



A Guide for Merit-Based Academies

FOREWORD AND ACKNOWLEDGEMENTS

The InterAcademy Partnership (IAP) is a global network of science, medical, and engineering academies that work together to support the role of science in seeking solutions to the world's most challenging problems. In 2016, IAP for Research, a component of the Partnership, launched a new project on Improving Scientific Input to Global Policymaking: Strategies for Achieving the Sustainable Development Goals (SDGs). An international Working Group is undertaking the project with financial support from the Carnegie Corporation of New York. Annex A contains a roster of Working Group members and the Project Secretariat.

A key objective of the project is to strengthen the global science community's capacity to support the implementation of the SDGs, with a focus on how the science academies can play their part in this system. In the first year of the project, the Working Group has heard insights and perspectives from a range of global experts, and participated in a variety of events related to the role of science, technology, and innovation (STI) in supporting the SDGs. They have familiarised themselves with the structures, mechanisms and processes the United Nations (UN) has established for incorporating STI input into SDGs implementation.

At the same time, the Working Group has been keen to learn more about the actual and aspirational role of the academies in supporting the SDGs. A survey of senior and young academies was conducted to gauge their awareness of, and engagement with, the SDGs and the structures supporting them. Survey responses indicated there is considerable variation among academies and individual scientists in their understanding of how the SDGs are being implemented. As a consequence, the Working Group has compiled this short guide and plans to share examples of good practice in 'academies' supporting the SDGs, and develop complementary resources, such as a database of SDG-relevant academy initiatives. Its progress and eventual final report (expected in early 2019) can be found on the IAP for Research website¹.

Rigorous peer review is a hallmark of IAP for Research studies and other products, and is overseen by the IAP for Research co-chairs. We would like to thank the following reviewers for their constructive comments:

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(i) - <http://interacademies.org/>



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1. Introduction

Science is vital for supporting a wide range of global policy objectives, many of them included in the 17 Sustainable Development Goals (SDGs) [1] endorsed by the UN in 2015. Many scientists throughout the world are already involved in the implementation of these global goals, in various capacities; but there is both need and opportunity for many more to engage. A recent survey [2] of senior and young national science academies, which represent some of the best scientific expertise in their countries, has indicated that there is relatively poor awareness and understanding of the SDGs.

This short guide is a product of an InterAcademy Partnership (IAP) project [3] (2016-2019) on global policymaking. The project is framed around the global science community's contribution to the SDGs, with particular focus on the academies. It engages IAP member academies, national young academies and the Global Young Academy (see Annex B) with three core pillars: mobilisation, capacity building and collaboration.

The purpose of the guide is threefold:

1. to raise awareness of the SDGs amongst the global science community and its leaders, in particular, members of national academies;
2. to improve their understanding of how the SDGs are being implemented; and
3. to encourage scientists and academies to support the SDGs more effectively.

The guide is not intended as an exhaustive list of all networks, institutions and programmes supporting the SDGs; rather as a stimulus for academies to have conversations internally, with each other and with other stakeholders, including policy-makers, and as a "call to action" for academies to get involved.



2. What are the SDGs?

The SDGs are a well-articulated, globally adopted framework with a high impact, high stakes agenda: they are the blueprint for the future well-being of the planet and its people. Adopted by all UN Member States [\[4\]](#) and coming into force on 1 January 2016, the 17 Sustainable Development Goals (SDGs) [\[5\]](#) of the 2030 Agenda for Sustainable Development [\[6\]](#) provide a 15-year aspirational framework oriented around people, planet, prosperity, peace and partnership.

Whilst building on the Millennium Development Goals [\[7\]](#), the 17 SDGs place a stronger emphasis on human rights and inclusion of all, and endeavour to balance the economic, social and environmental dimensions of sustainable development. Unprecedented in scope and significance, they are also called the Global Goals, a distinguishing feature being their universality. They are applicable to all, taking into account different national realities, capacities and levels of development, and respecting national policies and priorities. They call for action by all countries, whether poor, rich or middle-income, to promote peace and human well-being whilst protecting the planet. They acknowledge that poverty reduction must run in parallel with strategies that build sustainable and inclusive economic growth and strong institutions, and they address a range of social needs including education,

health, gender equality, reduced inequalities, and job opportunities, while tackling climate change and environmental protection. Multiple targets [\[8\]](#) underpin each goal – 169 in total. These targets will be monitored through a set of 232 internationally agreed indicators [\[9\]](#) set by the UN Statistical Commission, over a third of which are classified as “Tier III” [\[10\]](#) i.e. with measurement methodology and standards being (or to be) developed and tested.

