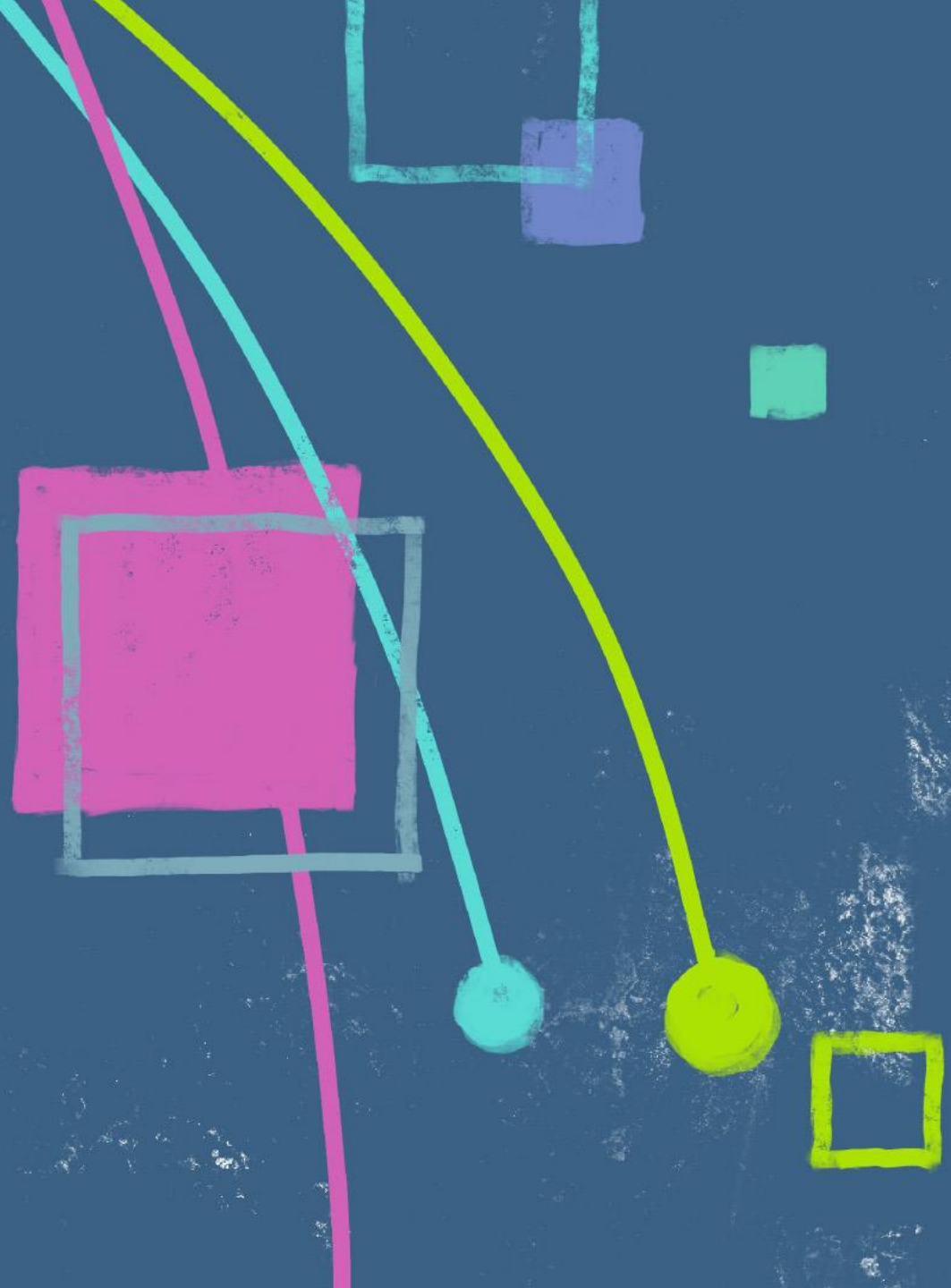# Changing Directions
Steering Science, Technology, and Innovation for the Sustainable Development Goals

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strings

Steering Research and Innovation for Global Goals

SDGs as an opportunity to steer STI to address sustainable development challenges

- The SDGs offer a means for researchers, public and private research funders, policymakers and societies at large to study which directions for STI are most likely to count as progress in relation to human challenges.

