Annexes

Annex 1.

Outcomes and/or summaries of selected meetings held in preparation of this report

The following is a collation of the key outcomes and/or summaries of a number of meetings organized by UN DESA in the preparation of this report.

Dubrovnik Declaration - Regional perspective on the science–policy interface for a sustainable future

The Dubrovnik Declaration was adopted by the Expert Group meeting for the Global Sustainable Development Report - Future directions and formalization of network of scientific contributors, which was hosted by the Government of Croatia in Dubrovnik from 21 to 22 October 2013.

1. We, government representatives, experts, scientists and civil society representatives in Europe and the Mediterranean basin,[385] and representatives of international institutions, having met in Dubrovnik, Croatia, on October 21–22, 2013, one year after the Rio+20 Conference, have resolved the following;

2. Within the common objective of sustainable development to which we all aspire, each region faces specific challenges. We believe that acceptance of sustainable development as a paradigm and progress towards more sustainable outcomes will best be enabled by a clear recognition of this diversity of challenges and priorities at the regional and subregional levels, and a better reflection of these differences in discussions at the global level;

3. The Mediterranean, as a cradle of civilizations and a crossroads of cultures, reminds us that development must be designed so as to equitably meet the needs of present generations while preserving the right of future generations to meet their own needs;

4. During the meeting, we have identified common challenges for the next decades within our region, which include the following areas: the management and monitoring of our shared Mediterranean Sea, including the pressures imposed on it by various land-based and sea-based activities; regional economic integration and its impacts; equity, employment and social issues; education, including education for sustainable development, tourism and culture; the climate–land–energy–water nexus; and more broadly, sustainable consumption and production;

5. We agree that we need, in order to reach the future we want, implementable programmes for sustainable development. We believe that going forward; these will be best addressed through integrated, interdisciplinary approaches. In our region, these include, for example, integrated coastal zone management and sustainable consumption and production policies;

6. We acknowledge the important contribution of good governance, rule of law and human rights to sustainable development and we recognize that peace and security are critical for development and a major component of it;

7. We consider empowerment of women and girls and protection of their rights important for sustainable development;

8. This need for integrated visions, strategies, planning and decision-making requires well-functioning and healthy science-policy dialogues in our countries. Such dialogues can facilitate cooperation in the collection, management, analysis, use and exchange of scientific information, as well as the further development of internationally agreed indicators, and support the preparation of science-based advice and the development of policy options;

9. We also believe that the pool of scientific knowledge and policy experience in our region could be better utilized to benefit from each other's experiences and work more closely on topics of common interest, in particular those that require transnational cooperation;

10. We commend the efforts of the United Nations system to improve the science–policy interface for sustainable development in response to the Rio+20 mandate, and in particular the efforts to produce regular Global Sustainable Development Reports that go beyond existing assessments and integrate environmental, social and economic aspects in a way that enables easier evidence-based policy-making. We believe that such reports can contribute to improving evidence-based decision-making at all levels, including through the High-level Political Forum on sustainable development at the global level. We think that, in order for such assessments to be useful at the national and regional levels, future editions of the Global Sustainable Development Report should build on and highlight regional and subregional priorities for sustainable development, challenges and potential for collaboration on the science and policy fronts at those geographical levels;

We resolve to work closely together in the coming years to:

11. Improve our collaboration and exchanges of ideas on common challenges for the region, including those identified during the meeting, and reach out to other regional networks for that purpose in order to facilitate the implementation of a common regional dialogue platform;

12. Improve exchanges of ideas and practices among national and regional scientists and policymakers, with a view to promoting interdisciplinary dialogue and cross-fertilization for sounder policymaking at the national level;

13. Mobilize existing scientific networks in the region to: (i) provide inputs to future editions of the Global Sustainable Development Report produced by the United Nations Secretariat; (ii) ensure that the voice and unique perspective of the region is reflected in global debates on sustainable development; and (iii) transpose the outcomes of global science-policy debates on sustainable development into regionally and nationally relevant frameworks for thinking and action, in order to inform national policy-making and contribute to the implementation of international commitments on sustainable development;

We call on national Governments in the region to:

14. Facilitate science policy dialogues and promote a stronger institutionalized science–policy interface at the national level, using national expertise (such as peer reviews, impact assessments and policy evaluations) and promoting interdisciplinary approaches and policy perspectives;

15. Provide enhanced support to regional scientific networks working on common priorities for the region, in order to fully utilize the regional pool of expertise;

16. Support and strengthen interministerial policy coordination for sustainable development;

17. Engage in policy consultations for sustainable development with major groups such as economic actors and civil society organizations;

18. Regularly engage in consultations with other Governments on sustainable development policies;

We further call on the relevant regional and international institutions including the United Nations, in particular through the Mediterranean Commission on Sustainable Development, to:

19. Fully integrate regional and subregional perspectives in their analytical and policy work, technical assistance and capacity-building programmes, for example by examining more systematically the implications for regional and national policy-making of intergovernmental commitments on sustainable development taken at the global level;

20. Provide support to regional scientific networks whose work focuses on regional and subregional priorities for sustainable development, and to their interaction with policymakers;

21. Provide support to interdisciplinary exchanges targeted at building integrated visions and sustainable development strategies at the national level, in order to facilitate intra-regional capacity-building.

Chair's summary of the Beijing meeting on engaging national assessments

The following is the Chair's Summary of the "Expert Group Meeting for the United Nations Global Sustainable Development Report - Engaging National Assessments" which was hosted by the Government of China in Beijing from 12 to 13 December 2013:

1. Scientists and experts met in Beijing, China, from 12 to 13 December 2013, one year after the Rio+20 conference.

2. Many supported the global aspiration for the next two generations to eliminate poverty and hunger; to feed, nurture, house and educate nine billion people by 2050; to secure inclusive growth, equity and development, and to preserve the Earth's life-support systems.

3. During the meeting, some identified a number of common challenges for the next decades including poverty eradication, sustainable consumption and production, employment and learning, inclusive growth, income distribution, social equity and security, education, health care, science and technology innovation, urbanization, energy, water, climate change, land use and soil protection, forests, oceans and seas, marine protection and fishing.

4. Natural and social scientists have raised early awareness of emerging issues and have been suggesting sustainable development goals and targets for more than 40 years. Many of these have already been addressed by decision-makers, but more needs to be done to inform decision-makers of emerging issues that scientists consider to be currently not well represented on the agenda.

5. Scientists have suggested potential future goals and targets for the next two generations, based on existing assessments that analysed past trends and future options (see Box). Many scientists suggested that they might be considered by the OWG on SDGs to take this into consideration and to draw upon the scientific community of sustainable development scenario analysts to inform them on trade-offs and synergies between suggested goals and targets.

6. Many agreed that building this "common future we want" requires effective cooperation following the principle of common but differentiated responsibility (CBDR) at the global, regional and national levels, in particular on "means of implementation" for sustainable development such as technology, finance and capacity-building.

7. Some expressed the need to draw on the wider range of global modelling and scenario analysis capabilities, in order to assess various sets of SDGs and pathways towards their achievement, including in terms of technology and financing needs. Scenarios can also help interpret progress towards Sustainable Development Goals once agreed.

8. Some expressed the idea for the United Nations Division for Sustainable Development to provide a United Nations institutional home for SDG scenarios and global models, in order to inform the Global Sustainable Development Report in particular, and the deliberations of the High-level Political Forum on sustainable development, in general.

9. Many expressed the views that national and regional sustainable development assessments, wherever available, may be important inputs for a Global Sustainable Development Report. There are big differences in terms of national priorities under the sustainable development agenda. Developing countries continue to face a capacity challenge to synthesize lessons learned from sectoral or issue-based assessments. Developed countries need to change their unsustainable patterns of consumption and production. These national priorities, of both developed and developing countries must be adequately reflected in the Global Sustainable Development Report.

10. It was mentioned that there are thousands of international assessments that differ in terms of scope, scale, organization, process, participation, resources and perceived policy relevance. It was noted by some that the IPCC model of scientific assessments has served as an institutional model for an increasing number of assessments, including at the national level. It was also underlined that the United Nations flagship publication model has the advantages of being low-cost and having a wider stakeholder participation and plurality of views.

11. Several experts expressed the need for a regular assessment

of assessments to identify common ground and different views. The efforts of the United Nations Division for Sustainable Development to improve the science–policy interface for sustainable development were commended, including through its production of a prototype of the Global Sustainable Development Report and its readiness to continue producing regular editions of the Global Sustainable Development Report to bring together existing assessments to support evidence-based policy-making.

Box: Potential sustainable development goals/targets that have been suggested by scientists

- Eliminate extreme poverty worldwide by 2050;
- Halve the proportion of people who suffer from hunger by 2015, further halve it by 2030, and eradicate hunger by 2050;
- Universal access to improved water source and basic sanitation by 2050;
- Establish universal health coverage;
- Establish universal primary education by 2020, and universal secondary education by 2030;
- Create 63 million decent new jobs per year until 2050, achieving full, productive and decent employment for all;
- Eliminate overfishing and restore fish stocks;
- Stabilize biodiversity at the 2020/2030 level (depending on region) by 2050;
- Eliminate net forest loss and destruction of primary forests by 2020;
- Stabilize global materials (e.g. non-renewable resource) consumption at 2015 levels;
- Achieve 0.7% ODA/GNI (OECD countries), focusing on the poorest and most vulnerable countries. Mobilize resources for a global SDG fund commensurate with estimated needs by 2018;
- GDP per capita should be greater than US$10,000 (PPP) in all countries by 2050;
- Reduce the wide disparity of per capita GDP between developed countries and developing countries;
- Ensure a sustained increase in intergenerational earnings and educational mobility;
- By 2030, ensure universal access to modern energy services; double the global rate of improvement in energy efficiency; and double the share of renewable energy in the global energy mix;
- Reduce the number of slum dwellers to close to zero by 2050;
- Hold the global mean temperature increase below 2°C;
- Increase science and technology innovation capacity through knowledge-sharing and technology transfer.