The SDGs were shaped following the largest consultation programme in UN history. Mandated by the UN, an open working group [\[11\]](#) of representatives from 70 countries drafted the goals, drawing on a series of “global conversations”. These included 11 thematic and 83 national consultations, door-to-door and online surveys, and enabled more than 5.7 million people from low- and medium- HDI (human development indicator) countries to participate.

Whilst they are not legally obligated to do so, UN Member States are expected to take ownership and establish national frameworks for the achievement of the 17 SDGs. Countries have the primary responsibility for follow-up and review of the progress made in implementing the goals. These national-level analyses inform regional follow-up and review, which in turn inform follow-up and review at the global level.

3. Why should academies support the SDGs?

There is a strong rationale for academies and the wider scientific community to engage on the SDGs. All UN Member States are committed to their delivery and have undertaken to align and integrate national priorities with global commitments, so that the SDGs are mainstreamed within their countries. This means that national research agendas and policy priorities will, if they don't already, reflect these global goals. As an important part of their national science systems, academies have a role to play in facilitating this process, drawing on the wealth of expertise in their membership.

Where they exist, regional research and policy agendas are undergoing similar realignment. For example in the European Union [12], the SDGs are becoming the reference framework for Horizon 2020 [13], the largest single multinational research fund in the world, and for shaping development cooperation with partner countries through the new European Consensus on Development [14]. Similarly, the Association of Southeast Asian Nations (ASEAN) [15] is exploring complementarities between the SDGs and its Vision 2025 roadmap [16].

The SDGs necessarily engage many different departments / ministries within any one government; these ministries will need the tools and

agencies for managing and reviewing the integration of the goals into their day-to-day business, and for devising and implementing policies and programmes to achieve them. Academies can provide expertise to put the SDGs into context and explain their importance, causes and trajectories; help devise monitoring and evaluation frameworks and identify gaps, complementarities, synergies and trade-offs across SDGs; explain complex or big data; facilitate the sharing of knowledge through open science; help develop national science, technology and innovation (STI) roadmaps/action plans; promote and practice interdisciplinary and collaborative work; and provide independent assessments of what is working and what is not, in order to advise policymakers and hold them to account.

The realisation of the SDGs will require the best minds, resources, business models and innovations from all sectors and disciplines, and across all generations. The academies can play their part in national, regional and global systems as recognised, independent and honest sources of expertise; as trusted and respected advisers and convenors; as advocates for investment in research and strong scientific institutions; and as mentors and partners to young scientists to help empower them to play their part.

4. How are the SDGs being implemented?

(1) At the international level

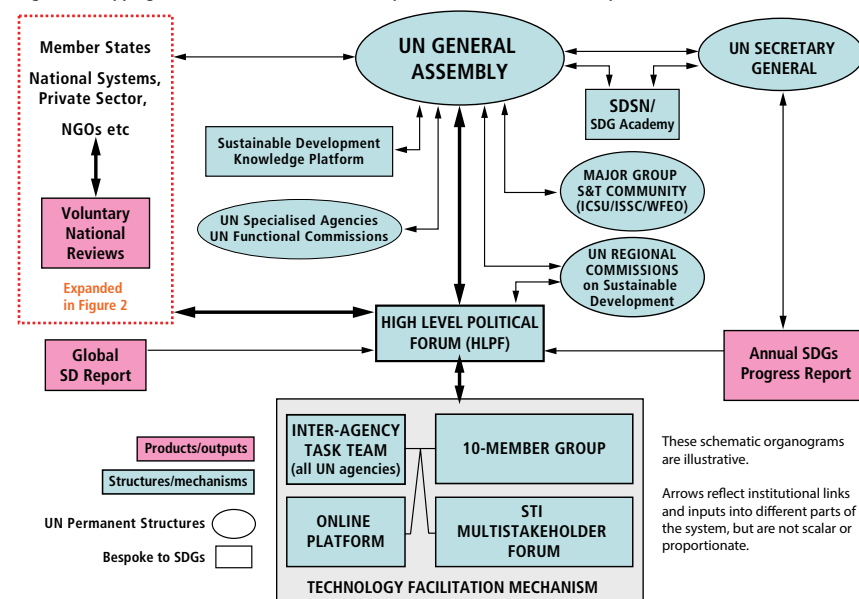
The key UN infrastructure for the implementation of the SDGs is mapped out in Figure 1, together with some of the main conduits/entry points for scientists to engage.

