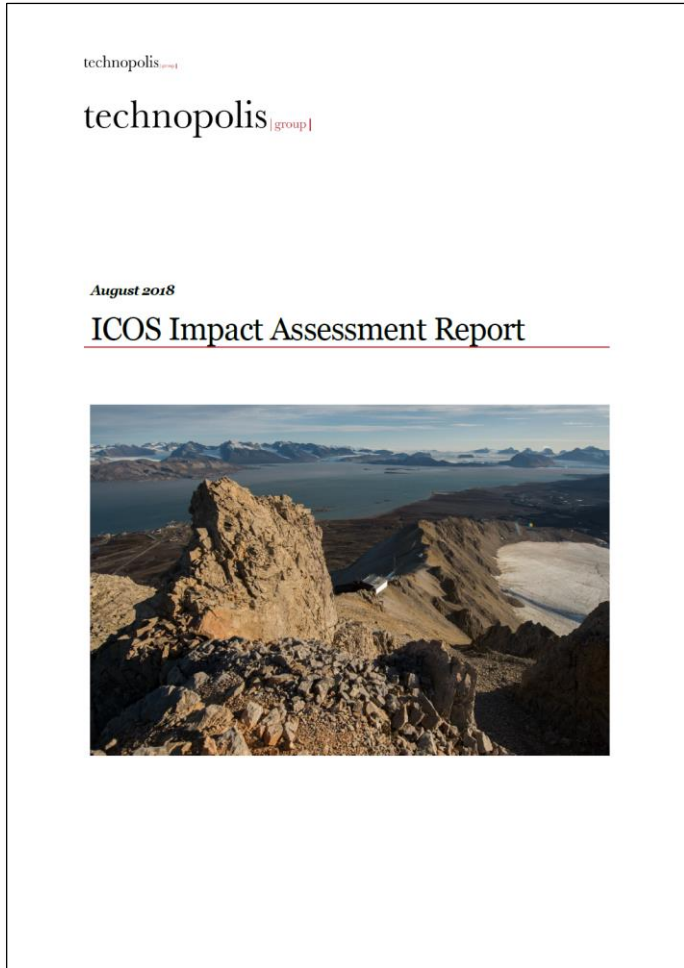
Global average CO₂ concentration (ppm) since ESFRI Roadmap entrance of ICOS

Data source: Monthly measurements (average seasonal cycle removed). Credit: [NOAA](#)

