

# Major Group Position Paper

## The Scientific & Technological Major Group's vision and priorities for the Sustainable Development Goals

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### Introduction

This short position paper details the Scientific and Technological Community Major Group's vision and priorities - including themes, goals, targets and indicators – for the Sustainable Development Goals (SDGs) and the wider post-2015 development agenda and the High Level Political Forum (HLPF). It forms part of the European Commission-funded multi-stakeholder engagement programme "[Sustainable Development 2015](#)" (*SD2015*). This paper provides an opportunity for the Major Group to communicate and consult on its position as a basis for ongoing stakeholder engagement, capacity building and advocacy.

The paper sits alongside similar position papers authored by the other Major Groups. A synthesis report of these position papers is provided by Stakeholder Forum in order to identify common priorities and important differences across the Major Groups' positions and compare them with the [Open Working Group on Sustainable Development Goals' \(OWG\) 'focus areas'](#), published in February 2014. The review will be used as a basis for engagement between the Major Groups and the OWG, and to establish priority clusters for further coordination and advocacy work on those themes. The individual papers will be updated by the respective Major Groups in September 2014 following a series of global and regional capacity building, outreach and advocacy exercises under the *SD2015* programme.

ICSU, ISSC and the World Federation of Engineering Organisations (WFEO) are organising partners of the Science and Technology Major Group. This paper is a joint position statement from ICSU and ISSC.

ICSU and ISSC are committed to enhancing the contribution of science to sustainable development. In particular, they strive to foster international collaboration among global scientific and technological communities, facilitate inputs from the scientific community to international policy processes such as the SDGs, and promote dialogue and mutual understanding between the science and policy communities and other stakeholders, with a view toward strengthening evidence-based approach to achieving sustainable development around the world.

ICSU and ISSC draw on their large international and disciplinary memberships as well as the international scientific programmes on global environmental change and other issues that ICSU has pioneered over the past three decades as a scientific sponsor (IGBP, IHDP, DIVERSITAS and WCRP now coming together within the Future Earth initiative), as well as IRDR and the new Urban Health programme.

As used in this paper, the term "science" includes natural, social, economic, health and engineering sciences.

### Summary

Following the Rio+20 Conference, the process of defining Sustainable Development Goals represents a major opportunity to set a common framework for ambitious collective action and to embed sustainable development in the fabric of societies. To fulfil this ambition, up-to-date and rigorous science must underpin the definition, implementation and monitoring of the SDGs.

The process for establishing SDGs also allows the scientific community to demonstrate its role not only in posing problems but in identifying solutions. Science has shown in recent decades that the stable functioning of the Earth system on which human development and wellbeing depends is at risk. This not only challenges us to take urgent and coordinated action, but in doing so, to recognise the fundamental connections between extreme poverty, economic instability, social inequality, and environmental degradation.

The SDGs should be built on an integrated approach to sustainable development as opposed to the existing approach which remains centred on three 'pillars' – economic and social development and environmental

protection. Instead, an integrated approach recognises that these three domains should be nested one inside the other, emphasising that environmental degradation undermines progress on economic and human development and that people shape ecosystems, from local to global scales, and depend on them in many different ways. The complex challenges of achieving sustainable development call for more integrative and solutions-oriented research that bridges disciplines and strengthens the role of science in society.

This position paper considers the following priority themes and issues discussed by the UN Open Working Group between March 2013 and February 2014 for which ICSU and ISSC have prepared specific inputs:

- Disaster risk reduction
- Cities
- Health
- Energy
- Oceans and seas
- Forests and biodiversity
- Sustained and inclusive economic growth
- Governance

Some issues not listed above - such as food security, climate change mitigation and adaptation, and water - are also of critical importance for the SDG framework and were the focus of high-profile international research presented at the Planet under Pressure conference (<http://www.icsu.org/rio20/policy-briefs/policy-briefs-for-a-planet-under-pressure-1>).

## Our position

We have entered the Anthropocene, in which pressures resulting from human activity pose threats of abrupt and irreversible changes to our planet. **Sustainable development requires the pursuit of poverty eradication, social equity, human dignity and wellbeing for all while safeguarding the carrying capacity of the life-support systems on Earth.**

Stable functioning of the Earth's interconnected systems (atmosphere, oceans, forests, waterways, etc.) is a prerequisite for stable human development. This implies a recognition of the fundamental biophysical thresholds that determine the planetary conditions under which human societies can thrive and the development of a systems approach to the framing of goals as well as to the science that will underpin the implementation of these goals. It also implies that environmental changes cannot be tackled in isolation from the economic, social, political and cultural factors that shape our values, behaviours, practices and lifestyles.