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EDITORIAL | 20 June 2023

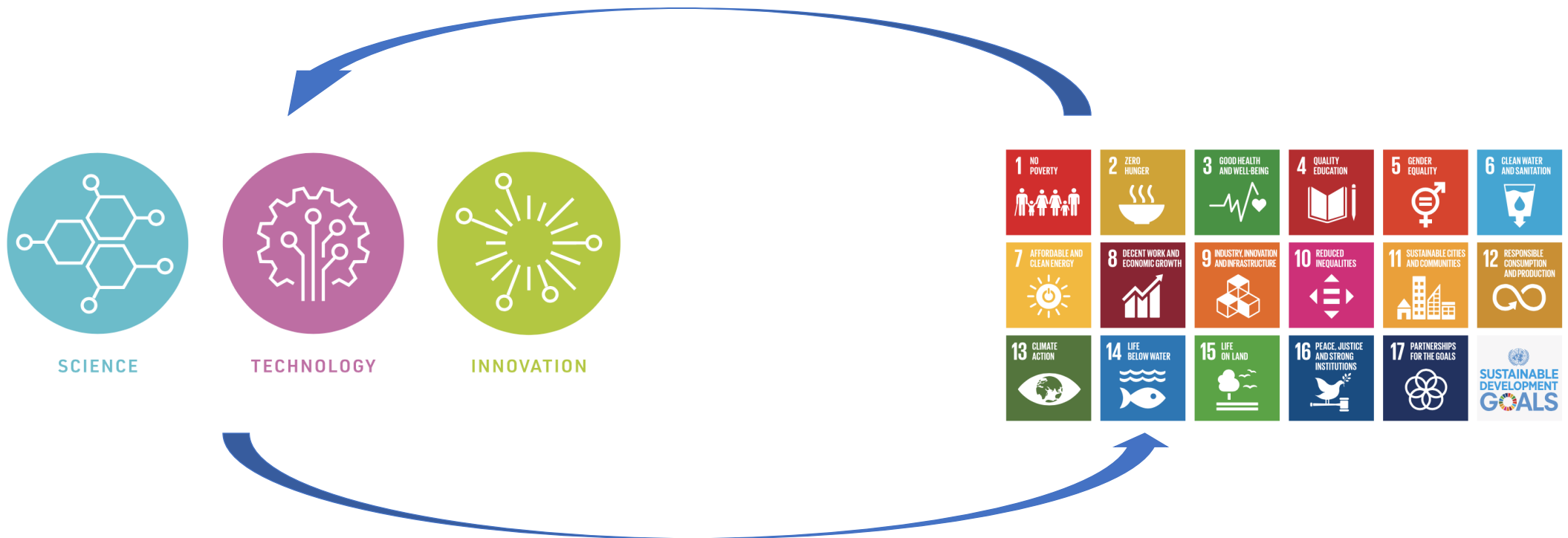## The world's plan to make humanity sustainable is failing. Science can do more to save it

There is no planet B, and the UN's Sustainable Development Goals are heading for the rocks. Researchers around the world must do their bit to change that.

Is current STI aligned to the SDGs?

A major global study into the alignment between science, technology and innovation (STI) and the Sustainable Development Goals (SDGs)

Spoiler alert

- We highlight 4 main sustainability challenges of current STI
- If this mismatch is not addressed, it will undermine progress on the SDGs
- We summarise 4 main areas of policy intervention

1. Problems of orientation and inequality of STI
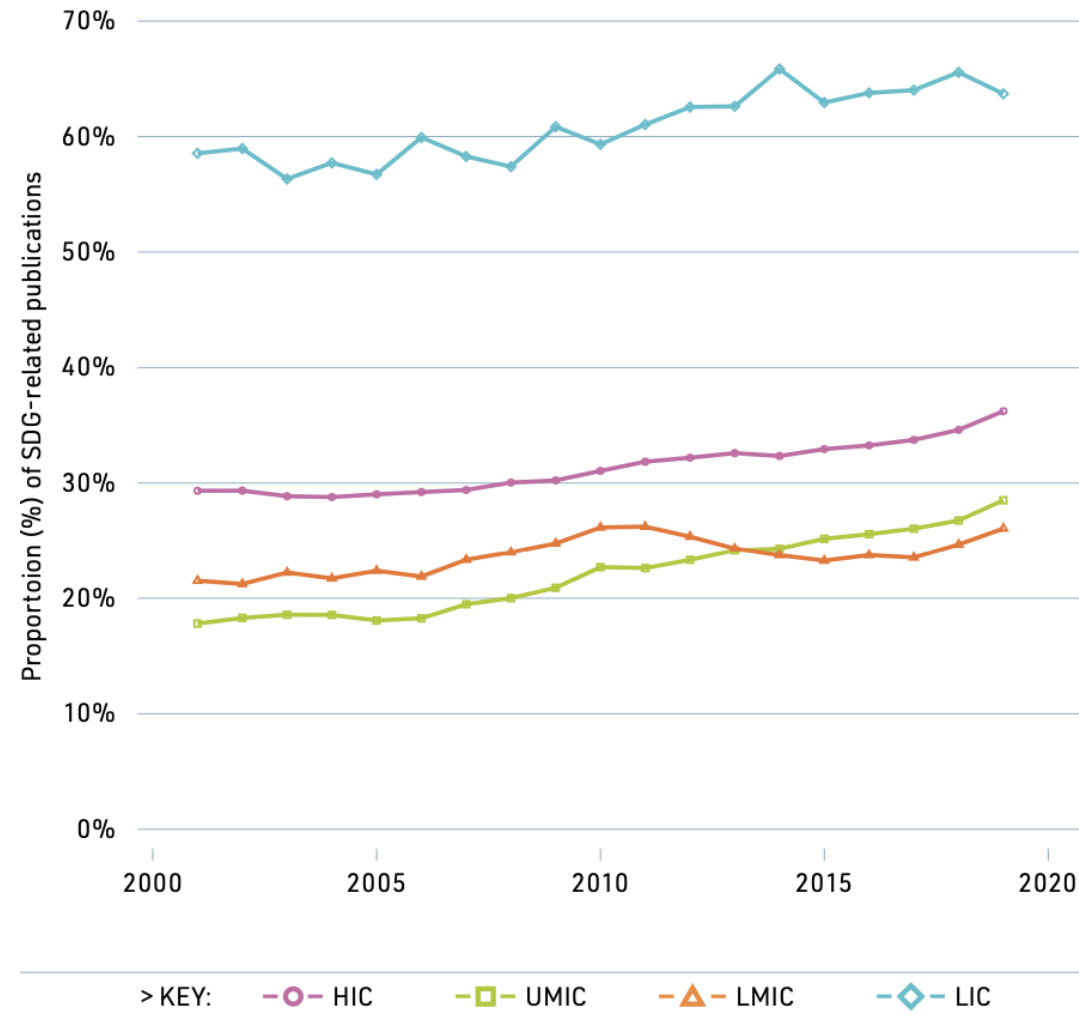
2. Problems of focus and knowledge siloes

