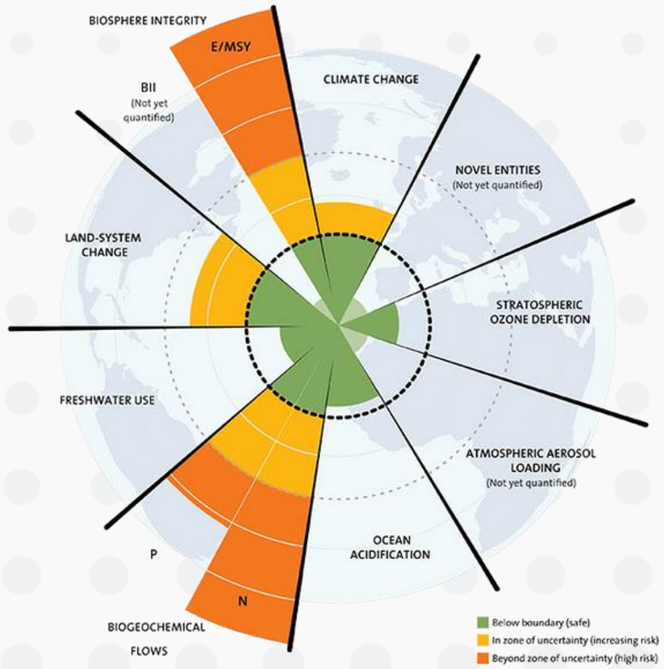
A Framework to Unleash Mission-Oriented Science

HLPF 2021, 6 July

A planet on “red alert”

Photos: Photos (t/l > b/r): BBC, The Atlantic, CNN, Al Jazeera



Source: Steffen et al. (2015)

… humanity divided

- **Wealth**
  - 71% of adults own less that $10 000 in wealth
- **Health**
  - life expectancy had doubled in a century, for some (12 years of good like beyond 20)
  - 100 m experience acute hunger while 1 bn are obese
  - 1% of 1.3 bn Covid vaccinations injected took place in Africa
- **Environment**
  - 90% of people breathe highly polluted air
  - 1 in 9 people use unsafe water
  - 2.3 bn people have no access to a toilet
- **Happiness and resources**
  - more die by suicide than war and violence
  - happiness inequality is on the rise
  - 1 bn people have no access to electricity - there are enough cellphones in circulation for all
- **3 bn people: land degradation, desertification and did not benefit from the great acceleration**

… and society far off-track on the SDGs

Substantial progress **Fair progress** **Limited / no progress** **Deterioration** **Distance to target**

Source: UN (2020) SDG Progress Chart (pre-pandemic status)

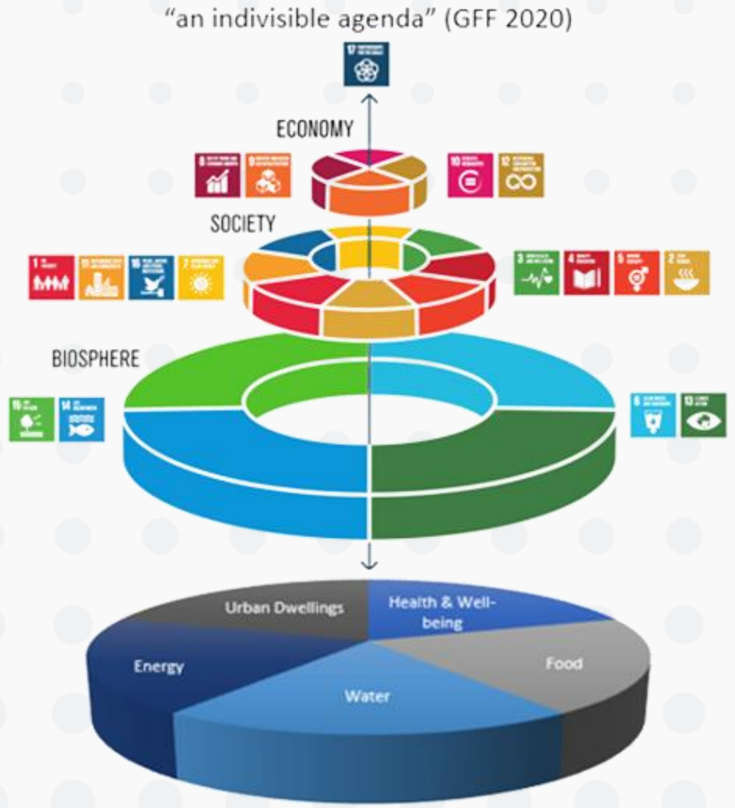
Focus on basic needs

The charge to ISC:

- Identify key areas for mission-driven science

Methodology:

- **Survey inputs from ISC-led call** (239 valid responses, 61 countries)
- **Agenda-setting reports** (20 reports, including 2018 IIASA TWI2050 Report, 2019 UN Global Sustainability report, UN Research Roadmap for the COVID-19 Recovery)
- **Synthesis of scientific literature**



Source: Adapted from Stockholm Resilience Center

The vision

Source: Deloitte.com

For science to support the urgent societal transformations towards a more sustainable, equitable and resilient future, we need

A nimble, targeted, mission-oriented set of socio-political-science initiatives and associated support structures that harness the best of what science offers, but does so in a completely different (albeit largely proven) way, connected seamlessly with other parts of society to implement necessary policies, practices and behavioral changes.

A business-as-usual science

The Dominant Science System

- **Elements** (institutions - e.g. universities, research institutes, non-governmental and governmental organizations - and structures)
- **Organized in silos** (natural sciences, social sciences, applied sciences, humanities, and the arts, sometimes with industry)
- **Reinforced by cultures** (assumptions, values, incentives, standards, promotion criteria)
- **Functionally intertwined** (via the funding, generation, validation, evaluation, communication and application of knowledge)
- **Operates in particular contexts** (organizational, operational, political)
- **Collectively shapes what and how scientific knowledge is produced and used, and by whom**

Can’t Deliver the Science We Need

Self-organization & Foci

- Narrowly focused
- Fragmented, distant and abstracted
- Compartmentalized

Imbedded attitudes

- Exclusionary and disconnected from society’s needs
- Elitist
- Dominated by western thinking

Normative Orientation

- Sometimes uncritical
- Captured by an economic growth-mindset

A science for societal transformation

A Support System That Enables

- Institutional concentration of extensive brain trust
- Cross- and transdisciplinary integration
- Science for the common good
- Full-time immersion
- Research shielded from teaching, admin, fundraising, promotional pressures and uncertainties
- Sustained support (financial, institutional, technological/infrastructural, political)
- Directly linked and accountable to policy and practice

To Produce the Solutions We Need

Self-organization & foci

- Integrative
- Systems-focused
- Networked and flexible
- Transformative
- Societal needs led (socio-political challenges)
- Globally and regionally connected
- Strength-based and capacitating

Attitude

- Collaborative and inclusive
- Embracing transdisciplinarity and different knowledge systems
- Open and accessible to all

Normative orientation

- Critical, innovative and reflective
- Driven by the common good
- Solutions-focused
- Accountable to society

