

Building Resilience in a Changing World

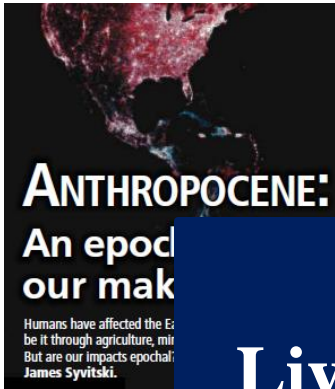


Gordon McBean, PhD, FRSC
President, International Council for Science
Co-Chair, Governing Council, Future Earth

Presentation to ICSU-JRC Joint Thematic Session
World Science Forum, Budapest
6 November, 2015.



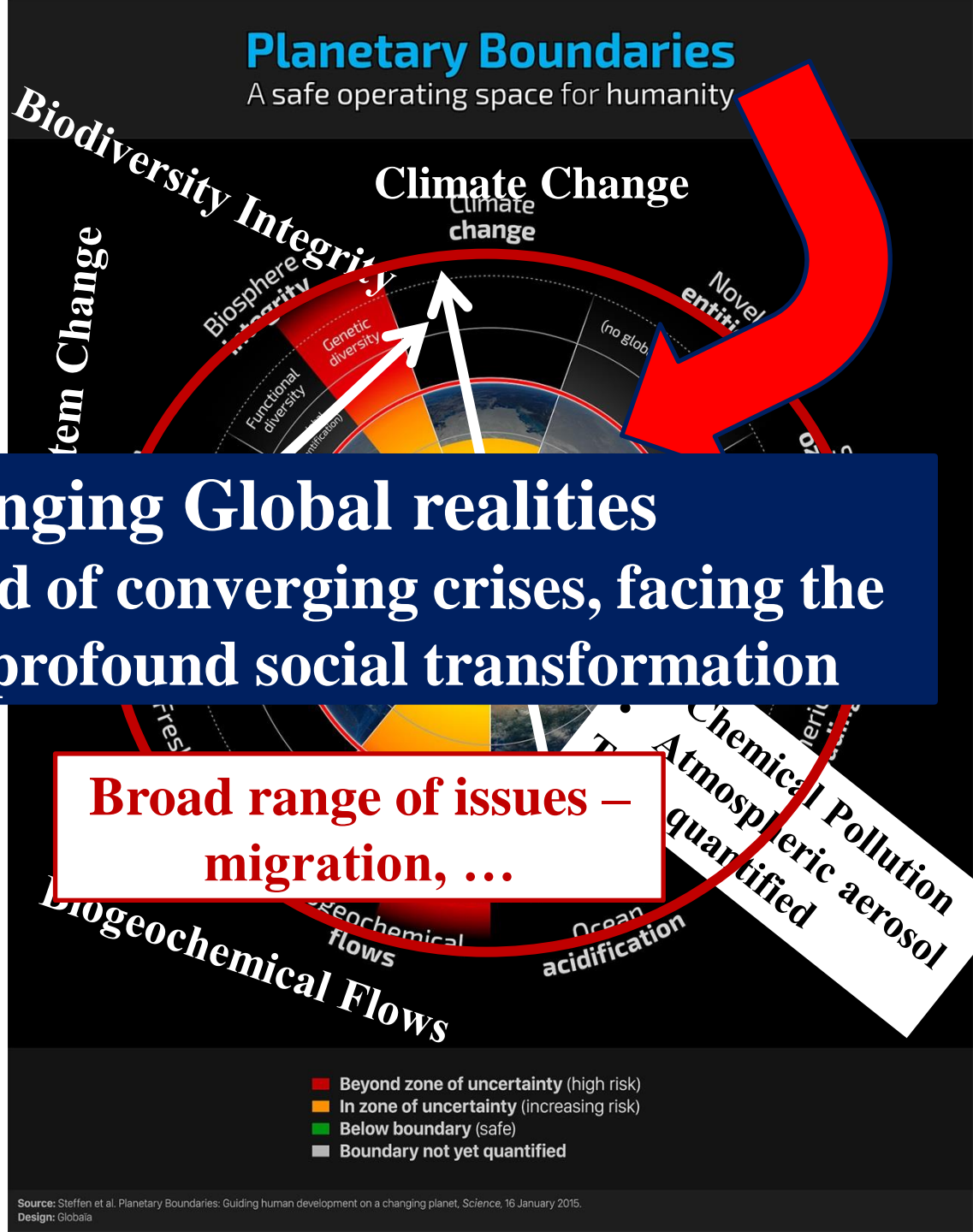
We have entered the Anthropocene—Age of Humans



Challenging Global realities
Living in a world of converging crises, facing the imperative of profound social transformation

How...
Global “tipping” points?
What actions can turn us back?