Economic growth, infrastructures and technical solutions including access to energy, clean water and sanitation

People and society, which includes health (SDG3) – the bridge to the other clusters

Natural environment, connected to the social sciences via SDG2 (zero hunger)

9- Industry, innovation and infrastructure

7- Affordable and clean energy

12- Responsible consumption and production

8- Decent work and economic growth

4- Quality education

10- Reduced inequalities

11- Sustainable cities and communities

13- Climate action

6- Clean water and sanitation

16- Peace, justice and strong institutions

3- Good health and wellbeing

15- Life on land

2- Zero hunger

1- No poverty

5- Gender equality

I- Life below water

2. Problems of focus and knowledge siloes

Type of STI >

| Scientific research area | Existing technology | Market-oriented innovation | Social innovation | Grass-roots innovation | Policy innovation | Values and direction-setting |

% of responses >

- 0–9%
- 10–19%
- 20–29%
- 30–39%

| 7% | 3% | 16% | 11% | 6% | 37% | 20% |

Examples from survey >

Researching sociotechnical literacy

Solar panels

Bioelectrochemical systems for charging electric vehicle

Community-based health insurance

Local food supply chains

Decriminalization of sex work

Plant-based diets

3. Problems of regional misalignment
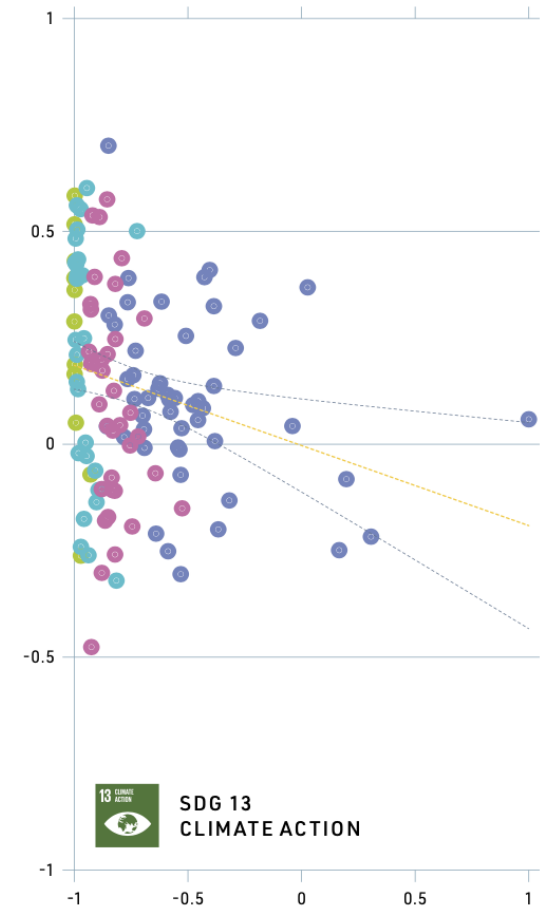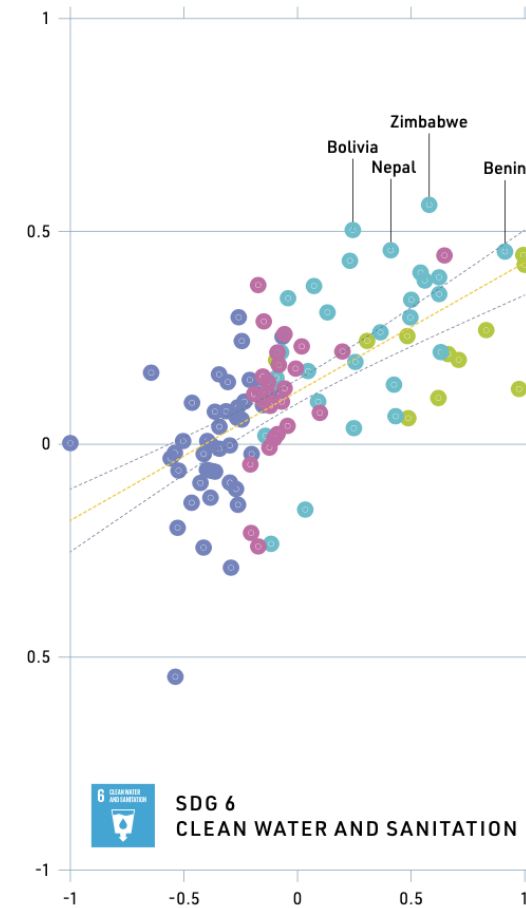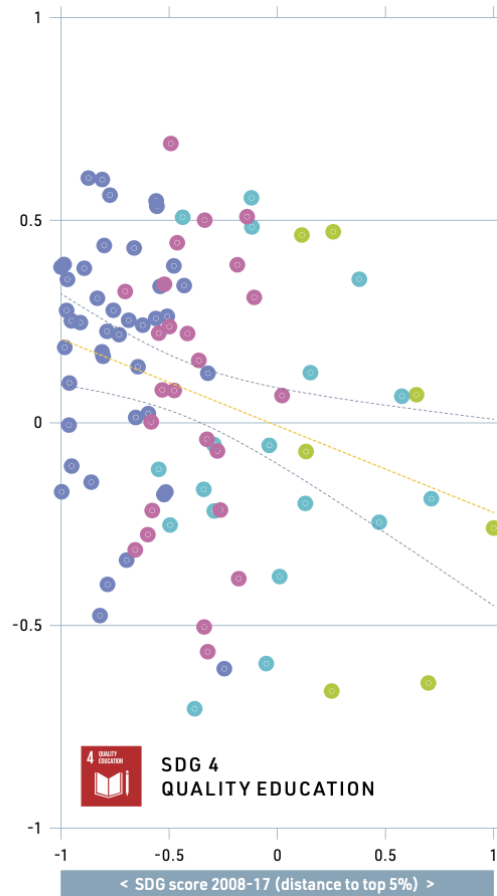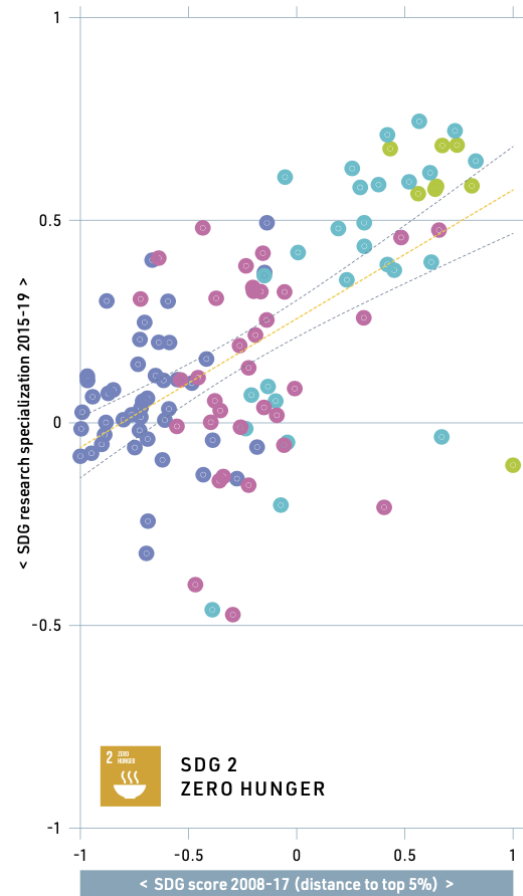
4. A problem of closing off relevant STI pathways