Note: see also http://sustainabledevelopment.un.org/globalsdreport

12. Many experts stressed the importance for future editions of the Global Sustainable Development Report to take into account various types of knowledge (beyond peer-reviewed knowledge) and take into account the full range of perspectives, especially those of scientists in developing countries including the poorest and most vulnerable countries. To this end, a wide range of participation through multiple channels could be encouraged. The Report could also highlight national and regional sustainable development priorities and make use of new technologies and approaches. Many suggested that Governments and other relevant stakeholders consider in their deliberations the options for future editions of the Global Sustainable Development Report illustrated in the prototype Report.

13. Many suggested the idea that national Governments carry out regular national sustainable development reports that draw on the available scientific knowledge and to include all relevant stakeholders, to communicate their reports to the United Nations, and to cooperate with other Governments and other relevant stakeholders in building excellent national capacities. In this regard, the exemplary efforts of the Government of China and all others that submitted sustainable development reports were commended. Many suggested that the United Nations, donors and all relevant development partners support national sustainable development reports and related initiatives that provide ideas for improved policies.

14. Regional sustainable development reports can highlight regional priorities and support regional voices in the global deliberations. Some suggested that all Regional Commissions continue these efforts and cooperate closely with the national sustainable development report processes and with the United Nations Division for Sustainable Development.

15. The idea was expressed that all United Nations system entities integrate regional and subregional perspectives in their analytical and policy work, as well as in their technical assistance and capacity-building programmes, for example by examining more systematically the implications for regional and national policy-making of intergovernmental commitments on sustainable development taken at the global level.

16. It was suggested that the United Nations Division for Sustainable Development continue engaging with scientists, experts, Governments and civil society to undertake in-depth analysis and evaluation of trends and scientific analysis in the implementation of sustainable development, including lessons learned, best practices and new challenges, and cross-sectoral analysis of sustainable development issues. In particular, the idea was expressed that the Division continue leading the regular preparation of the United Nations Global Sustainable Development Report in an inclusive way as an entry point for the wide range of relevant scientific communities to the High-level Political Forum on sustainable development. It was emphasized that it is important to also involve younger scientists. It was suggested that the entire United Nations system and especially the United Nations Regional Commissions, UNESCO, UNCTAD, UNIDO and UNEP to join the effort.

17. Some expressed the need for national Governments to engage in the preparation of the Global Sustainable Development Report; facilitate a science policy dialogue; try to strengthen interministerial policy coordination; to provide support to scientific networks and cross-border networking for sustainable development; to cooperate with other Governments on policies, technology and finance for sustainable development; and to consider the options illustrated in the prototype Global Sustainable Development Report.

18. Most expressed the need to consider the creation of a working group or advisory group to guide the preparation of future editions of the United Nations Global Sustainable Development Report. The group could include science and technology focal points nominated by each national Government.

19. Many shared the view that it is necessary to work closely together in the coming years to actively engage in and contribute to the United Nations Global Sustainable Development Report; to raise awareness and mobilize scientific communities in our countries to provide their inputs; to improve our collaboration and exchange of ideas on sustainable development challenges between us and between scientists and policymakers in general; to support the voice and unique perspective of our respective regions to be reflected in global debates on sustainable development; and to bring the outcomes of global science policy debates into relevant national-level policy-making.

20. All participants expressed their gratitude for the excellent arrangements and the warm hospitality by the meeting host, the Administrative Centre for China's *Agenda 21*, and acknowledged the efforts of the United Nations Department for Economic and Social Affairs in convening this important meeting.

Annex 2.

List of United Nations/international organizations publications and outlooks

The following is a list of the publications and outlooks considered in the present report. Direct Web links are provided for ease of reference.

Selected United Nations flagship reports

World Development Report 2013 (WB) (Messages | Full report)

Human Development Report 2013 (UNDP) (Summary | Full report)

Global Mountain Biodiversity Assessment (CBD)

Expert Group on the Role of Biodiversity in Sustaining the Water Cycle (convened by SCBD in cooperation with the Scientific and Technical Review Panel of the Ramsar Convention)

Regulatory Framework for Climate-Related Geoengineering Relevant to the Convention on Biological Diversity (CBD)

Impacts of Climate-Related Geoengineering on Biological Diversity (CBD)

Connecting Biodiversity and Climate Change Mitigation and Adaptation (CBD)

Interlinkages Between Biological Diversity and Climate Change (CBD)

Scientific Synthesis on the Impacts of Underwater Noise on Marine and Coastal Biodiversity and Habitats (CBD)

Scientific Synthesis of the Impacts of Ocean Acidification on Marine Biodiversity (CBD)

Scientific Synthesis of the Impacts of Ocean Fertilization on Marine Biodiversity (CBD)

Series of Regional Workshops for Describing Ecologically or Biologically Significant Marine Areas (CBD)

IMF Research Bulletin

Economic Report on Africa 2013 (ECA)

African Governance Report II (ECA)

Combating Corruption, Improving Governance in Africa (ECA)

The Role of Parliament in Promoting Good Governance (ECA)

African Women's Report (ECA)

Sustainable Development Report on Africa III (ECA)

The Renewable Energy Sector in North Africa (ECA)

Annual Report (ECE)

Lviv Forum Report (ECE)

Forest and Economic Development (ECE)

Euro-Asian Transport Linkages, Phase II, Expert Group Report (ECE)

Foreign Direct Investment in Latin America and the Caribbean 2012 (ECLAC)

Social Panorama of Latin America 2012 (ECLAC)

Economic Survey of Latin America and the Caribbean 2012 (ECLAC)

Latin America and the Caribbean in the World Economy 2011-2012 (ECLAC)

A future Within Reach: Reshaping Institutions in a Region of Disparities to Meet the Millennium Development Goals in Asia and the Pacific (ESCAP)

Asia and the Pacific Beijing+10 Selected Issues (ESCAP)

Asia Pacific Disaster Report 2010 – Protecting Development Gains (ESCAP)

Green Growth, Resources and Resilience Environmental Sustainability in Asia and the Pacific (ESCAP)

Economic and Social Survey of Asia and the Pacific 2013 (ESCAP)

ESCWA Annual Report – 2013 (ESCWA)

Summary of the Survey of Economic and Social Developments in the Arab Region, 2013–2014 (ESCWA)

Progress Made by the ESCWA Member Countries on Financing for Development (ESCWA)

The Arab Millennium Development Goals Report: Facing Challenges and Looking Beyond 2015 (ESCWA)

Inventory of Shared Water Resources in Western Asia (ESCWA)

Priority Adaptations to Climate Change for Pacific Fisheries and Aquaculture (FAO)

Report of the Fourth Meeting of the Regional Fishery Body Secretariats Network (RSN-4) (FAO)

Guide for Policy and Programmatic Actions at Country Level to Address High Food Prices (FAO)

FAO, Forests and Climate Change (FAO)

Forests and Water (FAO)

Guidance Note: Integrating the right to adequate food into Food and Nutrition Security Programmes (FAO)

Making Agriculture Work for Nutrition – Synthesis of Guiding Principles (FAO)

Proceedings from the International Scientific Symposium on Food and Nutrition Security information: From Valid Measurement to Effective Decision Making (FAO)

Enabling Environments for Agribusiness and Agro-Industries Development. Regional and Country Perspectives (FAO)

Food Wastage Footprint. Impact on Natural Resources. Summary

Report (FAO)

Climate Change Adaptation and Disaster Risk Management in Agriculture (FAO)

The Impact of Commodity Development Projects on Smallholders' Market Access in Developing Countries (FAO)

Report of the First Regular Session of the United Nations System Chief Executives Board for Coordination for 2013 (CEB)

What Climate Change Means for Africa, Asia and the Coastal Poor (WB)

Annual Report 2012 (IFAD)

Smallholders, Food Security, and the Environment (IFAD)

Destination Green – Driving Progress Through Action on Aviation and the Environment (ICAO)

Global Wage Report 2012–13 (ILO)

World of Work Report 2013: "Repairing the economic and social fabric" (ILO)

International Workshop on Environmental Management Needs for Exploration and Exploitation of Deep Seabed Minerals (ISA)

Global Assessment Report on Disaster Risk Reduction 2013 (UNISDR)

Synthesis Report on Consultations on the Post-2015 Framework on Disaster Risk Reduction (HFA2) (UNISDR)

Towards a Post-2015 Framework for Disaster Risk Reduction (UNISDR)

Building Resilience to Disasters Through Partnerships (United Nations Task Team on the post-2015 United Nations development agenda: IOM, ITU, OHCHR, UNESCO, UNEP, UNISDR, UNFPA, WMO)

Trends in Telecommunication Reform 2013: Transnational Aspects of Regulation in a Networked Society (ITU)

Annual Report 2012 (ITC)

World Investment and Political Risk 2012 (MIGA, WB)

Better Than Cash Alliance (UNCDF)

2012 Annual Report: A Year of Innovation (UNCDF)

The State of the World's Children 2013: Children with Disabilities (UNICEF)

Humanitarian Action for Children 2013 (UNICEF)

Possible future work in the area of public-private partnerships (UNCITRAL) - Part 1 & Part 2

Microfinance: Creating an Enabling Legal Environment for Micro-Business and Small and Medium-Sized Enterprises (UNCITRAL)

Trade and Development Report 2012 (UNCTAD)

World Investment Report 2013 – Global Value Chains: Investment and Trade for Development (UNCTAD)

Least Developed Countries Report 2012 – Harnessing Remittances and Diaspora Knowledge to Build Productive Capacities (UNCTAD)

Technology and Innovation Report 2012 – Innovation, Technology and South–South Collaboration (UNCTAD)

Trade and Environment Review 2009/2010 (UNCTAD)

Information Economy Report 2012 – The Software Industry and Developing Countries (UNCTAD)

Economic Development in Africa Report 2013 – Intra-African Trade: Unlocking Private Sector Dynamism (UNCTAD)

Review of Maritime Transport 2012 (UNCTAD)

UNCCD 2nd Scientific Conference Background Document: The Economics of Desertification, Land Degradation and Drought: Methodologies and Analysis for Decision-Making (UNCCD)

Zero Net Land Degradation: Sustainable Development Goal for Rio+20. To Secure the Contribution of our Planet's Land and Soil to Sustainable Development, Including Food Security and Poverty Eradication. UNCCD Secretariat Recommendations in the Run-up to Rio+20 (UNCCD)

Land: A Tool for Climate Change Adaptation (Policy Brief 1) (UNCCD)

Land: A Tool for Climate Change Adaptation (Policy Brief 2) (UNCCD)