In developing the post-2015 development framework and goals for sustainable development, the international science community also calls for:

- Goals and targets that are carefully crafted to form a **coherent framework** that is both flexible and comprehensive, integrating the three dimensions of sustainable development and explicitly capturing the **connectivity between natural and social processes**. Goals and targets should be limited in number to provide the necessary focus for action.
- The grounding of the formulation, implementation and monitoring of the SDGs on the continuously **growing body of scientific evidence**, especially on the magnitude and pace of global environmental change and its social consequences.
- A unified, universally applicable framework for the SDGs focusing on the wellbeing and security of people and the planet. This framework must, simultaneously, fully **account for the great diversity** in socio-economic development and bio-physical specificities of countries worldwide.
- **Integration** of the three dimensions of sustainable development – economic, social and environmental – across the framework of the SDGs. This must include both the identification of targets and indicators that

integrate multiple domains of sustainability and development within particular thematic goals and the identification of targets and indicators which can usefully be associated with several goals.

- A commitment to the need for **integrated and solutions-oriented research** that supports a transition to sustainable development. In this regard, the **Future Earth** initiative launched at the Rio+20 Conference by a partnership of organisations including ICSU, ISSC, the Belmont Forum of funding agencies, UNESCO, UNEP, UNU and WMO is a major step forward. Future Earth will build and integrate knowledge across scientific fields, co-design and co-produce research with relevant stakeholders and support a transformative agenda for sustainable development.
- Recognition and use of **international legal instruments** such as the Conventions on Climate Change and Biological Diversity in implementing SDGs to avoid redundancy and a lack of coherence between parallel processes covering the same thematic area.
- Involvement of the **intergovernmental scientific assessments** for climate change, biodiversity and ecosystems services in providing a sound scientific basis for the implementation, monitoring and possible future revisions of the goals. For example, the Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES) can help incorporate knowledge on the complex relationship between ecosystem services and human society in the SDG framework.
- The definition of **measurable** targets and indicators for each goal – in recognition of lessons from the MDGs - to ensure that the SDGs provide a framework for action that can be implemented from global to local scales and that progress towards achieving the goals and targets can be effectively monitored. This will require attention to data collection and management, as well as strengthening terrestrial and marine observational capacity and coordination.

## Goals and Targets

Scientists convened by ICSU have developed policy briefs covering a range of issues discussed by the Open Working Group during its initial stock-taking phase available at: <http://www.icsu.org/science-for-policy/sustainable-development-goals-1/open-working-group>. We summarise some of the key sustainability challenges as well as recommendations and examples of targets.

### Disaster risk reduction

Disasters, development and poverty are intimately linked. Destruction of assets and livelihoods caused by disasters sets back hard-won development gains and worsen poverty, often for extended periods of time. Progress towards reducing poverty may be reversed in the face of a disaster event and poverty re-entrenched. Disaster impacts are growing, amplified by rapid growth and unsustainable development practices that increase the exposure and vulnerabilities of communities and capital assets. There is a growing recognition that the reduction of disaster risks is a foundation for sustainable development and a cross-cutting issue requiring action across multiple sectors.

Targets and indicators could draw on the Hyogo Framework for Action (2005-2015) as well as the growing research on measures of vulnerability and resilience.

### Cities

Cities are increasingly becoming the central nexus of the relationship between people and nature. They dominate demands on energy and natural resources such as water and agricultural land, with knock-on effects on ecosystem services, and are the main sources of global environmental impacts. Urban expansion is occurring rapidly in areas adjacent to biodiversity hotspots, and faster in low-elevation, biodiversity-rich coastal zones – which are also highly vulnerable to climate change and to disaster risk. Goal-setting must take into account the many complex multi-dimensional and cross-scale interactions between urbanisation and the environment.

Moreover, urban areas are globally interconnected, linking together people and places, and anchoring flows of resources, goods, services, information, and, indeed, people themselves. Individual cities cannot therefore be considered 'sustainable' without acknowledging and accounting for their dependence and impacts on ecosystems, resources and populations from both adjacent rural areas and other regions of the world.