PLANT STRESS
- 20.38 BREEDING
- 11.91 CONSERVING

USABILITY
- 7.11 BREEDING
- 6.56 CONSERVING

OTHERS
- 10.62 BREEDING
- 20.02 CONSERVING

Performance ranking

AGROBIODIVERSITY
- 18.95 BREEDING
- 22.90 CONSERVING

ECONOMY
- 24.37 BREEDING
- 20.77 CONSERVING

NUTRITION
- 19.02 BREEDING
- 13.40 CONSERVING

ACCESSIBILITY
- 15.73 BREEDING
- 20.41 CONSERVING
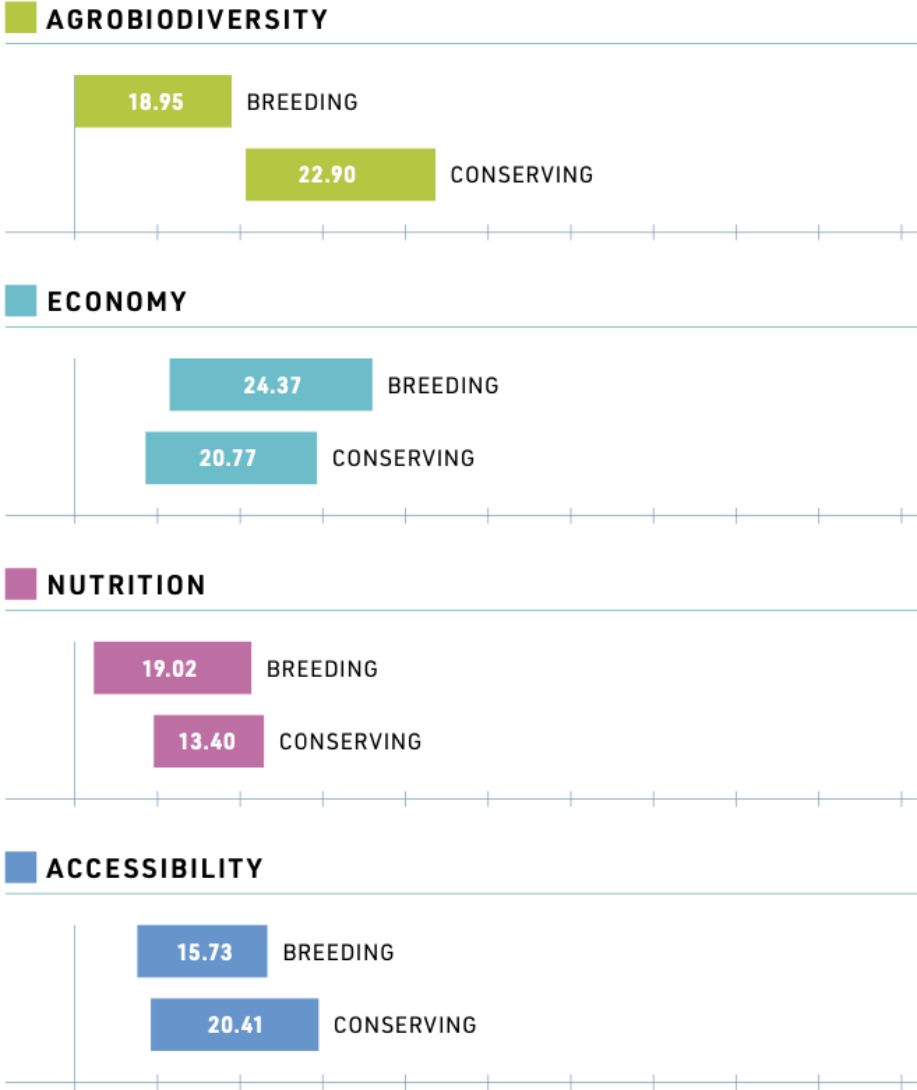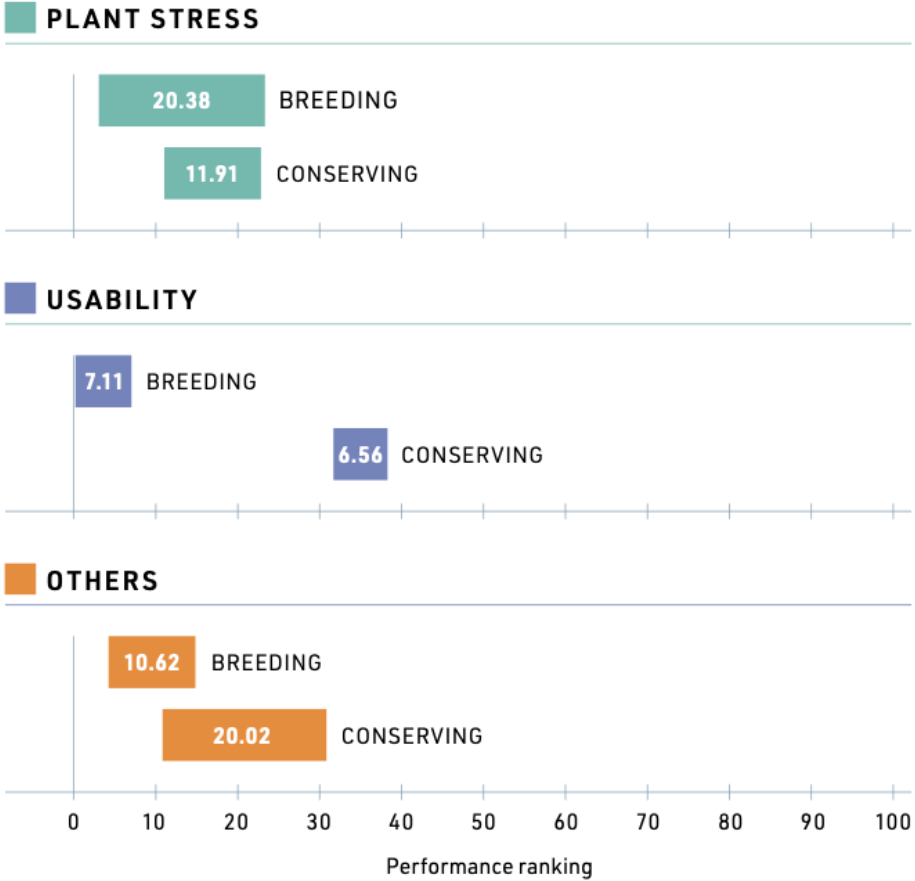
Main sustainability challenges of current STI