These are critically important policy issues for societies and governments.



Policy Issues for Governments

**Disaster
Risk
Reduction**

**Population
Migration**

**Poverty
Health**

**Development
Local to
Global**

**Climate
change**

Policy Issues for Governments

**Science-based
Information**

**Global Security
Cultures and Societies**

Disaster

**Population
Migration**

Challenging science policy and practice
Time to create the ‘conditions of possibility’,
to support science for a resilience, sustainable and
just world

**Sustainable
Development
Goals**

**Climate
change**

**UNFCCC
COP21**



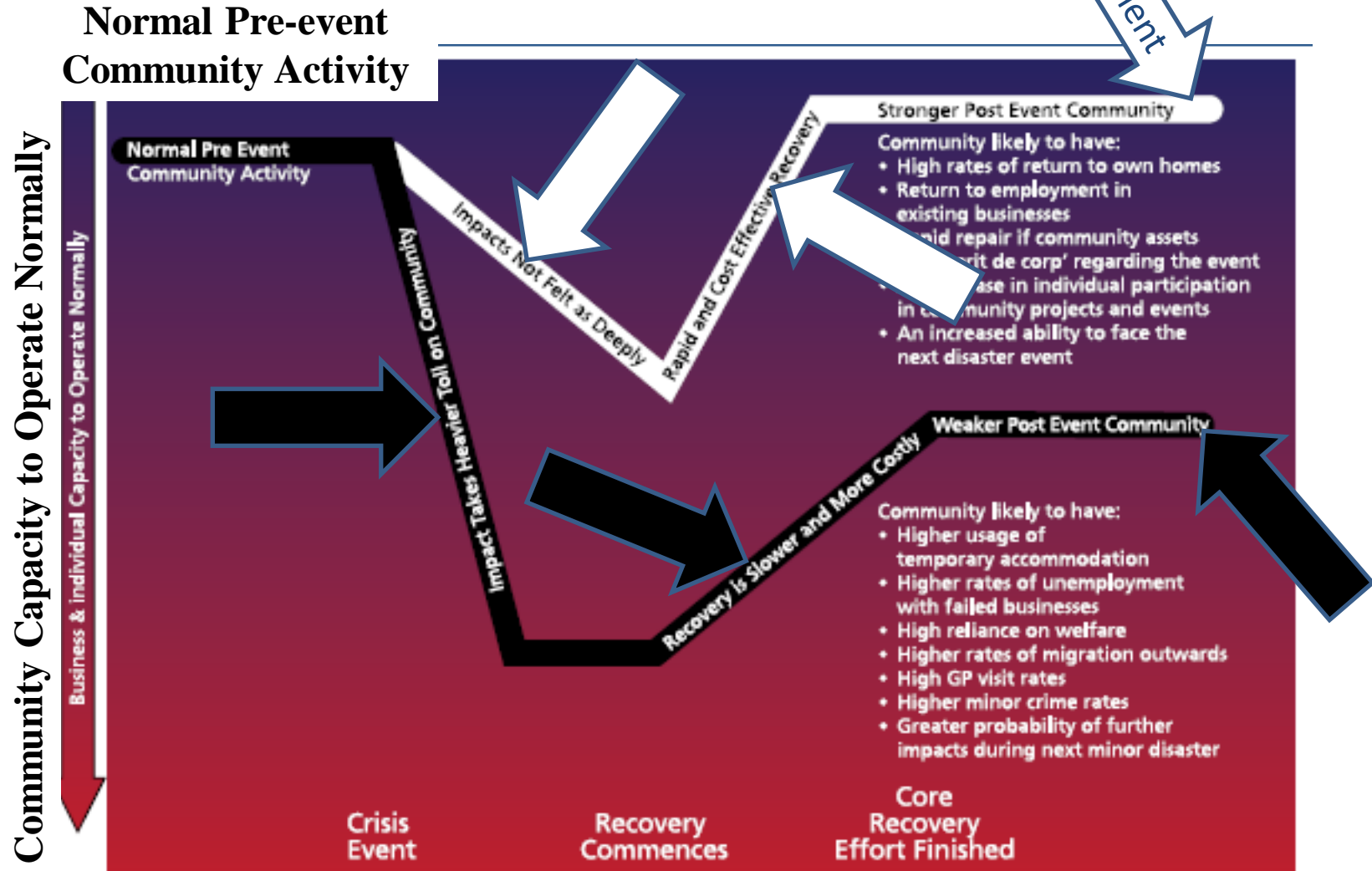
Disasters

- **A disaster - serious disruption of the functioning of a community or a society causing widespread human, material, economic or environmental losses which exceed the ability of the affected community or society to cope using its own resources.**
- **The number of disasters is increasing**

A RESILIENT SOCIETY

Expectation of Hazard – some impacts inevitable

Resilience - Ability to “bounce back” – recover quickly and enhance post event community



Impacts from hazard events depend on:

Nature and severity of event



Vulnerability:
predisposition of community to be adversely affected

Exposure

Disaster Risk

Resilience – building it across communities

1. Build on international agreements
2. Take systems approach
3. Consult with communities, stakeholders, ...
4. Join and strengthen existing research

Sendai Framework for Disaster Risk Reduction 2015-2030

- ..., there is a need for focused action within and across sectors by States at local, national, regional and global levels in the following four priority areas:
 1. **Understanding disaster risk;**
 2. **Strengthening disaster risk governance** to manage disaster risk;
 3. **Investing in disaster risk reduction for resilience;**
 4. **Enhancing disaster preparedness for effective response, and to “Build Back Better” in recovery, rehabilitation and reconstruction.**
- **International Conference – action plan - Jan. 2016, Geneva.**

1. **End poverty in all its forms everywhere**
2. **End hunger, achieve food security and improved nutrition and promote sustainable agriculture**
3. **Ensure healthy lives and promote well-being for all at all ages**