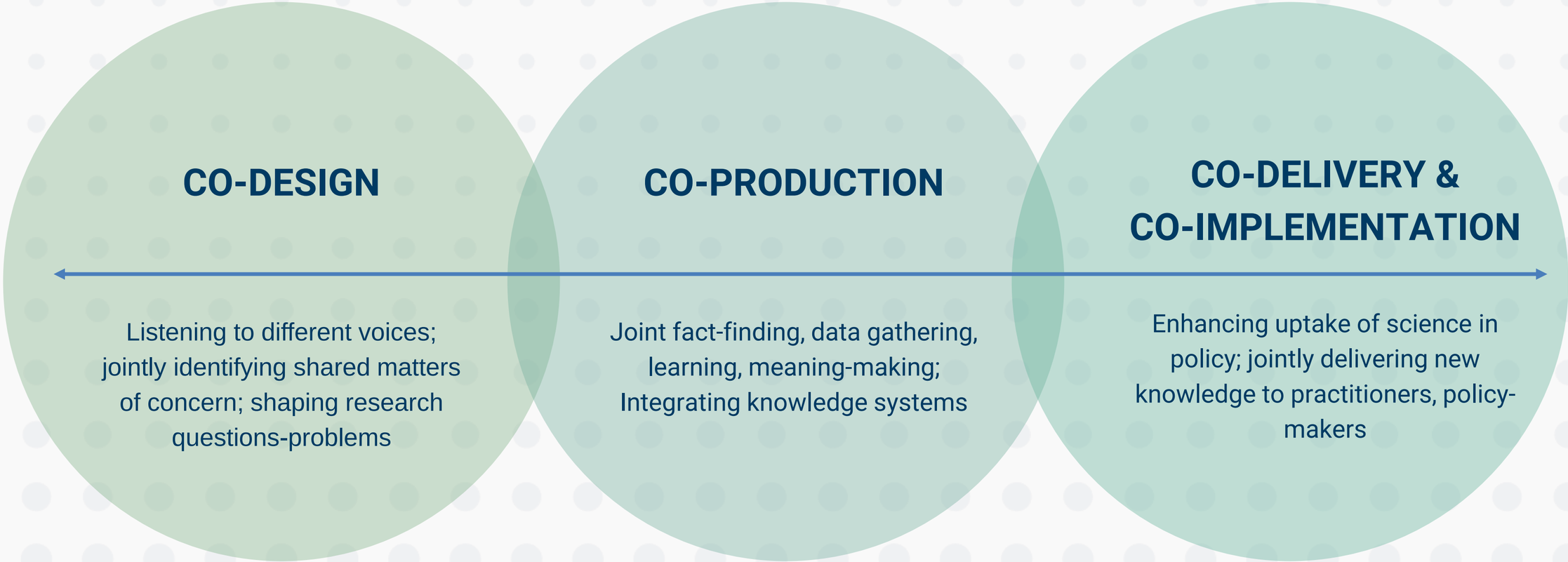
What is mission science?

- Focused on a clearly defined topic, question or goal
- Singularly goal-oriented and solutions-focused
- Conducted for a limited period of time until a substantial challenge has been successfully addressed
- Significant size, scope and ambition
- Requires co-designed, inter- and transdisciplinary approaches
  - Input from a wide range of knowledge holders and stakeholders
  - Integration across disciplines and knowledge spheres
  - Applied and fundamental knowledge
- Direct engagement - policy-makers and societal actors
- Accessible and used

Transformative

Source: National Geographic

The transdisciplinary heart of mission science



Unleashing science: making change happen

ASSUMPTIONS

- Achieving the SDGs is a socio-political problem
- Current science system inhibits science from making a significant, constructive contribution to the SDGs
- Incremental reform is incommensurable with SDG timeline
- Mission-driven science in support of society - is a design intervention

PRIORITIES

- The soc.-ecol.-climatic trends that undo past & undermine future prospects for human development, dignified and just human existence.
- Basic needs must be met first
- "Rate-limiting" questions co-determined with social partners

SCIENTIFIC ACTIVITIES

- Being responsive to identified decision-making needs
- Being supportive of identified policy and action interventions
- Being generative in identifying innovative solutions
- Being constructively critical of inadequate policy approaches

APPROACH

- Holistic and integrative
- Systems approach
- Transformative, high-impact, transdisciplinary knowledge creation
- Mission-driven
- Enabling environment
- Ongoing engagement activities

ESSENTIAL SOCIETAL PARTNERS

- Champions
- High-level political leaders
- Decision-makers at all levels
- Thought and action leaders
- Relevant private sector
- Public science funders and philanthropy
- Non-profit leaders
- Civil society

RESULTS - Changing the Conditions that Hold Unsustainable, Unjust Systems in Place

- Mindsets, belief systems and associated cultural values and norms
- Relationships and connections
- Power dynamics, vested interests, politics
- Policies and governance systems
- Resource flows
- Practices and behaviors

OUTCOMES

- "Rate-limiting" problems resolved
- Basic needs and related SDGs are met
- Further improvements in soc./ecol./ climatic conditions beyond 2030
- More equitable, inclusive, sustainable economic models and financial systems
- Shift toward integrated, inclusive science governance
- Emergence of functional, societally accountable public institutions at all levels