### Health

As cities hold an ever-growing proportion of the total human population, so they have become the predominant influence not only on health and wellbeing, but on global environmental change. Urban environments affect health through such factors as exposure to pollutants, safety, crowding, shelter and sanitation, levels of physical activity, food choices, and social connection and participation.

Sustainability and health should be embedded in the SDG framework including through individual targets and indicators related to urbanization. Targets related to urban health might address integrated sanitation and waste management, transitions to more sustainable urban consumption and production, access to essential services, improved urban planning and reduction of commuting time, increased use of active transport modes (i.e., walking, cycling, mass transit), and transitions to cleaner, lower-impact energy sources, among other factors.

### **Energy**

Adequate availability and sustainable use of energy can provide positive outcomes for economic development and human wellbeing (i.e. facilitate access to food, water, health services). At the same time, energy choices can have negative impacts on health, water and air quality and are currently a major contributor to anthropogenic climate change.

A rapid transformation of energy systems worldwide is required if energy systems are to be affordable, safe, secure and environmentally sound. Such transformation requires large-scale deployment of energy efficiency, renewable energies and low-carbon technologies as well as policies and incentives mechanisms to support rapid innovation. Developed countries face the challenge of decoupling energy use and greenhouse gas emissions while developing and least developed countries face the challenges of ensuring universal access to energy services as well as an opportunity to leapfrog to cleaner and more efficient technologies.

Specific targets could include:

1. Universal access to energy services by 2030.
2. Doubling the rate of energy intensity improvements by 2030.
3. Doubling the contribution of carbon-free energy sources by 2030.
4. Stabilizing climate change at 2°C by 2100.
5. Increasing energy security and eliminating air pollution.

### **Oceans and seas**

The ocean covers two thirds of our planet's surface, hosts the largest connected ecosystem, regulates our climate, allows for global trade and provides numerous essential life supporting services and provisions such as oxygen, food, materials and cultural services.

The SDG framework should recognise the importance of healthy, productive and resilient ecosystems for poverty alleviation and sustainable development. It provides an opportunity to encourage sustainable use of ocean resources in development, secure the ocean's life supporting functions and provide an effective governing framework.

Specific targets on Ocean and seas could include:

6. Provide equitable access to ocean resources
7. Implement adequate observing and information systems
8. Harmonize ocean and coastal governance
9. Establish marine protected areas covering 20% of the oceans
10. Improve ocean literacy and scientific technical capacity

### **Biodiversity and Forests**

Biodiversity and ecosystem services make fundamental contributions to human wellbeing and sustainable development. Biodiversity is the variety of genes, species and ecosystems including a wealth of ecosystem functions and processes. It yields direct and indirect benefits that support human and societal needs of poorer and richer nations, such as health, food, water, energy; climate regulation; cultural services; and provides an environmental

adaptive capacity that secures current and future generations from impacts of global change. Biodiversity is, by excellence, a cross-cutting issue of all dimensions of human wellbeing.

Biodiversity related targets should build upon the Aichi Biodiversity targets and could also include:

11. Maintain fishing effort within safe ecological limits (within multi-species maximum sustainable yield)
12. Maintain hydrological flows in ecosystems without crossing ecological boundaries.
13. Restore at least 15% of degraded land to enhance biodiversity and contribute to carbon sequestration, climate adaptation, and combat desertification (derived from the Aichi Target 15).
14. Include inclusive wealth accounting into measures of overall socio-economic progress.

Forests contain over 80 % of the world's terrestrial biodiversity and play a critical role in providing many ecosystems services such as water conservation, soil protection and carbon storage. Besides, they bring a major contribution to food security, the development of medicines and quality of life.

Targets could include:

15. Increase global forest and tree cover.
16. Increase climate change mitigation benefits from forests.
17. Enhance contribution of forest and trees to food security, nutrition and human health.
18. Increase contribution of forests to a green economy, including renewable energy.
19. Conserve and enhance forest-related biodiversity

### **Inclusive wealth**

While sustained and inclusive growth – or the multitude of related concepts including green economy - has been called for in the process leading up to the Rio+20 conference and for meeting the MDGs, it confines development to income and material prosperity, or at best incorporates some aspects of well-being including education and health. The notion of inclusive wealth goes further and emphasises the multiple dimensions of well-being, and the need to manage and sustain the determinants of well-being, i.e. the environmental (ex: forests and biodiversity), human (ex: education and health) and produced capital (ex: building and roads) that form the productive base of an economy over time.