Managing Environmentally-Induced Migration in Drylands: The Win-Win Strategy (UNCCD)

Mitigating Climate Change in Drylands – The Case for Financing Carbon Sequestration (UNCCD)

World Drug Report 2013 (UNODC)

UNESCO Science Report 2010 (UNESCO)

The Fifth Global Environment Outlook (GEO-5) (UNEP)

Our Planet: Rio+20: From Outcome to Implementation (UNEP)

UNEP Year Book 2012: Emerging Issues in our Global Environment (UNEP)

Blending Climate Finance Through National Climate Funds (UNEP)

A Summary of Current Climate Change Findings and Figures (UNEP)

Feed-in Tariffs and a Policy Instrument for Promoting Renewable Energies and Green Economies in Developing Countries (UNEP)

Moving Towards a Climate Neutral UN: The UN Systems Footprint and Efforts to Reduce It (2011 edition) (UNEP)

Ready, Willing and Able. Empowering Countries to Meet the Climate Challenge (UNEP)

Green Economy in a Blue World (UNEP)

Greening the Blue Helmets: Environment, Natural Resources and UN Peacekeeping Operations May 2012 (UNEP)

Advancing Justice, Governance and Law for Environmental Sustainability. Rio+20 and the World Congress of Chief Justices, Attorneys General and Auditors General (UNEP)

Towards a Life Cycle Sustainability Assessment: Making informed choices on products (UNEP)

Sustainable, Resource Efficient Cities. Making it Happen! (UNEP)

The Business Case for the Green Economy: Sustainable Return on Investment (UNEP)

Sustainable Consumption and Production for Poverty Alleviation (UNEP)

Annual Report of the United Nations Office for Partnerships (UNFIP)

The Global Report 2012 (UNHCR)

Global Appeal 2013 (UNHCR)

Gender and Prosperity of Cities, State of Women in Cities (UN-Habitat)

The State of Urban Youth 2012/2013, Youth in the Prosperity of Cities (UN-Habitat)

Urban World: Cities and Land Rights (UN-Habitat)

Industrial Development Report (UNIDO)

Annual Report 2011 United Nations Mine Action Service (UNMAS)

A Guide on Transitioning Mine Action Programmes to National Ownership (UNMAS)

Delivering sustainable results (UNOPS)

Business Action to Stop Counterfeiting and Piracy (BASCAP) , Confiscation of the Proceeds of IP Crime: A modern tool for deterring counterfeiting and piracy (UNICRI)

State of World Population 2012: By Choice, Not By Chance: Family Planning, Human Rights and Development (UNFPA)

The Demography of Adaptation to Climate Change (UNFPA)

Combating Poverty and Inequality (Beyond 2015 Brief No. 1) (UNRISD)

Inequalities and the Post-2015 Development Agenda (Beyond 2015 Brief No. 2) (UNRISD)

Social Policy and Employment: Rebuilding the Connections (Beyond 2015 Brief No. 3) (UNRISD)

Biological Mechanisms of Radiation Actions at Low Doses. A White Paper to Guide the Scientific Committee's Future Programme of Work (UNSCEAR)

Progress of the World's Women (UN Women)

World Survey on the Role of Women in Development (UN Women)

World Hunger Series: Hunger and Markets (WFP)

World Health Report (WHO)

WIPO Magazine (WIPO)

WMO Bulletin (WMO)

MeteoWorld (WMO)

World Trade Report (WTO)

Measuring Sustainable Development: Report of the Joint UNECE/OECD/Eurostat Working Group on Statistics for Sustainable Development (United Nations/OECD, 2008)

The Changing Wealth of Nations: Measuring Sustainable Development in the New Millennium (WB, 2011)

Outlooks

World Energy Outlook (IEA)

Global Biodiversity Outlook (CBD) GBO-3 , GBO-4

World Water Futures until 2050 (UNWWAP)

Water Scenarios for Europe and for Neighbouring States (SCENES)

IMF World Economic Outlook (WEO) Update -- Growing Pains, July 2013

OECD Economic Outlook, Volume 2013, Issue 1

African Economic Outlook 2013: Structural Transformation and Natural Resources

Perspectives on Global Development 2013: Industrial Policies in a Changing World (OECD)

African Economic Outlook 2013 (ECA)

Transport Trends and Economics 2011–2012 (ECE)

Preliminary Overview of the Economies of Latin America and the Caribbean 2012 (ECLAC)

Asia-Pacific Trade and Investment Report 2012: Recent Trends and Developments (ESCAP)

OECD-FAO Agricultural Outlook (FAO)

Crop Prospects and Food Situation (FAO)

Food Outlook. Biannual Report on Global Food Markets (FAO)

Nuclear Safety Review for the Year 2012 (IAEA)

Global Employment Trends 2013: Recovering from a Second Jobs Dip (ILO)

Update (UNAIDS)

Global Mercury Assessment 2013: Sources, Emissions, Releases, and Environmental Transport (UNEP)

Global Land Tool Network Issue Jan-April 2013 Securing Land and Property Rights for All (UN-Habitat)

Cities and Climate Change Initiative Newsletter (September 2012) Cities and Climate Change Initiative Newsletter (UN-Habitat)

World Economic Situation and Prospects (WESP) (UN DESA)

World Economic and Social Survey (WESS) (UN DESA

Annex 3.

Information on selected assessments

Table 47. Key assessments carried out under the Convention on Biological Diversity (CBD)

Assessment	Characteristics of assessment process and outcome	Use of scenarios and other tools	Policy impact	Capacity needs identified and addressed
Comprehensive assessments				
GBO-3[386]	GBO-3 was based on peer reviewed scientific literature, national reports, work on indicators by the Biodiversity Indicators Partnership and a commissioned review of models and scenarios. Each part of the final report was reviewed at least twice. Its preparation was overseen by an independent advisory group. The report identifies uncertainties. Preparation process and impact were independently evaluated.[387]	Biodiversity Scenarios: Projections of 21st Century Change in Biodiversity and Associated Ecosystem Services - A Technical Report for the Global Biodiversity Outlook 3 [388]	The Conference of Parties (COP) welcomed the report and took note of the conclusions (decision X/4), which also provided the rationale for Strategic Plan for Biodiversity 2011–2020 (decision X/2).	The preparation process revealed the need to strengthen the ability of countries to assess biodiversity change and to develop policies that are capable of addressing undesired change. Improved capacities to conduct national/subregional scenario analysis would help to support decision-making. The GBO-3 process did not contribute to capacity-building in a significant way.
GBO-4[389]	The preparation process for GBO-4 has only started. An independent advisory group is being established.[390] The document will be peer-reviewed prior to its finalization.	Planned, building on the experience of GBO-3	TBD	The capacity needs identified through the GBO-3 process persist. A series of regional workshops is planned to assist countries in the preparation of their fifth national reports, identifying relevant information for possible use in GBO-4, and on the application of regional scenarios to support decision-making.
Assessments of marine and coastal biodiversity				
Series of regional workshops for describing ecologically or biologically significant marine areas[391]	Description of ecologically or biologically significant marine areas through the application of the Azores scientific criteria in annex I of decision IX/20[392] as well as other relevant compatible and complementary nationally and intergovernmentally agreed scientific criteria, as well as the scientific guidance on the identification of marine areas beyond national jurisdiction, which meet the Azores scientific criteria.	Various, including GIS	TBD. (Once endorsed by the CBD COP, as envisaged in decision X/29, descriptions will be submitted to the United Nations General Assembly and particularly its Ad Hoc Open-ended Informal Working Group to study issues relating to the conservation and sustainable use of marine biological diversity beyond areas of national jurisdiction, as well as relevant international organizations, Parties and other Governments.	Need to improve data coverage; need to improve compatibility of data sets. The regional workshops on the description of ecologically or biologically significant marine areas contribute to capacity-building by providing exchange of information, sharing of data and through the compilation and peer review of the report.
Scientific Synthesis of the Impacts of Ocean Fertilization on Marine Biodiversity [393]	The assessment is based on a review and synthesis of existing literature and other scientific information carried out by the UNEP World Conservation Monitoring Centre, followed by a peer review by Parties, other Governments and organizations as well as the inputs from international scientific experts and was then considered by SBSTTA-14. The report identifies uncertainties.	Review of scenarios and models underlying fertilization experiments.	COP welcomed the report and provided guidance on ways to fill gaps in knowledge (decision X/29, paragraph 13 (e) and 57 to 62).	Need to improve models underlying fertilization experiments. The assessment did not contribute to capacity-building in a significant way.
Scientific Synthesis of the Impacts of Ocean Acidification on Marine Biodiversity [394]	The assessment is based on a review and synthesis of existing literature and other scientific information jointly carried out by the Secretariat of the Convention on Biological Diversity (SCBD) and the UNEP World Conservation Monitoring Centre, followed by a peer review by Parties, other Governments and organizations as well as the inputs from international scientific experts, and was then considered by SBSTTA-14. The report identifies uncertainties.	Review of IPCC scenarios (Special Report on Emissions Scenarios - SRES) and circulation models of the IPCC (IPCC IS92a).	COP welcomed the report, took note of conclusions and established processes to monitor and assess the impacts of ocean acidification on marine and coastal biodiversity (decision X/29, paragraphs 63–67).	Need to better understand impacts of ocean acidification on calcification of different organisms and life stages, as well as on the communities of which they are part. The assessment did not contribute to capacity-building in a significant way.
Scientific Synthesis on the Impacts of Underwater Noise on Marine and Coastal Biodiversity and Habitats [395]	The assessment is based on a review and synthesis of existing literature and other scientific information by a technical expert commissioned by SCBD, followed by a peer review by Parties, other Governments and organizations as well as the inputs from international scientific experts and was then considered by SBSTTA-16. The report identifies gaps in knowledge and uncertainties	N/A	SBSTTA recommended that COP welcome the report, took note of key conclusions, and recommended an expert process to improve and share knowledge and develop further guidance (recommendation XVI/5, paragraphs 14–20).	Need for a consistent terminology to describe underwater noise and need to fill gaps in existing guidance. The assessment did not contribute to capacity-building in a significant way.