1. Problems of orientation of "global" research aggravated by inequalities in directing it

2. Problems of focus on technical solutions in isolation from underlying social and political inequalities and conflicts (knowledge siloes)

3. Problems of misalignment between SDG priorities and research priorities

4. Problems of closing off relevant STIs pathways, together with underlying diversity and plurality

How to participate in Mentimeter Quiz?
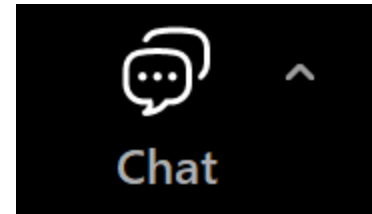
Option 1:

Scan the QR code

QR Code for Session 1

Option 2:

Go to the chat of Zoom and click the link provided

You to Everyone 14:09

ZW

Please use the following link to answer Mentimeter questions for session 1:

https://www.menti.com/alafs9mmwaqy

Ways forward: areas of policy action

Increase funding for SDG-related research and innovation

- particularly
  - in LICs,
  - on underlying social issues that interact with technical solutions
  - social, policy and grassroots innovations, and
  - on issues that are relevant to a region or context
- **involving a more diverse set of actors and interests** in research funding decisions, enabling more open and participatory decision- making that identifies and implements plural funding priorities (e.g. in panels)
- creating opportunities for **more equitable knowledge transfers and capacity-building** (driving research from local contexts)
- adopting a **more holistic approach to research funding design and evaluation**, facilitating interdisciplinary and transdisciplinary research

Promote a rich diversity of STI pathways to address specific SDG challenges

- ensuring that decisions about which STI pathways to prioritize involve stakeholders affected by those decisions

- comparing how different kinds of STI can address different challenges, before focusing on advancing specific types of STI

- maintaining a diverse and balanced portfolio of research and innovation investments
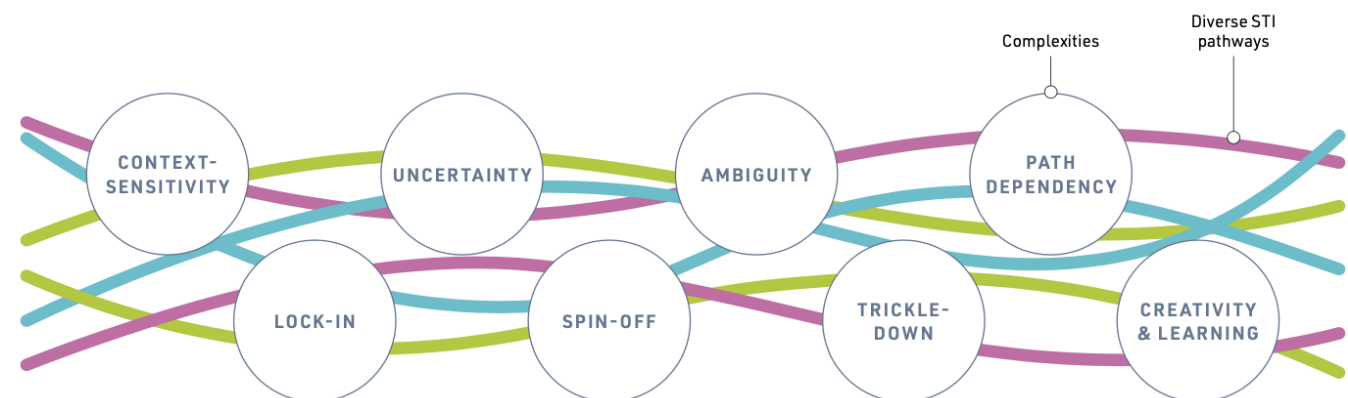
Design accountable initiatives that strengthen STI governance and support open and inclusive processes of deliberation and prioritization