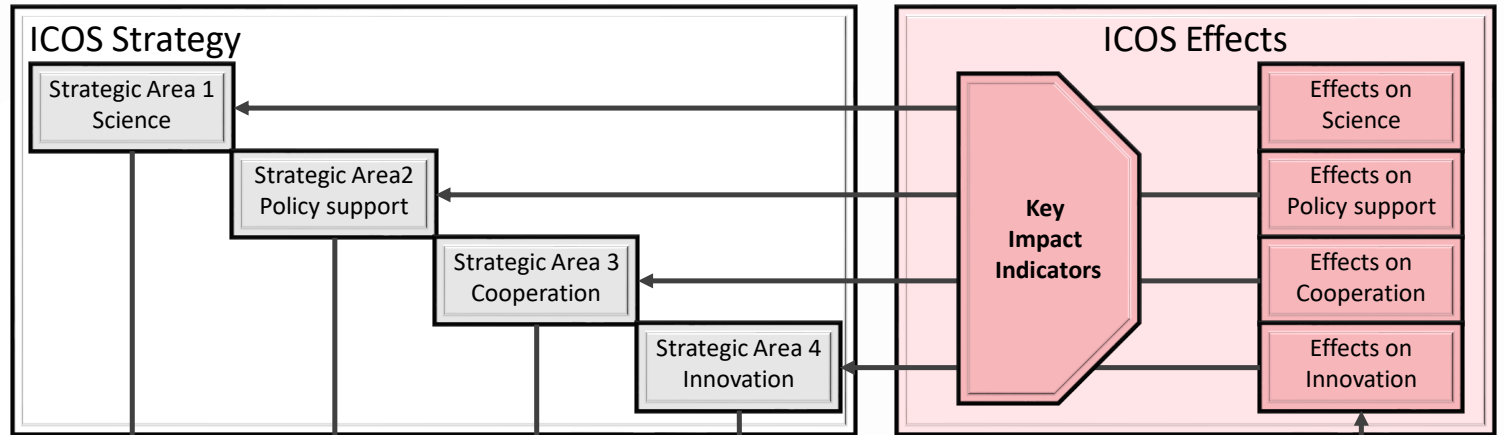


The way forward

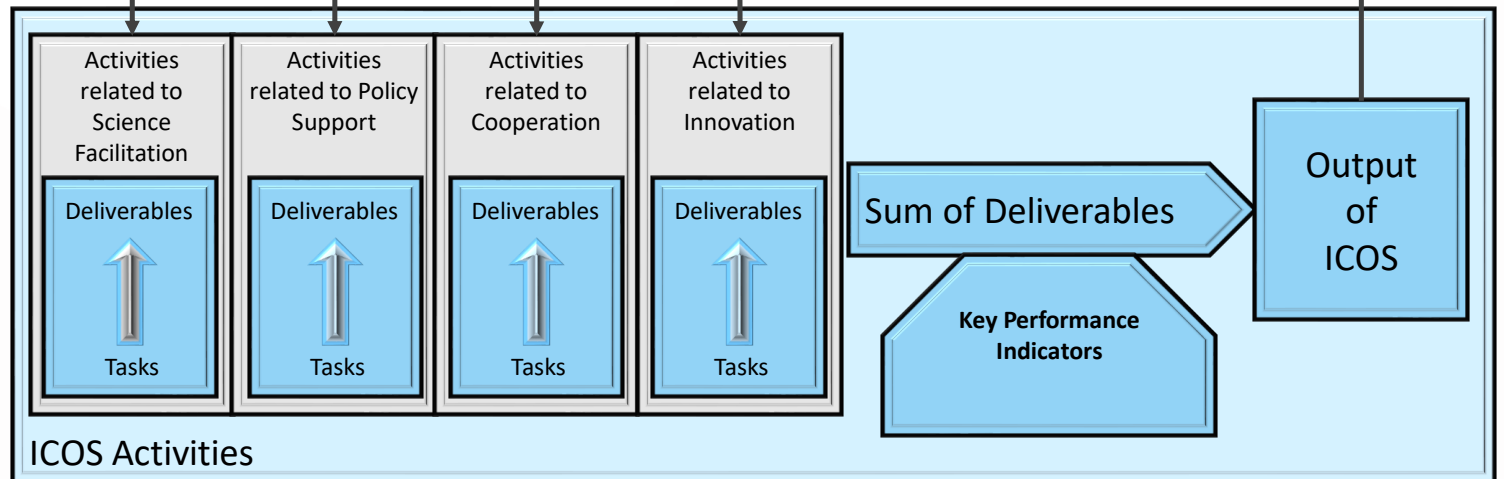
Reporting system that clearly distinguishes between impact (KII) and performance (KPI - Key Performance Indicator)



Effects of activities according to strategic areas is demonstrated via results from measuring KIIs.

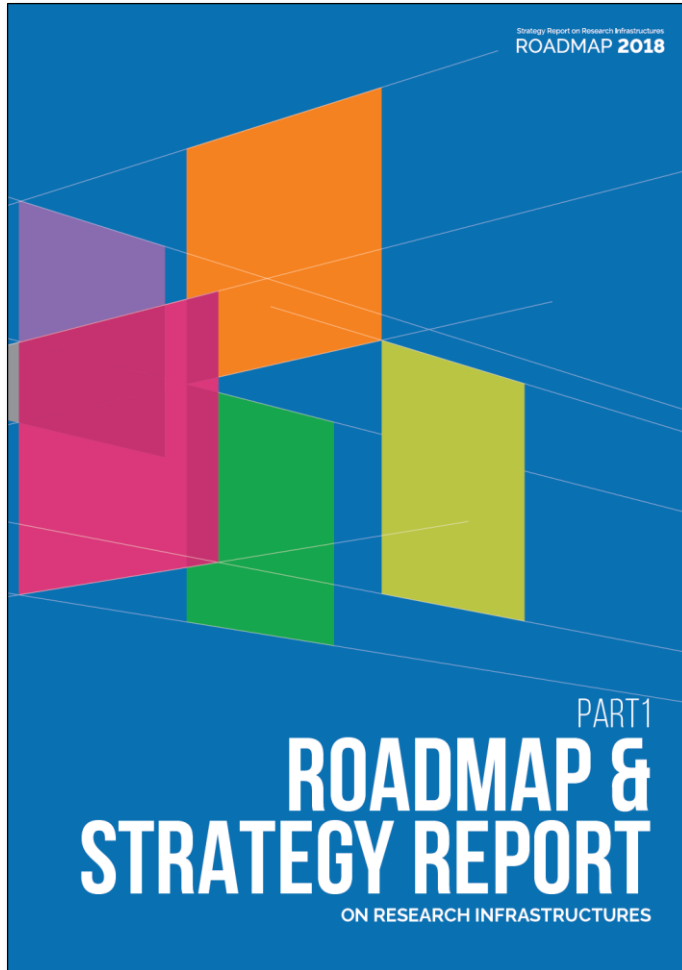


Objectives and Inputs for activities are defined by strategic areas



Quality of activities is demonstrated via results from measuring KPIs.