Assessment	Characteristics of assessment process and outcome	Use of scenarios and other tools	Policy impact	Capacity needs identified and addressed
Assessments of links between biodiversity and climate change				
Interlinkages between biological diversity and climate change[396]	The assessment draws on a technical paper on climate change and biodiversity prepared by IPCC, a review of literature including the IPCC Third Assessment Report, the Special Report on Land Use, Land-Use Change and Forestry and available literature not covered by previous IPCC assessments, carried out by an ad hoc technical expert group through three meetings and intersessional work. The draft report was submitted for peer review to Governments using the channels of both the CBD and UNFCCC, and to the wider scientific community. At its third meeting, the expert group considered and took into account the comments of the reviewers to finalize its report.	Review of IPCC scenarios (third assessment report	SBSTTA welcomed the report, took note of key conclusions, asked for the report to be brought to the attention of SBSTA of UNFCCC and provided detailed guidance to COP on the implications of the findings (recommendation IX/11) which formed the basis of COP decision VII/15. SBSTA of UNFCCC noted the report and recommended its use by UNFCCC Parties.	Need for additional guidance and tools that can be used to evaluate the economic, social and environmental impacts of climate change mitigation and adaptation activities and those of biodiversity conservation activities. Additional details are summarized in the section "Lessons learned from case-studies" (pages 11–13 of the report). The participation of experts from the biodiversity and the climate community increased mutual understanding of the processes and the respective status of knowledge.
Connecting Biodiversity and Climate Change Mitigation and Adaptation [397]	The assessment provides an update of earlier work in the light of new evidence. It draws from the report on interlinkages between biological diversity and climate change,[398] submissions by Parties and a review and synthesis of available literature carried out by the UNEP World Conservation Monitoring Centre, and was carried out by an ad hoc technical expert group through three meetings and intersessional work. The draft report was submitted for peer-review to Governments and to the wider scientific community. At its third meeting, the expert group considered and took into account the comments of the reviewers to finalize its report. The draft report, including main messages as compiled by the expert group was initially made available to participants of UNFCCC COP-14 and, an expanded UNFCCC SBSTA-30.	Review of IPCC scenarios, including the Fourth Assessment Report	SBSTTA 14 considered the report as part of the in-depth review of the work on biodiversity and climate change and prepared recommendation XIV/5 on the basis of which COP took note of the report and prepared guidance below on ways to conserve, sustainably use and restore biodiversity and ecosystem services while contributing to climate change mitigation and adaptation (decision X/33).	Knowledge and information gaps that prevent the integration of biodiversity considerations into climate change-related activities are identified by Parties through their national reports. Specifically there is need for guidance on the design and implementation of ecosystem-based approaches for mitigation and adaptation. The participation of experts from the biodiversity and the climate community increased mutual understanding of the processes and the respective status of knowledge.
Impacts of climate-related geoengineering on biological diversity[399]	The assessment compiles and synthesizes available scientific information on the possible impacts of a range of geoengineering techniques on biodiversity and has been prepared by a group of experts and the SCBD, taking into account comments from two rounds of review by Parties, experts and stakeholders. Uncertainties were highlighted throughout the report.	Climate change scenarios provide relevant controls for assessing the risks and benefits of geoengineering, including the implications for biodiversity.	Through recommendation XVI/9, SBSTTA recommended that COP take note of the report on the impacts of climate related geoengineering on biological diversity and of the main messages,[400] and that relevant sections be brought to the attention of related organizations and processes, and that additional work be undertaken in collaboration with partners.	In addition to the technical questions, the report highlighted in particular the need to better understand the social, economic, cultural and ethical considerations of climate-related geoengineering.
Regulatory framework for climate-related geoengineering relevant to the Convention on Biological Diversity[401]	This study has been prepared by a technical expert commissioned by SCBD. Review comments and additional contributions from a group of experts and two rounds of review by Parties, experts and stakeholders were taken into account in the final version.	N/A	Through recommendation XVI/9, SBSTTA recommended that COP take note of the report on the regulatory framework for climate-related geoengineering and of the main messages,[402] and called for further work to be undertaken on this matter.	There is a need to address the gaps in the current regulatory framework for climate-related geoengineering.
Assessment related to biodiversity of inland waters				
Expert group on the role of biodiversity in sustaining the water cycle (convened by SCBD in cooperation with the Scientific and Technical Review Panel of the Ramsar Convention)[403]	Impartial, independent review of scientific peer-reviewed literature on the role and functions of biodiversity related to sustaining the water cycle and the delivery of water-related ecosystem services. Sections of the report and final report were peer-reviewed. Sections include: wetlands, grasslands, forests, cities, institutions and enabling mechanisms. The report identifies levels of certainty and knowledge gaps.	Review of current knowledge only.	To be considered at CBD COP-11 (document UNEP/CBD/COP/11/30 and UNEP/CBD/COP/11/INF/2).	Considerable institutional constraints and capacity needs identified. Follow-on work recommended focusing on coordination, awareness-raising and capacity development. Key technical capacity building areas: understanding the key hydrological functions of ecosystems and how they influence - and can therefore be used as solutions to - water resources challenges (including managing the quantity and quality of water available); and the economics of "natural infrastructure" solutions to water management.

Assessment	Characteristics of assessment process and outcome	Use of scenarios and other tools	Policy impact	Capacity needs identified and addressed
Assessment related to mountain biodiversity				
Global Mountain Biodiversity Assessment [404]	The Global Mountain Biodiversity Assessment is an ongoing programme on research, inventorying and monitoring mountain biodiversity, guided by a scientific steering committee.	IPCC scenarios	COP, in decision X/30 took note of progress made by the Global Mountain Biodiversity Assessment and provided guidance on further work.	Need to increase capacity to develop and use geo-referenced biodiversity data for integrated analysis and spatial visualization of biodiversity information in relation to climate, land use, physiography and other important parameters. Need to increase capacity for hosting regional platforms for mountain biodiversity information for various mountain ranges (e.g. the Hindu Kush-Himalayas, the Andes etc.). Need to increase capacity to provide easy and open access to biodiversity information via the Global Biodiversity Information Facility/Global Mountain Biodiversity Assessment Mountain Biodiversity Portal and the Mountain GeoPortals of other institutes as a gateway to biodiversity information with meta databases.

Source: Contribution to this report by the Secretariat of the CBD, April 2013.

Table 48. Production steps of UNEP's GEO-5 report

No.	Production steps
1	Intergovernmental and multi-stakeholder consultation
2	Nomination of experts for GEO-5
3	Selection of experts and set up of Chapter Working Groups
4	Set up High-Level Intergovernmental Panel
5	Set up Science and Policy Advisory Board
6	Set up Data and Indicators Working Group
7	1st Meeting of High-Level Intergovernmental Advisory Panel to agree on internationally agreed goals
8	Regional consultations to identify priorities and goals
9	Nominations and selections of regional experts for GEO-5
10	1st Production and Authors Meeting to agree on annotated chapter outlines
11	Authors develop Draft 0
12	Internal review of Draft 0 (UNEP, authors and collaborating centres)
13	Science and Policy Advisory Board to conduct midterm evaluation of content and methodology
14	Science and Policy Advisory Board to deliver their evaluation report to Secretariat
15	Authors develop Draft 1 - Chapter Working Groups process internal review comments
16	External review of Draft 1 - High-Level Intergovernmental Advisory Panel, Government and stakeholder review of Draft 1
17	2nd Meeting of High-Level Intergovernmental Advisory Panel to discuss content, structure and identify key messages for the Summary for Policy Makers (SPM)
18	Authors process external review comments on Draft 1
19	Authors interact with Principal Science Reviewers and Chapter Coordinators in preparing Draft 2
20	2nd Production and Authors Meeting to harmonize approaches and work on Draft 2
21	Authors finalize Draft 2
22	External Expert Review of Draft 2
23	External Government Review of Draft 2
24	Authors interact with Principal Science Reviewers and Chapter Coordinators to process scientific review and government comments. Earth System Science Partnership and author sign off
25	Outstanding Issues submitted to Science and Policy Advisory Board for advice
26	Science and Policy Advisory Board to conduct final evaluation of content and methodology
27	Finalize SPM and submit draft SPM 6 weeks in advance of Intergovernmental Meeting
28	Intergovernmental Meeting to endorse SPM
29	GEO-5 SPM: Production process: final editing, design, layout including proof-reading, translation and final sign-off by UNEP; printing and shipment to venue
30	GEO-5 SPM: Production process: final editing, design, layout including proof-reading, translation and final sign-off by UNEP; printing and shipment to venue
31	GEO-5 main report: Production process: final editing, design, layout including proof-reading, translation and final sign-off by UNEP; printing and shipment to venue
32	Launch of GEO-5 Rio+20

Source: UNEP contribution to this report.

Annex 4.

Note on data sources, statistical methods and uncertainty

"The data that are available mould our perceptions" (Dudley Seers)

This Annex provides selective notes on data sources, statistical methods and uncertainty.

Data sources

So far, monitoring progress towards international commitments has essentially made use of official statistics, i.e. statistics "approved" by national statistical offices, by statistical units in relevant governmental ministries or developed by international agencies. Monitoring of the MDGs, for example, fully relies on official statistics.

However, if only official data are used, data gaps remain in key areas of sustainable development. Even for the MDG monitoring - which has benefited from a great increase of data availability over the years - 38 per cent of developing countries still did not have enough data to analyse trends for 25 or more MDG indicators in 2013.[405] While this indicates a need to continue investing in statistical capacity for official statistics, new official statistics can take many years until they are effectively operational. In the meantime, other alternatives need also be considered in order to fill the gaps left by official statistics, to improve official statistics of insufficient quality, and to cover areas untapped by official statistics.

Two alternative data sources have been considered in this report to complement official statistics: (a) data compiled for ad hoc scientific studies; (b) "big data" combined from the web, by satellites, sensors, credit card transactions, electronic devices, etc. These alternative data can either be used on their own (in the absence of any official data) or to complement and improve existing official statistics. For practical reasons, sustainable development policy will have to draw from all available data as long as they are reliable and their degree of uncertainty is taken into account. Big data in particular can provide snapshots of the well-being of the population or of our planet's features at high-frequency and at fine geographical resolutions, thus providing an opportunity to gain real-time insights on sustainable development.

Table 49, Table 50 and Table 51 provide an overview of important data sources that are referenced in the text in chapters 3, 4 and 5.