The UN General Assembly [17] is updated on implementation progress through the High-Level Political Forum (HLPF) [18], which meets every July at the UN Headquarters in New York. The HLPF is the central platform for follow-up and review of the SDGs, with full participation of all UN

Member States, specialised agencies and other stakeholders. The HLPF is informed by the Secretary-General's Sustainable Development Goals Report [19], an assessment of global and regional progress based on the latest available data from the global SDG indicator framework, prepared by the UN with inputs from international and regional organisations.

Supporting this Forum is the Technology Facilitation Mechanism [20] (TFM), whose objective is to enhance the effective use of STI for the SDGs, based on a multi-stakeholder collaboration between Member States, civil

Figure 1: Mapping science advice in the UN SDGs process: at the UN level (simplified)



society, the private sector, the scientific community, UN entities and other stakeholders. The TFM helps identify technology needs and gaps; share best practice on STI facilitation initiatives; and stimulate new networks and partnerships. The TFM comprises i) a UN inter-agency task team (IATT) on STI for the SDGs; ii) an annual collaborative multi-stakeholder forum on STI for the SDGs, described below; and iii) an online platform as a gateway for information on existing STI initiatives, mechanisms and programmes.

The TFM is supported by a 10-member group (appointed by the UN Secretary General for two-year terms) representing civil society, the private sector and the scientific community. Its role is to provide ideas, advice and guidance to the IATT, support the STI Forum and to facilitate the role of STI systems in delivery of Agenda 2030. The group has identified three high-level priorities: (i) actions and policies that strengthen STI capabilities and build human capacity at the individual, organizational, and political levels in every country; (ii) platforms for sharing knowledge, information, experiences and advice on relevant policies, actions, partnerships, technologies, and R&D outcomes; and (iii) mechanisms for developing national and international STI action plans.

The 10-member group has called for a transformative shift [21] in how STI is practiced, valued and rewarded: a shift from competition to greater collaboration; from working in isolated professional communities to integrated communities that provide new types of knowledge; and from the notion of working for society to working with society, openly and inclusively: in short, changing the practice of STI to focus more on the global public good.

The TFM is responsible for organising annual UN STI Multi-stakeholder Fora [22] to discuss these transformative issues and how they might be realised at individual, institutional, national and international levels. These fora are open to anyone, subject to submitting a request to participate: IAP has been represented in 2016 and 2017. The Co-Chairs' summary of the 2017 STI Forum [23] noted that: *Academies of science and related organized science groups should be encouraged to take an active role in national science, technology and innovation policy processes and in identifying needs and gaps.* [Paragraph 69]

After reporting annually (2014-2016 [24]), the Global Sustainable Development Report (GSDR) [25] will now be published every four years; the next one being prepared for the 2019 HLPF. A group of 15 scientists [26] has been tasked with its production and has put out an open call for inputs [27] from the global science community in four major areas: (1) interactions among SDGs and their targets; (2) transformation pathways towards sustainable development; (3) looking beyond the SDGs (major issues identified by research which are not explicitly taken into account in the SDGs); and (4) the role of science for sustainable development.

In addition to the structures established specifically for the SDGs, there are numerous (permanent) UN structures called "programmes and funds"ⁱ, "specialised agencies"ⁱⁱ and "functional commissions"ⁱⁱⁱ. They also contribute to the SDGs and provide a rich, if complicated, scope of engagement for academies and the wider science community. They are complicated because there are many of them and because they have very different science advisory systems and processes. For example, the UN

Environment Programme (UNEP) has its own Chief Scientist, and the UN Office for Disaster Risk Reduction (UNISDR) its own Science and Technical Advisory Group (STAG). There are also established global science assessment panels – the most prominent examples being the Intergovernmental Panel on Climate Change (IPCC) and the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES). These are included here for completeness but are not the focus of this Guide.