Such an inclusive wealth approach has far-reaching implications including for national accounting systems that should be revised to complement the present focus on flow of goods and services to include stocks of assets a country is able to build and improve, including the state of the environment and natural resources. The SDG framework should therefore recognise the importance of economic valuation for implementing and measuring progress towards sustainable development.

### **Governance**

Although governance needs to be further explored, it is clear that institutional arrangements and mechanisms as well as cooperation amongst multiple actors at different scales will play a major role in enhancing stewardship of planet Earth and its resources. In the thematic discussions, the need to improve governance of the global commons has also been emphasised.

## **Framework**

### ***Cross-cutting Issues***

- Resilience approach

As a result of the rapid expansion of the extent and intensity of human activities, the world faces rapid global and regional change generating more frequent social and environmental stresses, shocks and surprises. We must maintain the world's capacity to buffer these changes so that humans can adapt and where necessary respond in sustainable and transformative ways. A resilience approach can help draw attention to the need to foster capacity of social and ecological systems to cope with change, adapt and transform.

- Capacity building and capacity mobilisation

Addressing sustainable development challenges requires mobilising and building capacity where there are gaps to produce relevant knowledge, make the best use of available knowledge, and innovate in designing solutions. Areas where capacities should be strengthened include inter- and trans-disciplinary research for sustainable development, and the translation and use of scientific evidence by policy-makers and other groups.

- Stakeholder engagement and integration of different knowledge systems

Involvement of relevant stakeholders in the definition, implementation and monitoring of the SDGs has the potential to yield many benefits. Stakeholders such as business and industry, indigenous people or NGOs have knowledge and expertise on a range of issues relevant to sustainable development. In addition, stakeholder involvement in the SDG processes will contribute to build ownership of the goals by the public at large, increasing chances of success and reflecting the ambition of the goals to be truly universal.

## Monitoring and Evaluation

Progress towards achieving the goals and targets need to be monitored regularly (at least once a year) against a clear set of integrated and scalable indicators that can guide action from the global to the local scales. This will require a consistent monitoring and evaluating framework as well as consistent and comprehensive datasets in all regions of the world.

Monitoring and evaluation should not only focus on progress of individual goals but also look at the potential synergies and trade-offs between the goals. A lot of the linkages across goals are unknown or remain uncertain; science has a leading role to play in researching and making explicit these interdependencies.

Whilst we emphasise the importance of measurability of SDG targets to track progress and mobilise action, monitoring and evaluation should also encompass context-sensitive and qualitative analysis of the broad social dimensions of sustainable development, i.e. the behaviours and practices that drive environmental change, the values and beliefs that underlie such practices and behaviours, and the economic, political and cultural systems in which they are embedded.

## Conclusion

At this critical juncture, the scientific community offers this contribution to help define a set of SDGs. Going forward, the scientific community would like to continue its active engagement in the process in the following ways:

- Continue supporting the intergovernmental process to define a set of goals and reach agreement among governments.
- Upon approval of the SDGs, provide full support to the implementation and monitoring of SDGs, including through identifying and addressing gaps in scientific knowledge and capacities.
- In this context, support the High Level Political Forum's substantive work especially around the review of progress made on the implementation of the SDGs and in due time, their possible revision. ICSU and ISSC welcome a partnership to provide long-term substantive inputs to HLPF and relevant UN secretariats, beyond *ad-hoc* contributions to meetings.
- Undertake new solution-oriented research directed at better understanding the pressures on the global commons and the potential impacts for societies; the cross-scale interactions between food, water, biodiversity, energy and ways to foster better stewardship and more equitable access to resources; and the systemic changes (institutional, technological, behavioural, etc.) needed to advance human development within the ecological limits of the planet. The Future Earth initiative brings together many scientific and stakeholder communities to address these questions.

Defining sustainable development goals poses challenges of coherence, integration and implementation. The scientific community believes that the SDGs have the potential to guide a truly transformative agenda, combining economic and social development and environmental stewardship.