- setting up a global platform observatory to conduct regular surveys of global R&D, its diversity, inclusion, scale, locations, purposes and impacts

- bringing together constellations of funders to align how they support SDG priorities

- creating global funding pools to maximise the impact on global challenges

Empower stakeholders to form different interpretations of what counts as SDG-related STI

- developing and maintaining user-friendly and open analytical tools in collaboration with policymakers and civil society organizations
- increasing funding for national data and statistical systems
- developing STI databases to better capture innovation activities in social sciences, applied fields, diverse languages and in lower-income countries
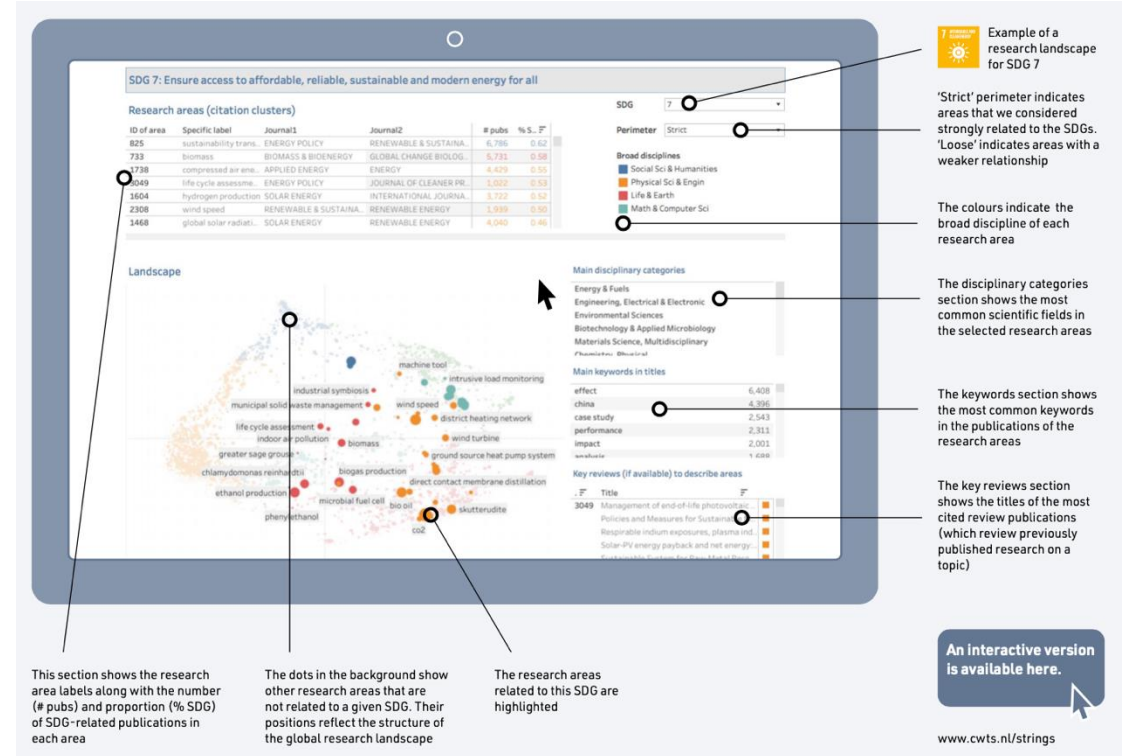
www.cwts.nl/strings

Just doing more R&D will not contribute to achieving the SDGs.

We need more open and inclusive approaches to define STI priorities, in order to address the current misalignments with the goals.

This is vital if we are to achieve our SDG targets and build a better, more sustainable world.