Table 49: Data sources of estimates of total, global investment needs (chapter 4.5)

Rio+20 thematic areas and cross-sectoral issues	Selected sources and references
Poverty eradication	Background paper 1, Section III.1.
Food security and nutrition and sustainable agriculture	Background paper 1, Section III.5.
Water and sanitation	WHO, Global Costs and Benefits of Drinking-water Supply and Sanitation Interventions to Reach the MDG Target and Universal Coverage (Geneva, 2012). WHO/HSE/WSH/12.01.
Energy	Background paper 1, Section III.6.
Sustainable tourism	N. A.
Sustainable transport	Background paper 1, Section III.4.
Sustainable cities and human settlements	N.A. This covers a wide range of sectors and activities.
Health and population	Background paper 1, Section III.2. D. Jamison and others, "Global health 2035: a world converging within a generation", The Lancet, vol. 382 (2013), pp. 1898–955
Oceans and seas	Background paper 1, Section III.8.2.
Least developed countries (LDCs)	Background paper 1, Section IV.
Africa	Background paper 1, Section IV.
Climate change	Background paper 1, Section III.7.
Forests	Background paper 1, Section III.8.2.
Biodiversity	Background paper 1, Section III.8.1.
Education	UNESCO, *Education for All Global Monitoring Report 2013, Teaching and Learning: Achieving Quality for All* (2013).
Gender equality and women's empowerment	Background paper 1, Section III.8.1.

Table 50. Data sources for GPI components, United States (chapter 5.2)

Item	Source
Personal consumption expenditures	Bureau of Economic analysis (NIPA)
Income distribution index	Census Bureau
Weighted personal consumption (+)	Derived from the above two components; personal consumption expenditures divided by income distribution index
Value of household work and parenting (+)	Robert Eisner, 1985
Value of higher education (+)	8.3.1. Hill et al. (The Value Of Higher Education: Individual And Societal Benefits 2005); Moretti (2004); and population data from Census Bureau
Value of volunteer work (+)	Population survey of Bureau of Labor Statistics (1965, 1974 and 1989); American Time Use Surveys from 2003–2004; and Independent Sector, 2006 (to estimate the value of an hour of volunteer time in 2000)
Services of consumer durables (+)	Bureau of Economic analysis
Services of highways and streets (+)	Bureau of Economic analysis
Cost of crime (-)	Bureau of Justice; Statistics National Crime Survey; Laband and Sophocleus (1992); and Security Distributing and Marketing (SDM)
Loss of leisure time (-)	Leete-Guy and Schor (1992); and Mishel et al. (1996)
Cost of underemployment (-)	Leete-Guy and Schor (1992); Economic Policy Institute; and Bureau of Labor Statistics
Cost of consumer durables (-)	National Income and Products Accounts
Cost of commuting (-)	8.3.2. United States Department of Transportation; Statistical Abstract of the United States (Census Bureau); the Bureau of Economic Analysis National Income and Product Accounts; Leete-Guy and Schor, (1992); National Household Transportation Survey (NHTS) from 1983, 1990, 1995, and 2001; and National Center for Transit Research (NCTR) at the University of South Florida
Cost of household pollution abatement (-)	Bureau of Economic Analysis (Vogan, 1996)
Cost of automobile accidents (-)	Statistical Abstract by the National Center for Statistical Analysis (NCSA, 2004); and National Safety Council (NSC, 2004)
Cost of water pollution (-)	Freeman, 1982; Rutledge and Vogan, 1994; Uri and Lewis (1999); National Resources Inventory, conducted by the Soil Conservation Service in conjunction with Iowa State University; Hagerman (1992); and Adams et al. (2006)
Cost of air pollution (-)	Myrick Freeman's (1982); and Environmental Protection Agency (EPA, 1998)
Cost of noise pollution (-)	World Health Organization (Congressional Quarterly, Inc. 1972)
Loss of wetlands (-)	Woodward and Wui (2000); and United States Fish and Wildlife Service (USFWS), 1997
Loss of farmland (-)	American Farmland Trust; National Agricultural Statistics Service; United States Department of Agriculture (USDA)'s National Agricultural Lands Study; Farm Information Center; Ready et al. (1997); Costanza et al. (1997); and Sampson, 1981
Loss of primary forests and damage from logging roads (-)	Outcalt and Sheffied (1996); USFWS (2003); USDA, 2005; Beardsley, et al. (1999); Tongass National Forest; USFS, 1980; Costanza et al. (1997); and Vincent, et al. (1995)
Depletion of non-renewable energy resources (-)	Energy Information Administration; and USDA (1988)
Carbon dioxide emissions damage (-)	Tol (2005); Oak Ridge National Laboratory; and Intergovernmental Panel on Climate Change
Cost of ozone depletion (-)	NOAA's Climate Prediction Center, 2006; Alternative Fluorocarbons Environmental Acceptability Study, Environmental Protection Agency; United Nations Environmental Programme; and United States Congress
Net capital investment (+/-)	Bureau of Labor Statistics; and Bureau of Economic Analysis
Net foreign borrowing (+/-)	Bureau of Economic Analysis

Source: GPI update in USA (2006) by John Talberth, Clifford Cobb, and Noah Slattery.

Table 51. List of data sources for chapter 3

Indicators	Source Link
Number of people living in absolute poverty (less US$1.25 per day [PPP])	World Bank - PovcalNet: Regional aggregation using 2005 (PPP) and US$1.25/day poverty line. http://iresearch.worldbank.org/PovcalNet/index.htm?1
Number of people living in less US$2.15 per day	Same source as above
Total number of employed people living below US$1.25 per day (PPP)	MDG Report 2013
Number of people below relative poverty line in developing world	Chen, Shaohua, and Martin Ravallion, 2012, "More Relatively-Poor People in a Less Absolutely-Poor World," World Bank Policy Research Working Paper 6114 (Washington) http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2012/07/02/000158349_20120702111420/Rendered/PDF/WPS6114.pdf
Number of people going hungry	FAO: Food Security Indicators Statistics http://www.worldhunger.org/articles/Learn/world%20hunger%20facts%202002.htm#Number_of_hungry_people_in_the_world http://www.fao.org/hunger/en/ (undernourished people) http://www.fao.org/docrep/016/i3027e/i3027e.pdf (undernourished people) http://bit.ly/14FRxGV http://www.fao.org/docrep/018/i3434e/i3434e.pdf

Indicators	Source Link
Access to sanitation by 2050	http://www.oecd.org/env/indicators-modelling-outlooks/49846090.pdf
Number of people with no safe drinking water	MDG Report 2013
Energy: Number of people with no access to electricity Number of people who use traditional biomass for cooking	World Energy Outlook 2013 http://www.worldenergyoutlook.org/resources/energydevelopment/energyaccessdatabase/
Migration	http://esa.un.org/unmigration/TIMSA2013/Data/UN_MigrantStock_2013.xls http://www.unfpa.org/pds/migration.html 214 million people lived outside their country of origin.
Number of people > 60 years of age	Population Facts (No. 2012/4) December 2012, UN DESA/PD http://www.un.org/en/development/desa/population/publications/pdf/popfacts/popfacts_2012-4.pdf
Number of Internet users	http://www.internetworldstats.com/stats.htm International Telecommunication Unit (ITU) http://www.itu.int/en/ITU-D/Statistics/Documents/statistics/2013/ITU_Key_2005-2013_ICT_data.xls
Number of people living in slums	http://www.unhabitat.org/pmss/listItemDetails.aspx?publicationID=3387 (Developing Regions) http://ww2.unhabitat.org/programmes/guo/documents/Table4.pdf (Global) http://ww2.unhabitat.org/programmes/guo/statistics.asp (Global)
Urban population forecast 2050	World urbanization prospects: The 2011 revision: http://esa.un.org/unup/pdf/WUP2011_Highlights.pdf
Number of people living in LDCs	http://esa.un.org/unpd/wpp/unpp/panel_population.htm
World population	Source UN DESA Population division http://esa.un.org/unpd/wpp/unpp/panel_population.htm
Life expectancy	http://apps.who.int/gho/data/view.main.690?lang=en http://www.earth-policy.org/datacenter/xls/indicator1_2011_8.xls http://www.earth-policy.org/data_center/C21
Maternal mortality rate	MDG Report 2013
Health and ageing Prevalence of HIV (population aged 15–49)	http://www.who.int/gho/hiv/epidemic_status/prevalence_text/en/ http://www.nia.nih.gov/sites/default/files/global_health_and_aging.pdf
Proportion of children under age 5 with fever who are treated with appropriate antimalarial drugs Successfully treated tuberculosis patients	MDG Report 2013
GDP and GDP per capita	United Nations Statistics Division: http://unstats.un.org/unsd/snaama/selbasicFast.asp
Official development assistance (ODA) amount	OECD: ODA Performance in 2012 http://dx.doi.org/10.1787/dcr-2013-en http://www.oecd-ilibrary.org/development-assistance-committee-members-oda-performance-in-2012_5k3wh9mnw3tc.pdf;jsessionid=3r4u18b8w9g0q.x-oecd-live-01?contentType=&itemId=%2Fcontent%2Fchapter%2Fdcr-2013-21-en&mimeType=application%2Fpdf&containerItemId=%2Fcontent%2Fserial%2F20747721&accessItemIds=%2Fcontent%2Fbook%2Fdcr-2013-en
Water withdrawal	http://unesdoc.unesco.org/images/0018/001819/181993e.pdf#page=29
Water use for agriculture	http://www.unwater.org/downloads/TFIMR_Annex_FinalReport.pdf The report one above also have the same amount
Research and development expense	http://databank.worldbank.org/data/views/reports/tableview.aspx
Employment data	MDG Report 2013
National Parliament seats occupied by women	MDG Report 2013
Adolescent birth rate	MDG Report 2013
CO_2 emissions	http://edgar.jrc.ec.europa.eu/news_docs/pbl-2013-trends-in-global-CO_2-emissions-2013-report-1148.pdf
CO_2 concentration	http://CO2now.org/ (only for 2012) http://www.iea.org/publications/freepublications/publication/CO2EmissionsFromFuelCombustionHighlights2013.pdf
Enrolment ratio, literacy	MDG Report 2013
Endangered species	The IUCN Red List of Threatened Species http://cmsdocs.s3.amazonaws.com/summarystats/2013_2_RL_Stats_Table1.pdf http://www.endangeredspecieshandbook.org/pdfslive/esh_chapter4.pdf
Biodiversity	http://cmbc.ucsd.edu/content/1/docs/Pimm_et_al_1995.pdf
Land cover	http://landscape.forest.wisc.edu/courses/readings/Ellis_etal_2008.pdf
Protected terrestrial and marine areas	MDG Report 2013
People living in river basins with severe water stress	http://www.globalwaterforum.org/wp-content/uploads/2012/05/Water-Outlook-to-2050_-The-OECD-calls-for-early-and-strategic-action-GWF-1219.pdf http://www.oecd.org/env/resources/49006778.pdf
Arable land	http://www.fao.org/fileadmin/templates/solaw/files/thematic_reports/TR_01_web.pdf
Groundwater depletion	March 2012: Environmental Outlook to 2050 http://www.oecd.org/env/indicators-modelling-outlooks/49844953.pdf