The ESFRI Framework (www.esfri.eu)



Long-term sustainability of RIs
(Part1: page 22)

1. ESTABLISH AND MAINTAIN EXCELLENCE.

Research excellence requires state-of-the art instrumentation and cutting-edge methodology, high-quality staff, services and support, and leading users who bring the most challenging or significant problems.

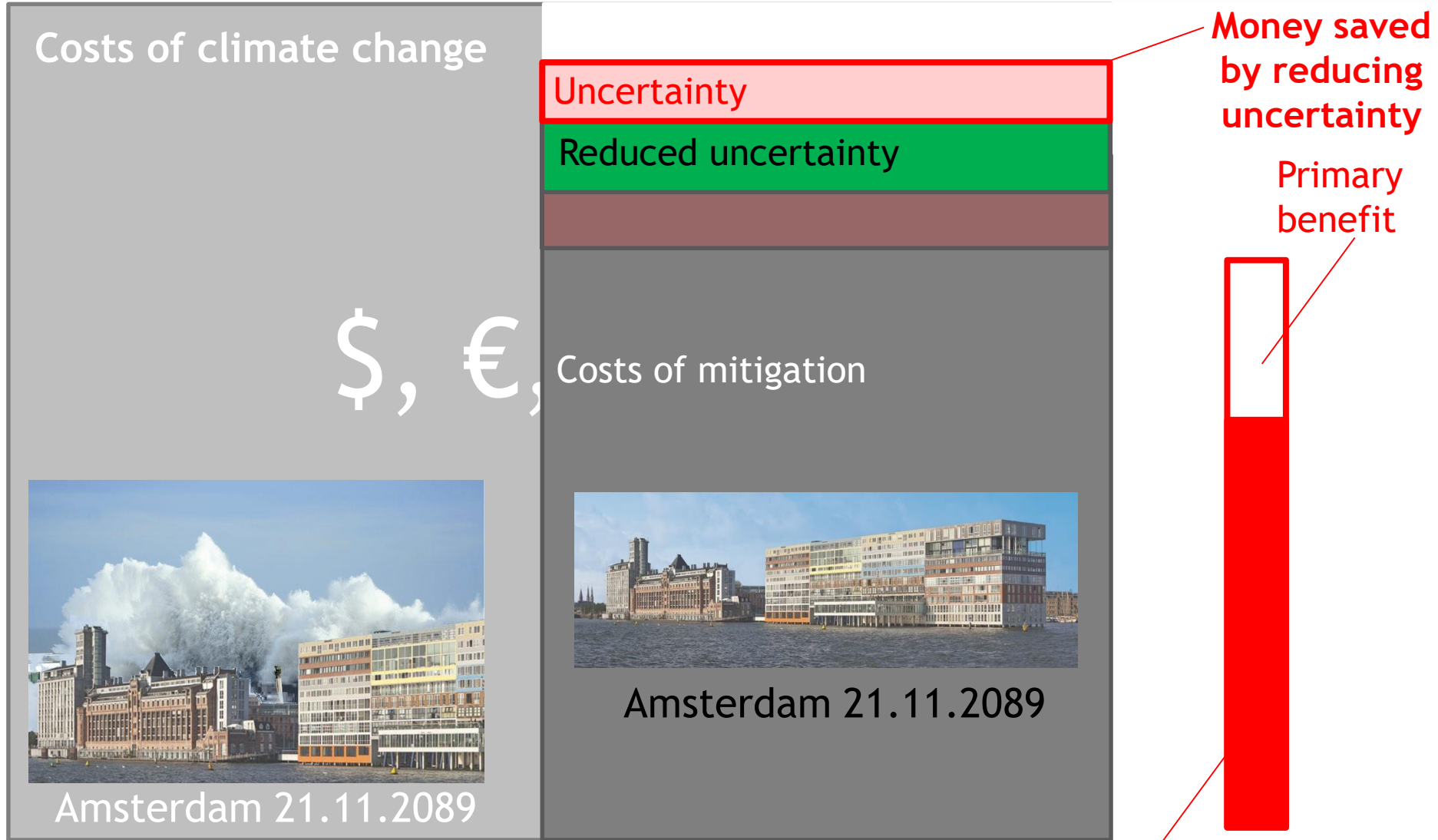
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5. DEMONSTRATE THE ECONOMIC AND WIDER SOCIAL VALUE OF RIs.