We need to start STI changing direction, now

Thank you for your attention

Full report available at
http://strings.org.uk
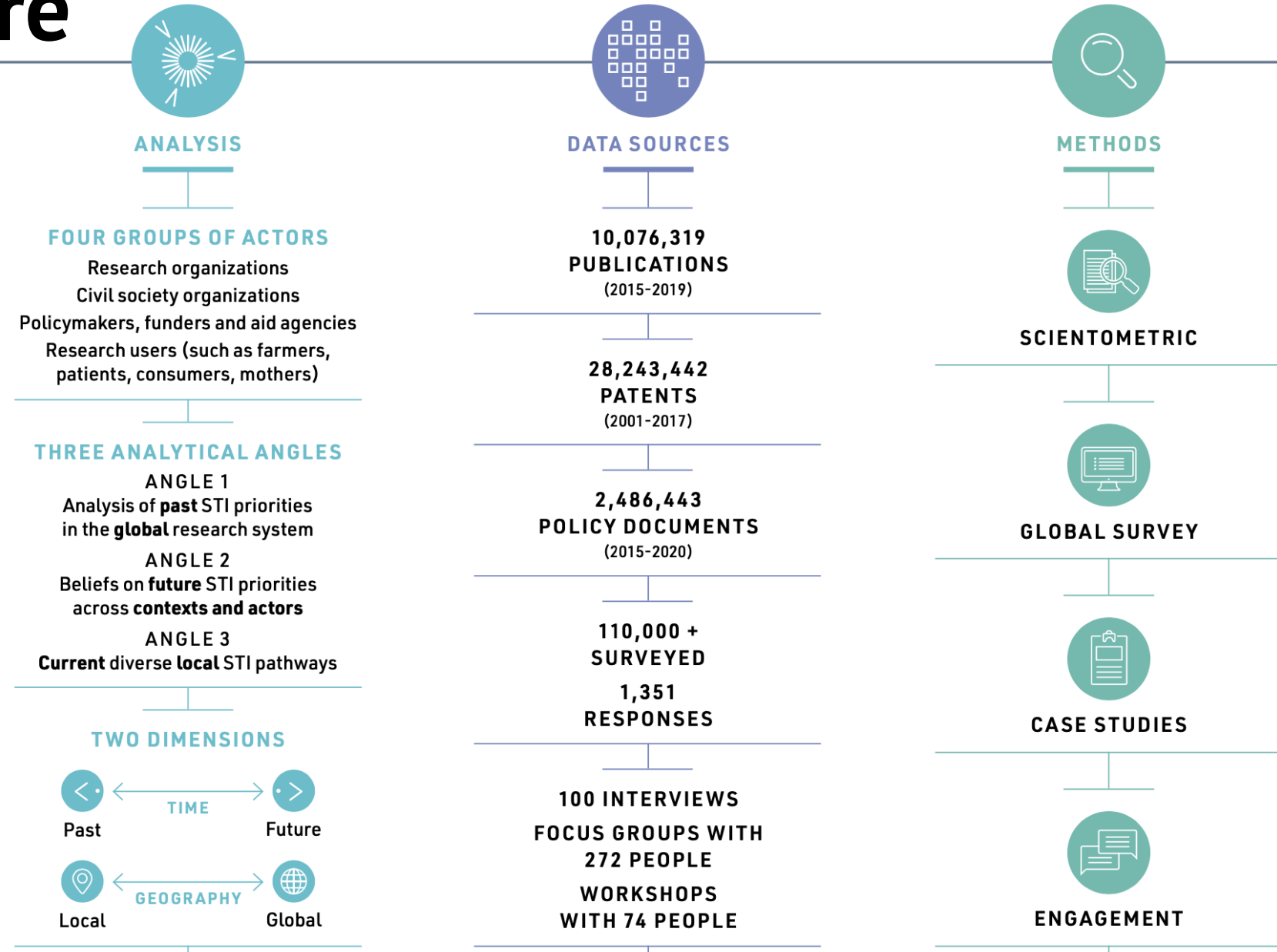## https://dx.doi.org/10.20919/FSOF1258

How we got there

- Analysed scientific publications and patents data: global research and innovation priorities, and alignment with SDG challenges.

- Global survey of stakeholders: views about what STI are needed to help achieve the SDGs in 2030.

- Cases studies on specific sustainability challenges: how different actors are shaping local STI pathways

ANALYSIS

FOUR GROUPS OF ACTORS

Research organizations
Civil society organizations
Policymakers, funders and aid agencies
Research users (such as farmers, patients, consumers, mothers)

THREE ANALYTICAL ANGLES

ANGLE 1
Analysis of **past** STI priorities in the **global** research system

ANGLE 2
Beliefs on **future** STI priorities across **contexts and actors**

ANGLE 3
Current diverse **local** STI pathways

TWO DIMENSIONS

TIME
Past — Future

GEOGRAPHY
Local — Global

DATA SOURCES

10,076,319
PUBLICATIONS
(2015-2019)

28,243,442
PATENTS
(2001-2017)

2,486,443
POLICY DOCUMENTS
(2015-2020)

110,000 +
SURVEYED

1,351
RESPONSES

100 INTERVIEWS

FOCUS GROUPS WITH
272 PEOPLE

WORKSHOPS
WITH 74 PEOPLE

METHODS

SCIENTOMETRIC

GLOBAL SURVEY

CASE STUDIES

ENGAGEMENT

2. Problems of focus and knowledge siloes