Indicators	Source Link
Number of people at flood risk in 2050	March 2012: Environmental Outlook to 2050 http://www.oecd.org/env/indicators-modelling-outlooks/49844953.pdf
The value of assets at risk due to flood	March 2012: Environmental Outlook to 2050 http://www.oecd.org/env/indicators-modelling-outlooks/49844953.pdf
Premature death due to particulate matter	March 2012: Environmental Outlook to 2050 http://www.oecd.org/env/indicators-modelling-outlooks/49844953.pdf
Increases in sulphur dioxide (SO2) and nitrogen oxides (NOx) emissions	March 2012: Environmental Outlook to 2050 http://www.oecd.org/env/indicators-modelling-outlooks/49844953.pdf
Impact of human to marine ecosystem	http://www.nceas.ucsb.edu/GlobalMarine
Deforestation	http://foris.fao.org/static/data/fra2010/KeyFindings-en.pdf http://www.fao.org/docrep/013/i1757e/i1757e.pdf

Source: Authors' compilation.

Statistical methods

Chapter 3 presents a review of progress towards global sustainable development by presenting and analysing trends of several indicators on people, the economy, society, nature, life support and community, as well as for the focus areas discussed in the Open Working Group (OWG) on SDGs. This approach draws on policy-based indicators, i.e. indicators established to respond to information needs of specified sustainable development strategies. The close connection between these indicators and the strategies defined is their main strength. However, it is difficult to discern interlinkages across the indicators and to identify existing synergies and trade-offs.

Capital-based indicators grounded in national accounting systems have been used elsewhere. In that approach, sustainable development is defined as non-decreasing wealth per capita over time; and wealth is defined as the sum of financial capital, produced capital, natural capital, human capital and social capital. This approach requires measuring all capital stocks in one unit (money). It has the advantage of allowing direct comparison across different types of capital but has also methodological and ethical difficulties. Methodologically, it is not always straightforward to establish monetary amounts for natural, human and especially for social capital. Some argue - on ethical grounds - that natural capital (e.g. as related to biodiversity or forests), human capital (e.g. educated workforce), and social capital (e.g. social networks), have intrinsic values which cannot or should not be valued in monetary terms.

Several aggregate measures to assess progress towards sustainable development have been proposed in the literature - some are discussed in Chapter 5. These aggregate measures tend to bring together several indicators into a composite index. The index can be composed of policy-based indicators or capital-based indicators. For instance, the HDI uses policy-based indicators while the genuine progress indicator (GPI), discussed in chapter 5, uses capital-based indicators. In comparison with the long list of indicators which typically inform policy - like the CSD indicators - the aggregate measures have the advantage of providing an overall picture in a single number. Often, the selection of suitable measures is decided by data availability. Different aggregate measures have different global and time coverage (Table 52). When data are not available for all countries, statistical methods can be used to extrapolate available data and combine it with other relevant information to estimate a global value.

Uncertainty

The estimates used to assess progress towards sustainable development carry with them varying degrees of uncertainty. For instance, the atmospheric concentration of CO_2 is sampled with a high degree of accuracy, whereas experts believe the accuracy of estimates of land carbon is only around ±30 per cent.[410] Many socioeconomic aspects, like employment and poverty rates, are estimated through household sample surveys and bear a degree of uncertainty related to non-response, sample size and design. Censuses, albeit their theoretical universal coverage, also have quality and coverage issues. Presenting uncertainty is important across all data sources. In big data, uncertainty can arise from limited coverage or the use of proxies. For example, Soto et al. present estimates of socioeconomic levels on the basis of cell-phone data with prediction rates of 80 per cent. [411]

Inaccuracies in measurements also introduce uncertainty. No measurement is fully accurate - the instruments used, the biases in people's responses to surveys, all introduce inaccuracies. Uncertainties also arise from the complexity of some Earth systems or the complex interactions among the vast array of social, economic and environmental factors. For example, there is not enough information about clouds to determine with full accuracy how much solar energy reaches the Earth's surface. Uncertainties resulting from lack of knowledge can arise in situations of low availability of data. Some of those uncertainties may be reduced with more or better data, but in complex natural systems, like the Earth's weather, no practical amount of data will provide 100 per cent certainty.

As we look into the future, estimates of forthcoming outcomes also come with a degree of uncertainty due to unknown contingencies and uncertainty about model and scenario assumptions. Some of these uncertainties can be reduced, for instance by increasing data availability, but others are, again, inherent to the complexity of sustainable development.

Despite these uncertainties, most scientific models are accurate enough to deserve credibility. Having the additional information on the degree of uncertainty of each estimate or scenario will allow the findings to be adequately incorporated into policy-making. To reflect the degree of uncertainty associated with the estimates, most research provides uncertainty ranges and/or statements quantifying the probability that a certain outcome is likely to occur.

Table 52. Coverage of selected aggregated measures

Aggregate measures	Coverage
Human development index 2012[406]	199 countries/territories
Human sustainable development index 2010[160, 407, 408]	163 countries/territories
Adjusted net savings 2005-2009[409]	134 countries/territories
Ecological Footprint 2007[408]	109 countries/territories
Genuine progress indicator, 1950–2003[130]	17 countries/territories, representing around 53% of the world population

Source: Authors' compilation.

Annex 5.

Global CLEWS model - an open source, open-data approach

In preparation for the present report, a global CLEWD model was developed as an open-source, open-data tool for research cooperation on global sustainable development, and to support the emerging national and regional applications: The Global Least-cost User-friendly CLEWs Open-Source Exploratory (GLUCOSE) model. The model is currently being developed further. The result will be a user-friendly web interface and a widened scope of the model to capture all the goals that will eventually be agreed by the OWG on SDGs. The envisaged user interface follows the approach used for the "2050 Pathways Calculator" of the United Kingdom's Department of Energy and Climate Change, in order to enable access to the model for a non-technical audience.[412] The original model was developed by researchers from the Royal Institute of Technology (KTH) in Sweden in cooperation with the United Nations Division for Sustainable Development. The remainder of this Annex draws heavily on background papers provided to UN DESA by Taliotis, Weirich and Howells of KTH.[413, 414]

Overall approach compared to existing global integrated models

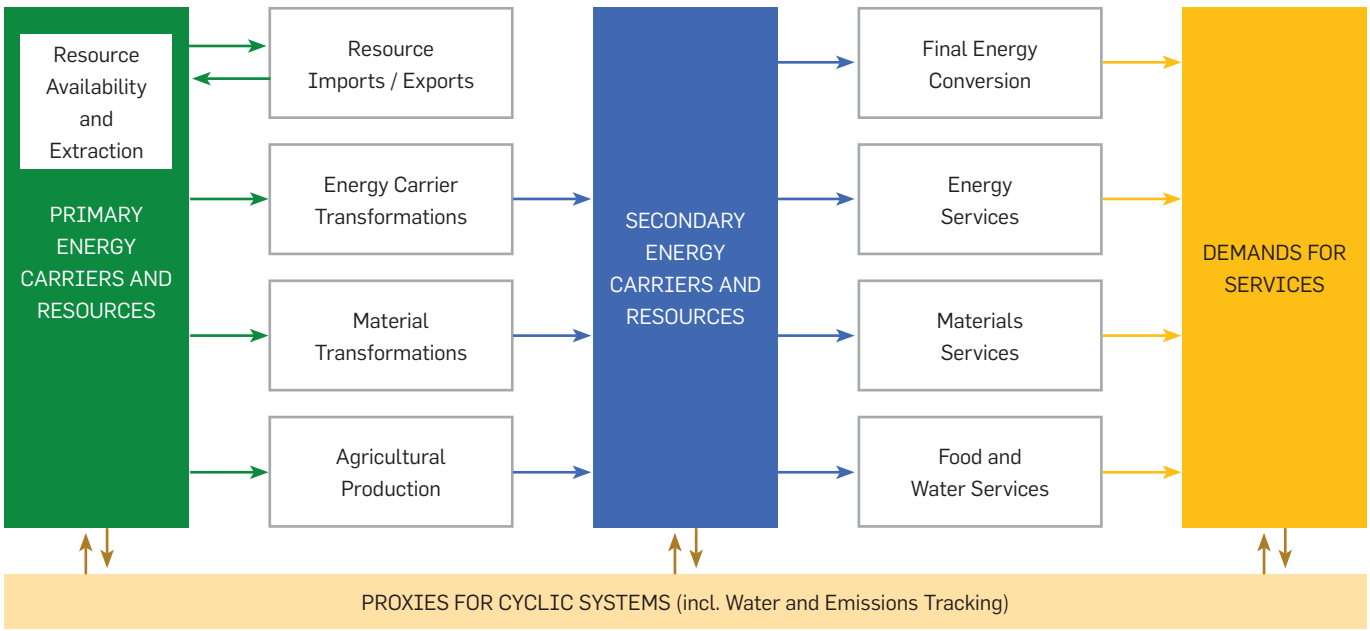
Most of the leading global integrated assessment models capture one sector in great detail - most often the energy sector - and integrate with other resources in a stylized way, such as through constraints, accounting relationships or through soft-linking to other sectoral models. They typically take other resource processes into account only as input or output factors on an aggregate level and without reconciling short-term, long-term and global objectives.[415, 281] While climate change, energy and water use may be included as separate manual inputs, they are rarely included in an overarching model.[416, 417]

On the other hand, fully integrated systems models that capture climate, land, energy, water and other socioeconomic indicators typically lack the necessary technology detail needed to support planning and policy decisions or are extremely complex, requiring expensive software and special skills.[415, 418]

To date there have been few efforts to carry out a large-scale international materials analysis as part of wider integrated model. Some have collected country-level data on industry emissions, innovation or efficiency improvement and economic prospects.[419, 420, 421, 422] Yet the life cycles of modern materials have a very significant impacts on climate, land, energy, water and development;[423] demand is altered through materials innovation;[424] non-energy carbon is an important material;[425] and the sector's economic importance is closely related to the materials extraction, processing and recycling.[426] Against this background, the GLUCOSE model was designed to also capture the life cycle of key materials.