There is increasing pressure at all levels for RIs to demonstrate the positive contribution they make to society in general, including the impact on regional and national economies, and the benefits they offer to our citizens through the science they deliver. Both the definition and measurement of socio-economic impact present considerable challenges, not least due to the difficulty of establishing causality between the activities or research, enabled by a RI, and its impact or value to society, quite possibly with a very long time delay or induction period.

Socio-economic impact

KPI 10: A reduction of damage by extreme weather events through more effective climate mitigation policy.



The ENVRI community



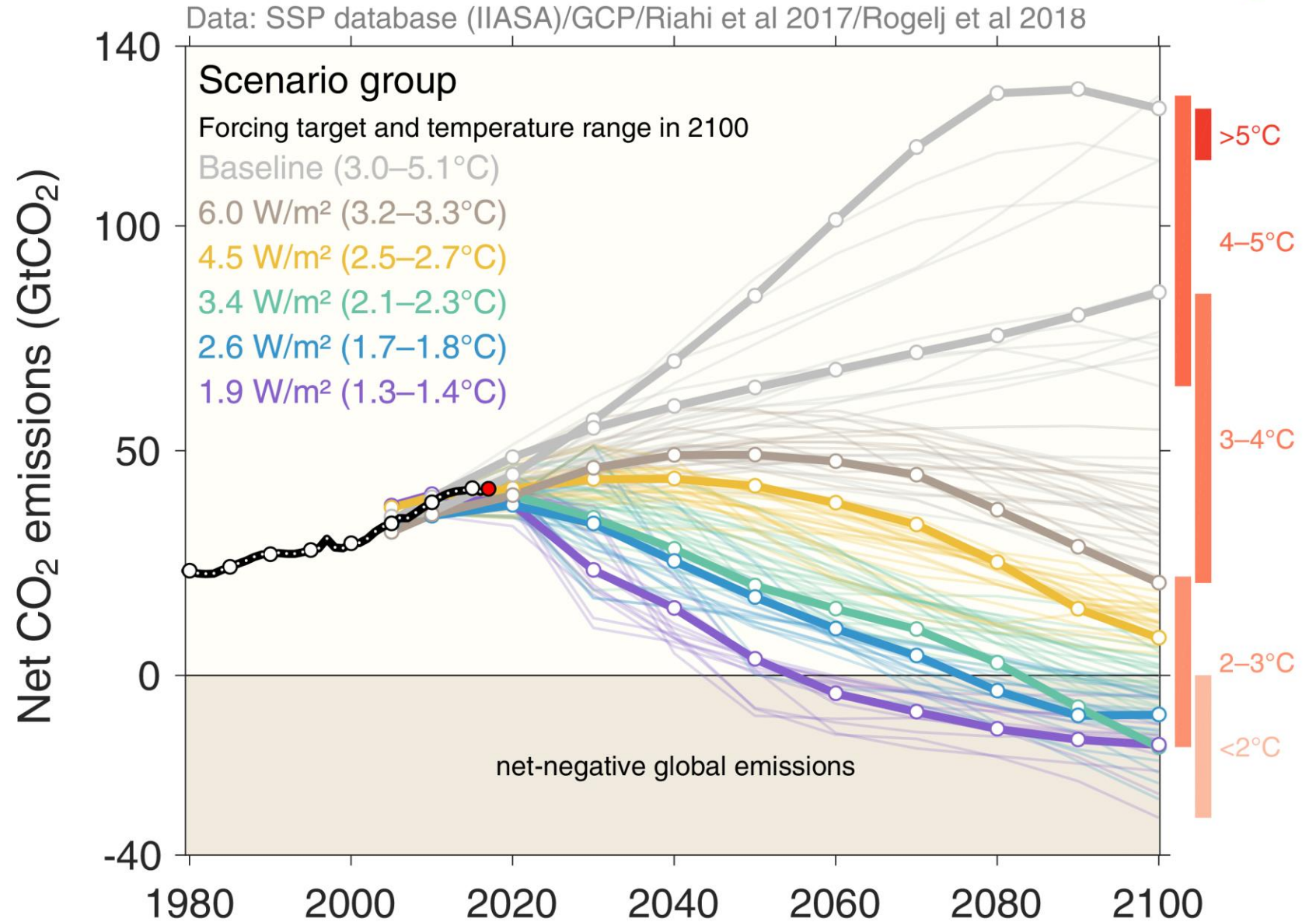
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Challenge 3:

Scientists don't know how the societies will behave in the future.