The Commission on Science and Technology for Development (CSTD) [28] is worth a specific mention: it is a subsidiary body of the UN's Economic and Social Council (ECOSOC) and provides both ECOSOC and the UN General Assembly high-level advice on relevant science and technology issues. The CSTD provides a platform for formulating recommendations and guidelines on science and technology matters within the UN, and seeks scientific expertise from around the world to assist with this mandate.

(i) - Examples of UN programmes and funds include the UN Environment Programme (UNEP), UN Development Programme (UNDP) and the UN Conference on Trade and Development (UNCTAD)

(ii) - Examples of UN specialised agencies include the UN Educational, Scientific and Cultural Organization (UNESCO), the World Bank (WB), the Food and Agriculture Organisation (FAO), the World Meteorological Organisation (WMO) and World Health Organisation (WHO)

(iii) - Examples of UN functional commissions include the Commission on Science and Technology for Development (CSTD), Commission on Sustainable Development (CSD) and UN Forum on Forests

The Major Group [29] for the Scientific and Technological Community – through its organising partners, the International Councils for Science (ICSU) and Social Sciences (ISSC) and the World Federation of Engineering Organisations (WFE0) – is one of the main channels for engaging scientists broadly, participating in intergovernmental processes related to sustainable development, depending on the particular topic under discussion.

The UN's Sustainable Development Solutions Network (SDSN) [30] aims to accelerate joint learning and promote integrated approaches to interconnected economic, social and environmental global challenges. The SDSN works closely with UN agencies, multilateral financing institutions, the private sector, and civil society. Its Australasia office has recently prepared a guide to the SDGs for universities [31]. The SDSN hosts the SDG Academy [32], a virtual platform providing free, high-quality, mass online education on the SDGs, and plays a role in data monitoring and accountability, including the annual SDG Index and Dashboards Report [33].

Another global resource is Future Earth's [34] Knowledge-Action Network on the SDGs [35], designed to enhance communication, promote awareness of the SDGs and the scientific challenges in delivering them, and strengthen the science-policy interface at all levels of governance.

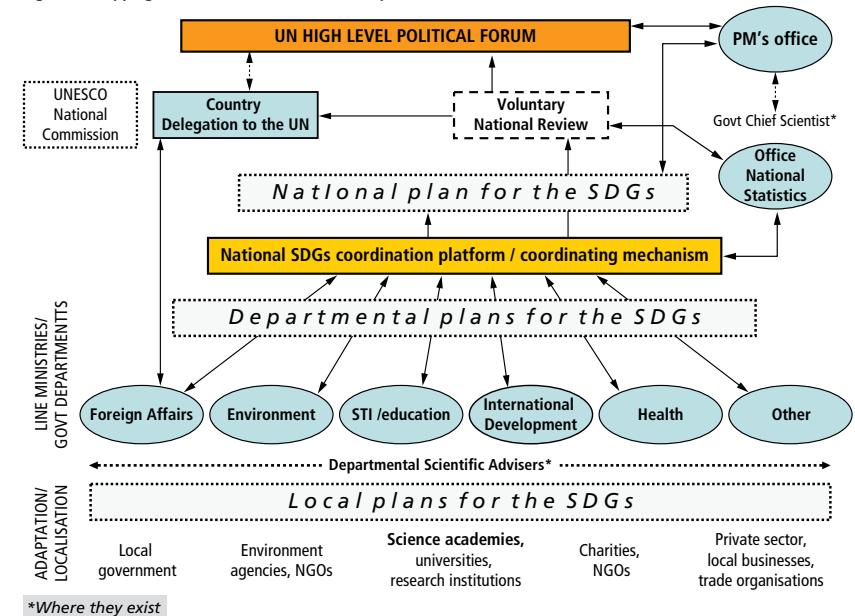
UN Regional Commissions on Sustainable Development [36] promote the SDGs through peer learning and cooperation, and providing regional inputs to the HPLF. Regional fora create spaces to share policy solutions, good practices and challenges in SDG implementation, and help identify major regional and sub-regional trends. They are open to the participation of all relevant stakeholders, including international and regional organizations, civil society, academia and the private sector. Academy networks in Africa (NASAC), the Americas (IANAS), Asia (AASSA) and Europe (EASAC) could strengthen relations with UN Regional Commissions and their Fora as platforms for supporting the SDGs.