4. **Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all**
5. **Achieve gender equality and empower all women and girls**
6. **Ensure availability and sustainable management of water and sanitation for all**
7. **Ensure access to affordable, reliable, sustainable and modern energy for all**
8. **Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all**

9. Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation

10. **Reduce inequality within and among countries**

11. Make cities and human settlements inclusive, safe, resilient and sustainable

12. **Ensure sustainable consumption and production patterns**

13. **Take urgent action to combat climate change and its impacts***

14. **Conserve and sustainably use the oceans, seas and marine resources for sustainable development**

15. **Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss**

16. **Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective accountable and inclusive institutions at all levels**

17. Strengthen the means of implementation and revitalize the global partnership for sustainable development



An integrated approach to research on disaster risk through: an international, multidisciplinary (natural, health, engineering and social sciences) collaborative research programme.

Objectives:

1. ... hazards, vulnerability and risk
2. Effective decision making ...
3. Reducing risk and curbing losses ...

IRDR International Centres of Excellence – ICOE (4 of 8)

- **Vulnerability and Resilience Metrics**, U.South Carolina, USA
- **Community Resilience**, Massey University, NZ
- **Risk Education and Learning**, Partners Enhancing Resilience for People Exposed to Risks Consortium, Stellenbosch University, SA
- **Disaster Resilient Homes, Buildings and Public Infrastructure**, ICLR, Western University, CA



Goal:

To provide the knowledge required for societies in the world to face risks posed by global environmental change and to seize opportunities in a transition to global sustainability



INTERNATIONAL
COUNCIL
for SCIENCE



STS Forum SDSN

Dynamic Planet



- **Approaches and Models**
projecting environment
drivers
societal system
observing
- **States and Trends**
explaining thresholds
understanding
- **Critical Zones**
coasts
tropical forests
polar regions