The GLUCOSE model was developed as a transparent,[427] accessible,[428] modular [429] and scalable[430] model - features that support a further model development through crowdsourcing.[431] OSeMOSYS (the Open-Source energy MOdelling SYStem)[432] was selected as the software platform to develop the GLUCOSE model. It is transparent, accessible and easily extended. OSeMOSYS is a cost-optimization toolbox which is typically used for energy analysis, but it can be used to model any type of flows through systems.

Figure 33. Conceptual design of the GLUCOSE model



Source: Weirich (2013)[433].

Model structure

The GLUCOSE model structure resembles that of the well-known TARGETS model.[434] The GLUCOSE model consists of three modules: the energy sector; land and food; and material production. It does not comprise separate water or climate modules (they are under development). Instead, the energy, land and materials modules account for and are affected by restrictions made in the model on water use and GHG emissions. Unlike previous CLEW-related work in Mauritius and elsewhere (see section 6.5), the different sectors of the GLUCOSE model are fully integrated.

Figure 33 illustrates the conceptual design of the model.

Energy module

The energy module of the GLUCOSE model was developed in a similar way as the leading major global energy models (e.g. those used for the Global Energy Assessment, and by the International Energy Agency)[435, 436, 437] which inspired the choice of technology options and energy demand categories. Figure 34 shows a simplified version of the reference energy system (RES). Final energy demand was divided into electricity, heat and transport. Industrial heating demand was treated separately and linked to the materials production module. Transport was divided into maritime,[438] aviation,[439] railways[440] and road travel.[447]

Technology specifications and initial energy demand projections were primarily based on IEA.[447, 441, 442] The power generation sector includes 26 technology options, while the heat generation sector has 20 technology options. Both centralized and decentralized options were considered. The model allows the assessment of future investment potentials in unconventional infrastructure and technology shifts in primary energy supply, such as coal or biomass gasification, coal-to-liquids and gas-to-liquids, and in generation, such as carbon capture and sequestration (CCS). The transport sector allows for market penetration of technologies using biofuels or electricity.[443]

Land module

The principal purpose of the land module was to provide linkages between agricultural production, its associated land-use, land degradation and energy use, and the production of biomass for energy purposes. Besides these links with the energy module, the land module is linked with the materials model, as it draws fertilizer from the materials module to increase yield of land.

Figure 35 shows the reference land resource system of the GLUCOSE model.

The land module consists of twelve main land categories, which are characterized by different climatic conditions (Table 53). These are divided by temperature (cold, temperate, hot), yield (low, medium, high) and level of agricultural intensity (low, high). An additional land category has been added for forest cover to account for fuelwood use.

All the land categories produce biomass as output, which can either satisfy demand for meat and vegetarian food or be used for energy purposes. The consumption of both food types leads to the generation of combustible waste, which can also be utilized in the energy module. Yield improvement of land and food production was based on FAO projections, while demand for food was coupled with population projections.[444]

Table 53. Land categories in the land module of the GLUCOSE model

Technology Name	Climate Category	Irrigation potential category	Yield 2010 (EJ/million ha)	Irrigation requirement (Gt/million ha)
L1	Cold/Arctic	-	0.067	0
L121	Cold/Arctic	Low	0.073	0.5
L122	Cold/Arctic	Medium	0.116	0.75
L123	Cold/Arctic	High	0.133	1
L2	Temperate	-	0.152	0
L221	Temperate	Low	0.167	1.5
L222	Temperate	Medium	0.266	5
L223	Temperate	High	0.304	10
L3	Hot/Tropical	-	0.228	0
L321	Hot/Tropical	Low	0.251	2
L322	Hot/Tropical	Medium	0.399	5
L333	Hot/Tropical	High	0.456	11
L4	Forests	-	0.106	0

Source: Weirich (2013)[433].

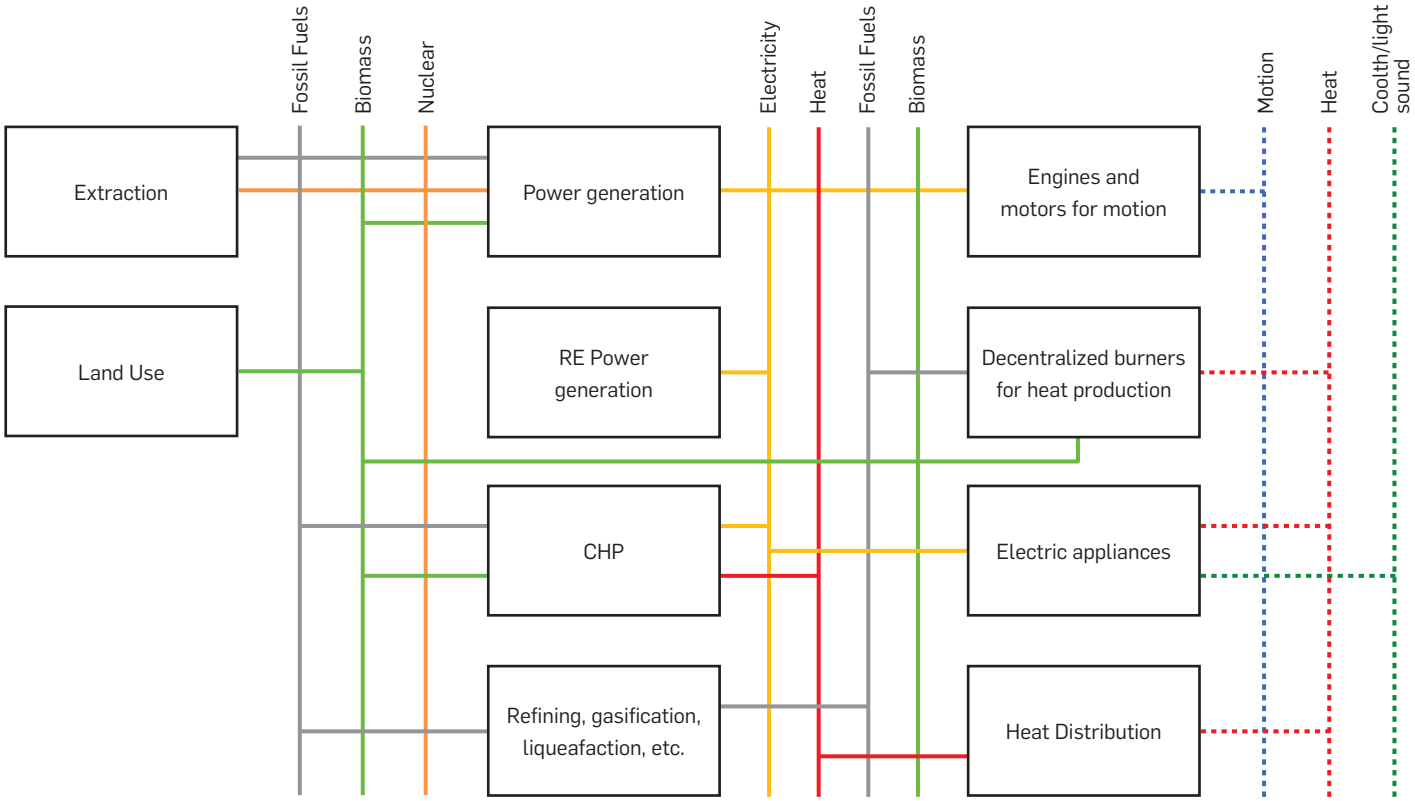
Materials module

The extent of energy use and environmental loading, as well as the potential for material and energy efficiency improvements are significant.[445, 446, 447] Sustainable use of materials implies reduction in material consumption and associated energy flows, by addressing the supply (e.g. through efficiency improvements in manufacturing), or the demand side (e.g. altered consumer behaviour). This can be achieved to a considerable extent through adaptation in lifestyles and societal behaviour, improved system design, cooperation between industries for a decrease in waste heat and material losses, and the incorporation of policy frameworks that facilitate such changes.[447]

The materials sector is interconnected with the land and energy module in several ways. Extraction of raw materials results in land degradation, emission release and requires energy input. Transformation of raw materials into consumer products is a very intensive process, while market globalization means that products need to be shipped across great distances from source of supply to point of demand. At the same time, equipment requirements in energy and agricultural production processes affect the demand of certain key materials, such as aluminium, cement, iron and steel. Inclusion of all these aspects can guide informed decision-making.