(2) At the national level

Figure 2 provides an illustration of how the SDGs could potentially be implemented at the national level, together with some of the main conduits / entry points for scientists to engage.

In many countries, the lead government ministry/department for the SDGs is Foreign Affairs or the equivalent, which will lead UN negotiations and country reporting; but a wide range of other ministries and agencies will be responsible for the implementation of the goals. The extent to which these processes are coordinated at national, departmental and local (e.g. sector, city, state) level is country-dependent.

Figure 2: Mapping science advice in the UN SDGs process: at the national level (illustrative)



Arrows reflect institutional links and inputs into different parts of the system, but are not scalar or proportionate.

One process common to all UN Member States is the “Voluntary National Review” [37] (VNR), where countries voluntarily undertake to inform the HLPF on their progress in implementing the goals nationally. In the first three years of implementation (2016-2019), more than 110 countries are expected to present their VNRs at the HLPF, some more than once. The purpose of a VNR is to facilitate the sharing of experiences, including successes, challenges and lessons learned, in national implementation; to strengthen government policies

and institutions; and to mobilise multi-stakeholder support and partnerships. The UN secretariat is making efforts to standardise these reviews so that they include national priorities and targets; two or three examples of (i) sharing best practice, (ii) challenges encountered, and (iii) areas where support is required; review methodology – who was involved, who was consulted; incorporation of SDGs in national frameworks; and a description of how they are being implemented.

Observations on the first round of reviews in 2016 suggest that VNRs can help strengthen: (i) leadership development and technical competence within governments; (ii) institutional capacity; (iii) data capacity; and (iv) national inclusion and collaboration; and stimulate national mapping work of existing capabilities and gaps. A synthesis of the 2016 reviews [38] and compilation of main messages from the 2017 reviews [39] are available online.

The VNRs provide a platform for academies to engage with their respective governments, with the possibility of becoming an institutionalised but independent part of the process. Countries where these VNRs have already happened, where they are ongoing, and where they are committed for future years are listed online [40], together with reviews already completed by various countries.

5. How can academies support implementation of the SDGs?

National science academies are well placed to be (i) providers and/or conduits for independent science advice at national, regional and global levels; and (ii) agents for capacity building and change in national science systems to help support implementation of the SDGs.

Where they exist, the Voluntary National Reviews are a useful starting point. They provide a government's perspective on where national implementation is working well and where there are gaps in knowledge, data and understanding of specific goals, their targets and/or indicators. Academies can use VNRs to guide their own work programmes or to challenge constructively their government's perspective: for example, bringing to their attention knowledge in a specific area or bridging systemic/institutional disconnects.

There is an increasing recognition of the need to develop national, regional and global action plans or roadmaps for STI, to underpin implementation of the SDGs. These roadmaps can help identify gaps and opportunities in skills, expertise, research needs, and financial planning and investment for the SDGs. But whilst there are numerous online documents that reference such mapping, their

translation into action is limited. Academies can help facilitate this process, not least as honest brokers and trusted convenors, but also as vital parts of their national science systems and by virtue of the way academies are organised regionally and globally.

In a 2016/17 survey of the IAP Member Academies, National Young Academies and the Global Young Academy, academies identified the following ways they can support the SDGs:

- **promoting the importance of the SDGs** across all science and technology endeavours, and engaging (sensitising) their own members, governments, parliaments, civil society, the public, academia and the private sector through open lectures, discussion and outreach programmes;
- **providing advice to governments** directly or through other appropriate sources, helping them to interpret, prioritise and implement the SDGs and their targets locally, nationally and regionally;
- **nominating experts** to serve on advisory/other committees within public and private sectors;