Transformations towards Sustainability











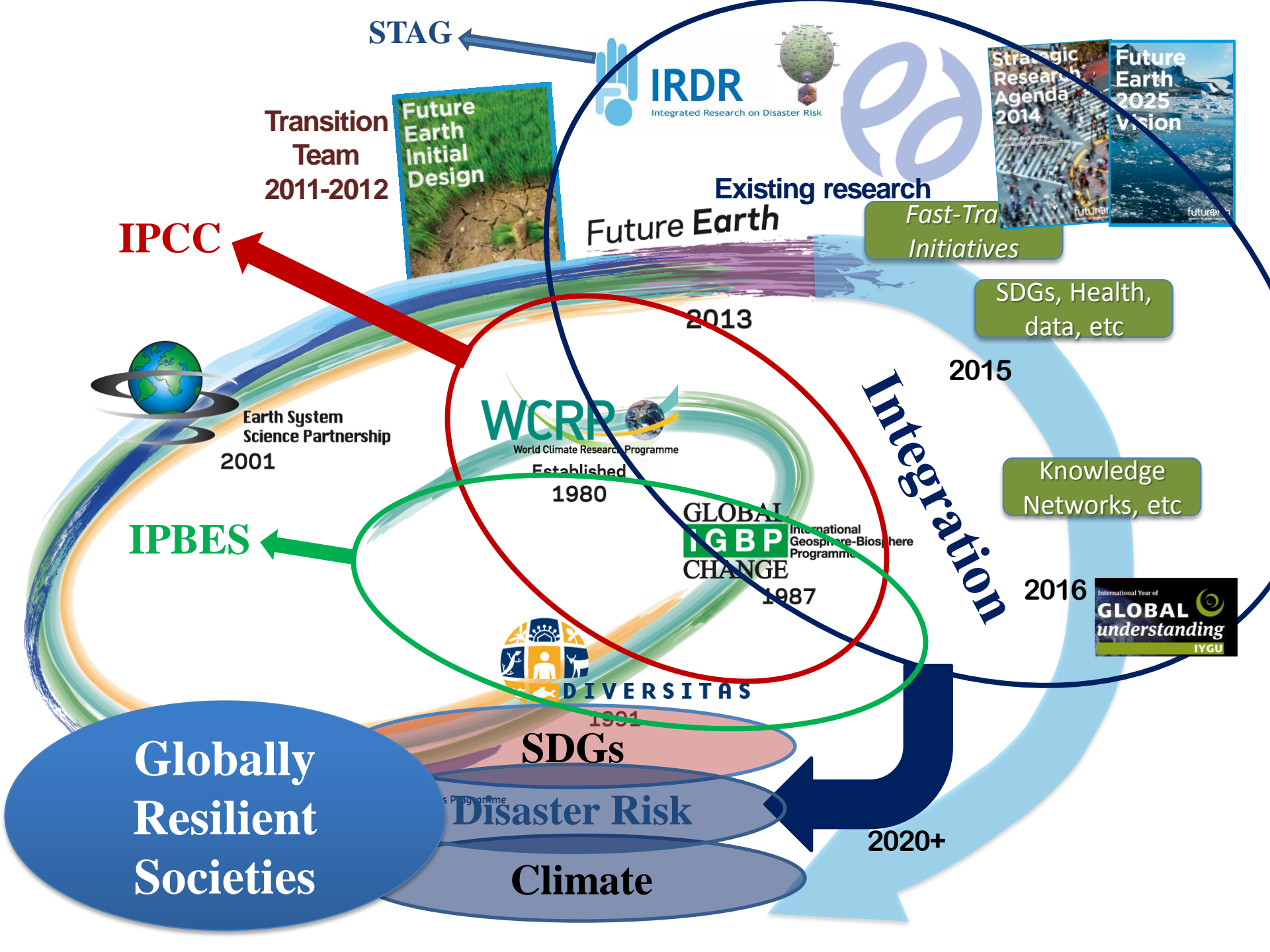
- **Transformation process**
decision making
economy
mega-cities
development options
- **Innovation and ideas**
trade-offs
emerging technology
assessment of policies
- **Global and regional governance**
international law
incentives
regional enforcement

Global Development



- **Stewardship of resources**
clean air
mining
materials
biodiversity
- **Ecosystem services**
Trade-offs
climate change
fisheries
- **Equitable access**
food security
water availability
healthy environment