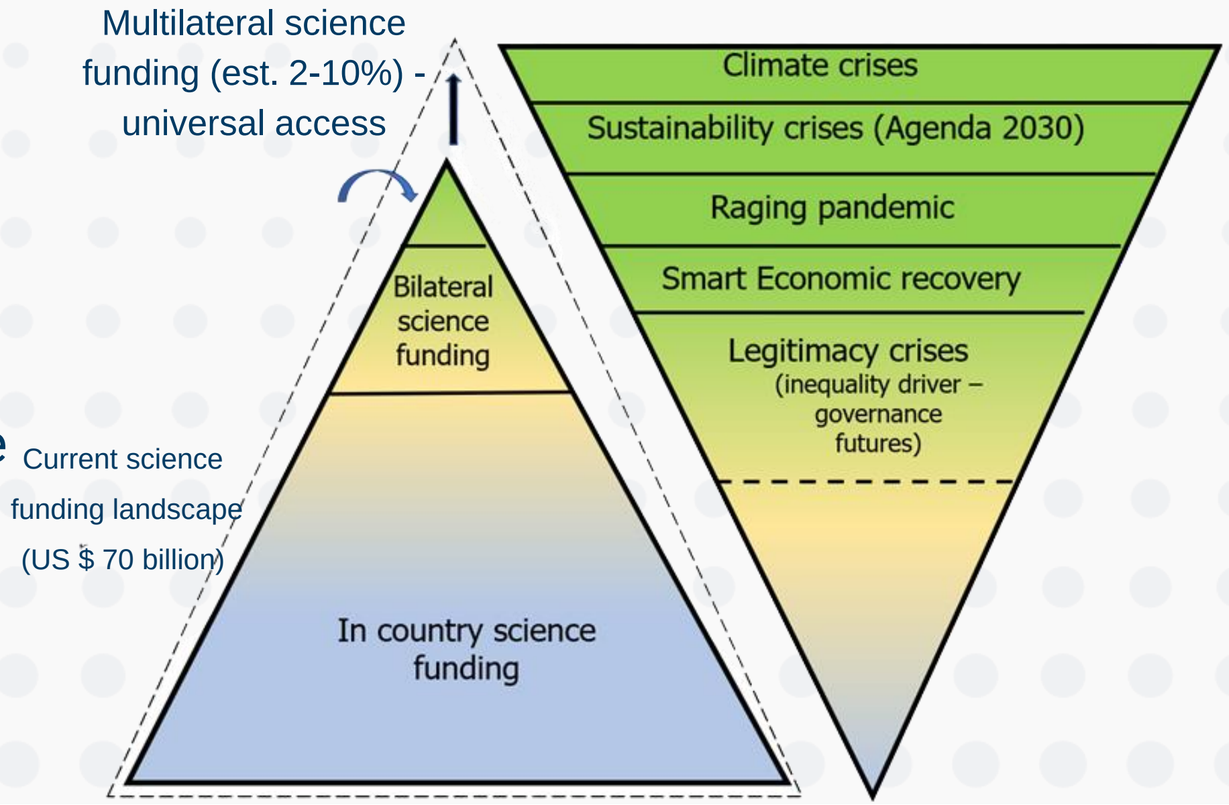
SUPPORT & INPUTS

- Adequate funding, institutional co-design, science infrastructure, etc.
- Dedicated leadership, top-notch scientists-policy experts, time, support staff

Key considerations

- Global challenges (incl. SDGs) cannot be achieved unilaterally
- Urgency – mission-driven global priorities to be tackled at scale, timeously and collectively
- Business as usual, incremental – eventually know exactly what we should have done
- Global societal priorities – determine whether there is a dignified future for humanity or not (GRC – pretty basic)
- Large science infrastructures can bring together the science community and funders (CERN $1.1bn/annum)
- Shared and universal global societal problems that require our collective effort, not yet

Early estimates US$ 100-200 million/ annum - decade



Mission implementation

- Unique “Sustainability Stations” that garner sustained political commitment, harness private sector support and the best that science has to offer (limited period)
- Stations to be co-designed with key political, private sector, science and national partners
- May disrupt science, some initiatives and science funding as we know them, to do this effectively

Objectives

- Harness and optimize transdisciplinary approaches to tackle mission critical global change societal challenges
- Identify catalytic interventions (policy, societal responses and research) to overcome rate limiting barriers to transformative societal responses across the Global Science Missions

Missions to be co-defined within these basic needs domains…

… they embrace most pressing human challenges

- This initiative brings together political leverage, societal influence, engaged governments, the private sector and all funders
- Are we up to this daunting socio-political challenge – to step up to the level of ambition required?
- If so - ISC is willing to take initiative forward together with all willing partners

Thank you

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