- encouraging governments to implement coherent research policies that target basic as well as applied research in support of the SDGs;
- acting as interlocutors between policymakers and academia/research communities – the role of academies is vital in communicating evidence with policymakers, but also policy and research needs to scientists;
- convening different constituencies through workshops/meetings/fora/symposia to promote dialogue;
- preparing timely position statements, reviews, policy briefs, summaries, consultation responses and expert consensus reports from an integrated, interdisciplinary perspective in order to provide clear evidence-informed recommendations;
- working together as members of senior and young academies to complement each other's strengths in supporting the SDGs;
- further integrating different scientific perspectives and engaging different disciplines to account for scientific, social, cultural and political contexts;
- exploring trade-offs and complementarities between and across SDGs [41], and horizon scanning to identify future challenges and anticipate obstacles;
- monitoring and evaluating progress of the SDGs, including developing indicators, especially for poorly defined goals [42];
- capitalising on regional and global academy networks to identify common challenges, share best practices and promote innovative approaches.

All senior and young academies are encouraged to explore the many links and resources presented here, and to consider ways they can deploy their unique strengths to support the SDGs. For further information, please contact projects@iapartnership.org.

In summary, routes by which academies can help support the SDGs include:

- participating in the annual UN STI Multi-stakeholder Forum;
- responding to the call for input to the Global Sustainable Development Report (GSDR);
- engaging with the UN Regional Commissions through regional academy networks;
- supporting the Voluntary National Review (VNR) process nationally;
- contributing to the development of national STI roadmaps/action plans;
- providing expertise to the science-based work of the various UN structures;
- contributing to consultations routed through the Major Group for S&T;
- participating in international research, monitoring and evaluation programmes;
- reflecting the SDGs in their own (inter)academy programmes and initiatives.

Examples of ways academies are currently engaging with the SDGs

including SDGs in academy's Annual Performance Plan, Annual Report and Strategic Plan

e.g. Academy of Science, South Africa (ASSAf)

setting up expert committee on SDGs

e.g. Science Council of Japan (SCJ)

incentivising universities through SDG-focused programmes

e.g. Swiss Academy of Sciences (SCNAT)

aligning prizes / awards to SDGs

e.g. The World Academy of Sciences (TWAS)

using SDG-referenced Working Groups

e.g. Global Young Academy (GYA)

running flagship studies in SD research and developing a national STI plan for the SDGs

e.g. Academy of Sciences, Malaysia (ASM)

holding (bi) annual members' meetings on SDG-relevant themes

e.g. Thai Academy of Science and Technology (TAST)

commissioning national sustainability reports

e.g. Chinese Academy of Sciences (CAS)

organising live tv phone-ins on SDG-relevant issues

e.g. Zambian Academy of Sciences (ZaAS)

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Annex A

Improving Scientific Input to Global Policymaking: Strategies for Attaining the Global Sustainable Development Goals Working Group

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(i) National senior academies

The InterAcademy Partnership (IAP) [i] is a global network of more than 130 national and regional merit-based academies of science, medicine and engineering, together with four regional networks in Africa (NASAC) [ii], the Americas (IANAS) [iii], Asia (AASSA) [iv] and Europe (EASAC) [v]. These academies work to support the role of science in seeking solutions to address the world's most challenging problems. They endeavour to do this by harnessing the expertise of the world's scientific, medical and engineering leaders to advance sound policies, promote excellence in science education, improve public health and achieve other critical development goals.

The academies and their regional networks are keen to play a more active, interdisciplinary role in policy advice and service at a global level, and are making efforts to better integrate and streamline their work.

(ii) The Global Young Academy and National Young Academies

There is a growing movement of National Young Academies [vi] – presently 33 in the world and others planned, with 10 similar bodies in other countries. In addition, the Global Young Academy (GYA) [vii] comprises 200 members, who are leading young scientists (at the beginning of their independent academic career) from 70 countries, and 134 alumni as of 2017. Members, who serve five-year terms, are selected for the excellence of their science and their commitment to service. The vibrancy of the GYA and National Young Academies results from the energy of their members, who are passionate about the role of science in creating a better world.

URLs

- i - <http://www.interacademies.org/>
- ii - <http://nasaonline.org/>
- iii - <http://www.ianas.org/>
- iv - <http://aassa.asia/>
- v - <http://www.easac.eu/>
- vi - <https://globalyoungacademy.net/national-young-academies/>
- vii - <https://globalyoungacademy.net/>