The Shared Socioeconomic Pathways (SSPs) lead to a broad range in baselines (grey), with more aggressive mitigation leading to lower temperature outcomes (grouped by colours).

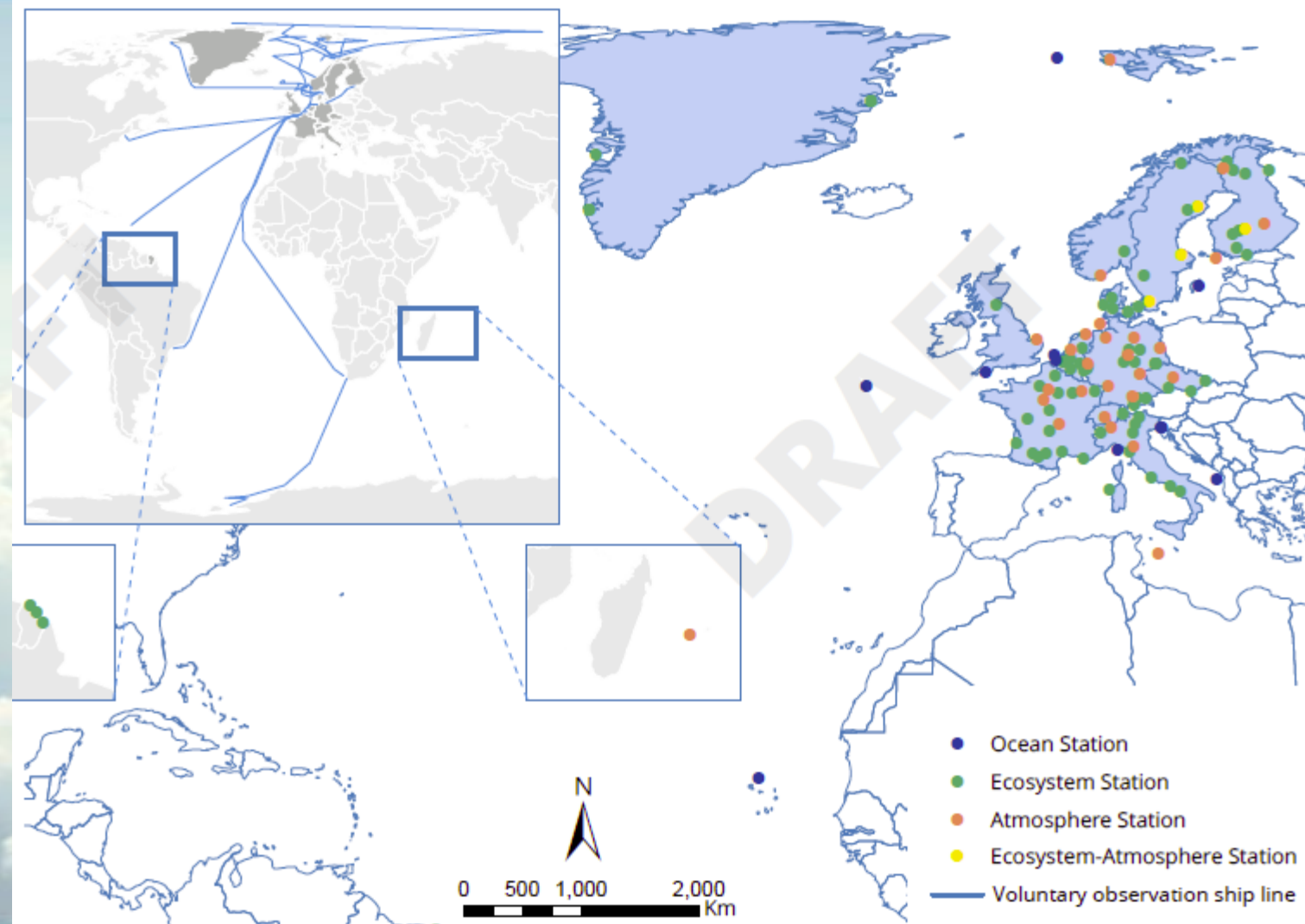


Impact analysis painted a picture of highly relevant RI - A european pillar of GHG observations

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- Increasing the volume of data available
- Greatly enhancing the measurement and data quality of many measurement sites that lacked knowledge, funds or instruments to meet ICOS standards.
- Improving access to data and data uniformity throughout its network
- Developing measurement standards and protocols
- Providing reference samples through central analytical facilities



a copy of the impact analysis is available in pdf or print format Contact: janne-markus.rintala@icos-ri.eu

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Thank You for your attention

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