Challenges	Themes	Dynamic Planet	Sustainable Development	Transformations to Sustainability
1. Water, food, energy for all			Food and the nexus	
 2. Decarbonise socioeconomic systems		Future Oceans		
3. Safeguard natural assets			Natural assets	
4. Build healthy, resilient cities			Future cities	
 5. Sustainable rural futures				
6. Improve human health under GEC			Future health	Transfor mations
 7. Sustainable consumption and prod'n				
 8. Social resilience to future threats				
		SDGs		



STAG



Transition Team 2011-2012



Existing research
Future Earth

Fast-Track Initiatives

SDGs, Health, data, etc

IPCC



Earth System Science Partnership 2001

WCRP
World Climate Research Programme
Established 1980

GLOBAL IGBP CHANGE
International Geosphere-Biosphere Programme 1987

Integration

Knowledge Networks, etc

IPBES

DIVERSITAS 1991

2016
GLOBAL understanding
IVGU

Globally Resilient Societies

SDGs

Disaster Risk

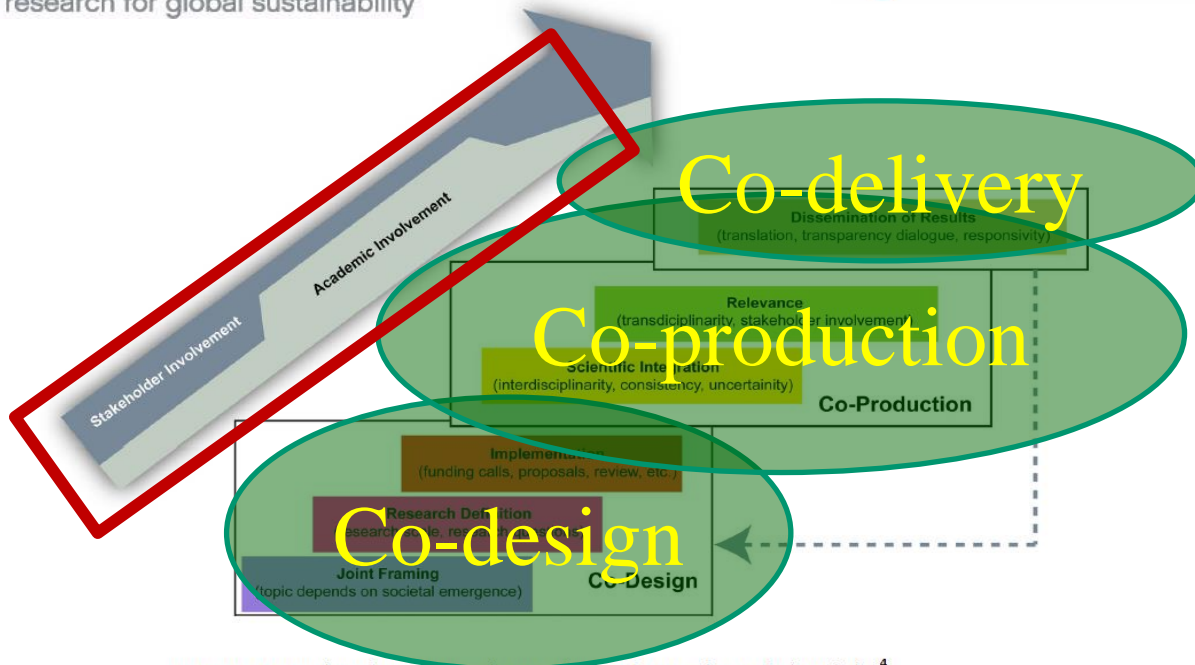
Climate

2020+

Fostering co-design, co-production and co-delivery of knowledge – linking the science and policy-stakeholder communities - the Future Earth approach across integrated science programs



**URBAN HEALTH
AND WELL BEING**



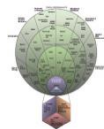
**Science for
Policy and
Communities**

Figure 1: Steps and involvement in co-design and co-production of scientific knowledge ⁴

Integrating Science – across disciplines, issues, nations and organizations – addressing issues

We need to address issues of intergenerational and international equity.

Evidence-based policies for Building Resilience in a Changing World – for all nations around the globe.



**Thank you for
your attention**