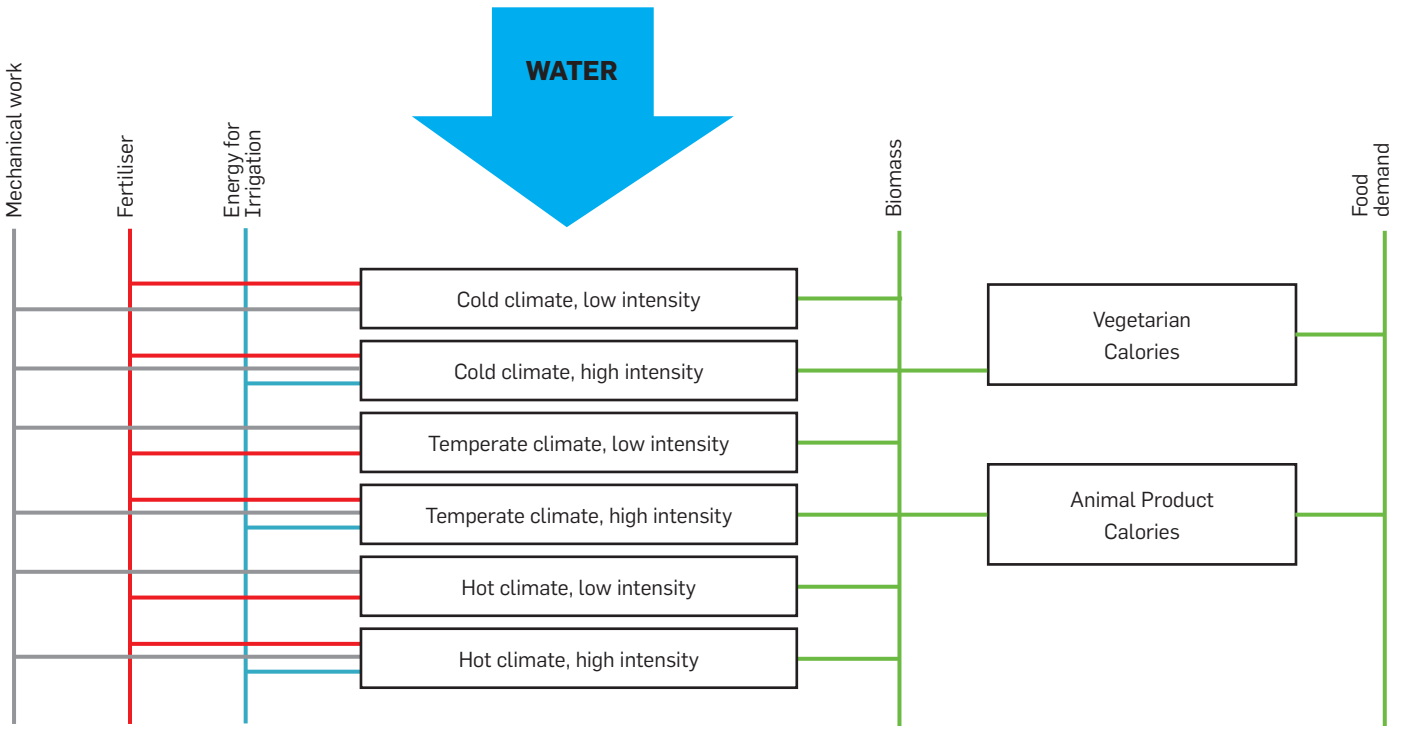
In the present version of the model, the materials module consumes energy. The pulp and paper, iron and steel, aluminium, cement, fertilizers and petrochemicals industries take in energy in various forms (i.e. heat, electricity, fuels) and use it either to drive conversion processes or as feedstock.[432,422] Efficiency improvements have been assumed based on existing projections.[448] Figure 36 shows the reference resource system for the materials module.

Figure 34. Simplified reference energy system of the GLUCOSE model



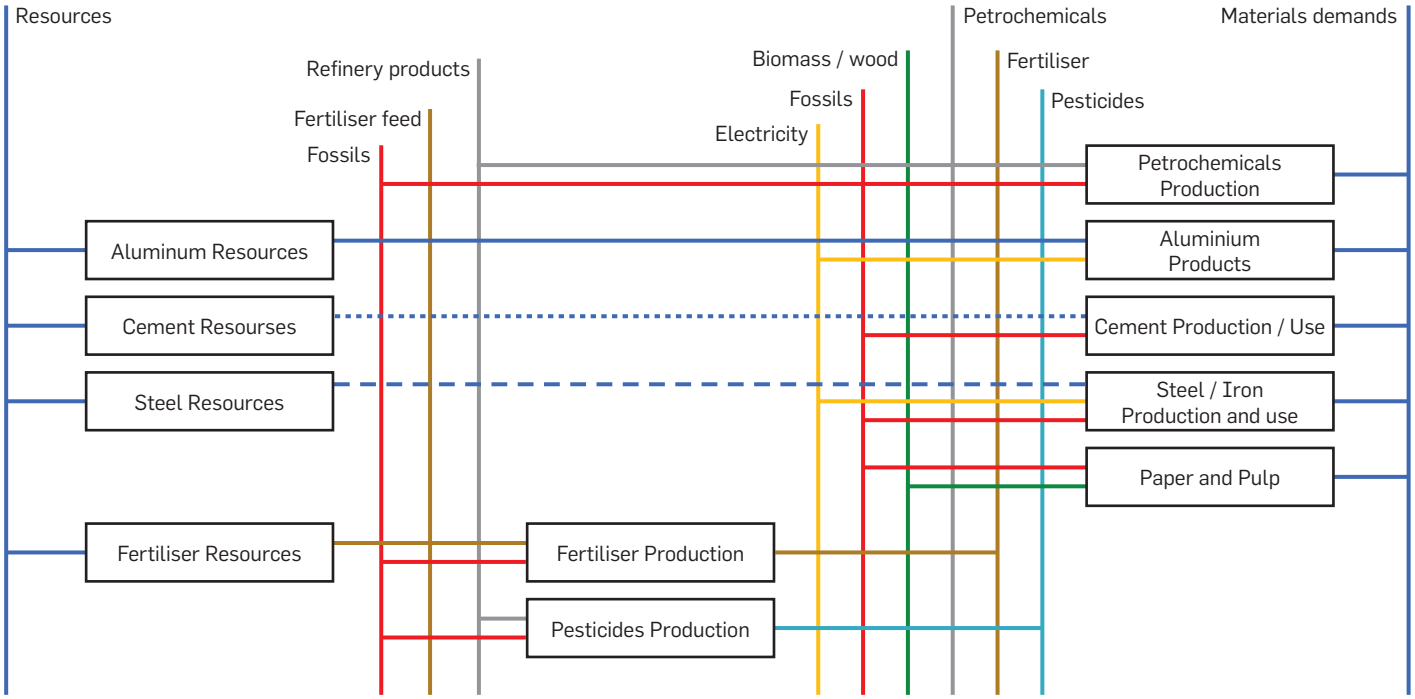
Source: Weirich (2013)[432].

Figure 35. Reference land resource system of the GLUCOSE model



Source: Weirich (2013)[432].

Figure 36. Reference resource system for the materials module of the GLUCOSE model



Source: Weirich (2013)[432].

Scenarios

A *baseline scenario* was developed that resembles the business-as-usual scenarios of other modelling efforts[447] in that it does not enforce any new environmental regulations. Since the OSeMOSYS platform is a demand-driven cost-optimization tool, it was decided that the solution for the baseline scenario would primarily be an outcome of the technological cost projections and the technology performance limitation.[449] The baseline scenario follows assumptions in the IEA technology perspectives publication for total primary energy supply and renewable energy generation potentials: the maximum penetration rate of renewable energy technologies and a minimum fossil fuel use follow a 2°C scenario, while a GHG emission limit was imposed based on a 6°C scenario. [447, 450]

A number of *alternative scenarios* have been developed to evaluate the response of each module within GLUCOSE. These include varying degrees of land or water availability, GHG emission limits and the imposition of a global carbon tax. The scenarios were used to explore the impacts of these measures in the integrated CLEWs nexus case compared to the effects on individual sectors. The set of scenarios explores many factors, including political decisions, technology learning, access to modern energy services, behavioural changes, and demographic and socioeconomic conditions.

Scenario results

Results were compared from running the integrated GLUCOSE model with all modules to running the energy module independently. The difference is due to cross-sectoral effects and interlinkages that are overlooked in individual sector assessment efforts. Additionally, scenarios with GHG emission limits and a global carbon tax are examined to assess effects on primary energy supply and power generation. It should be highlighted that results presented here are only indicative, as the aim is not to make predictions but to provide insights as to the system dynamics under particular circumstances.

Baseline scenarios

There are some interesting differences between the results of the integrated GLUCOSE model and the sectoral energy model, in terms of primary energy supply (Figure 37). It should be noted that the actual differences are most likely significantly larger than suggested by the aggregate global model. At the global level, trade-offs can be resolved that it is not be possible to resolve at the national or subnational level. In 2050, biomass use in primary energy supply was projected to be 125 EJ in the global energy model and only 74 EJ in the GLUCOSE model. This divergence is an indication that biomass availability at cost- competitive prices for use in the energy sector is constrained by increasing food demand and production costs. Whereas in the separate energy module all biomass could theoretically be used for energy, in the integrated GLUCOSE model the most productive land categories are primarily used to produce biomass for food. Consequently, available land for fuel production has a lower yield and requires greater nutrients, water and energy inputs, resulting in elevated fuel costs for irrigation and mechanical work. The results from the integrated GLUCOSE model show a significantly higher coal use after 2035. Oil is used for petrochemical production (in materials module), which leads to slightly lower volumes of oil available for energy purposes, particularly in transport, as opposed to the separate energy module. As a result, coal-to-liquids and to a lesser extent gas-to-liquids production increases to compensate for this. Liquid fuel production from coal and gas commences in 2031 in the GLUCOSE model and reaches a combined production of 58 EJ in 2050, in contrast to the first year of 2042 and total production of 31 EJ by 2050 when

the energy module is assessed separately. In both the integrated GLUCOSE and the separate energy sector models the production of oil declines overtime, even though oil reserves[451] are not depleted by 2050. This is due to the expected higher cost of oil per unit of energy compared to natural gas and coal[435] in the future and the expected increase in production of coal-to-liquids and gas-to-liquids.[452]

There are also some interesting differences between the results of the integrated GLUCOSE model and the sectoral energy model, in terms of power generation (Figure 40). One important difference is the lower use of gas in the GLUCOSE model, mainly compensated by coal-fired plants, which is visible in the last decade. Even though gas-fired electricity generation seems to outcompete coal plants in the energy module, results from the GLUCOSE model suggest that it is more cost-effective to use gas in the other sectors (i.e. materials module) instead.

Global water consumption in materials sector is expected to increase by half over the next 40 years (Figure 38) and water consumption in the energy sector (excluding hydropower) almost double (Figure 39). Besides hydropower plants, coal power plants, iron/steel and industry are large water consumers at the global level.

CO_2 tax scenarios

In the CO_2 tax scenario, the differences are greater between the results for the integrated GLUCOSE model and the separate energy model. In other words, interlinkages between resources become more pronounced as climate action is being taken.

The CO_2 tax scenario assumes a global CO_2 tax linearly rising from US$1 per ton CO_2 eq. in 2016, to US$15 in 2030, and to US$25 in 2050. The assumed CO_2 tax is rather moderate. CO_2 taxes derived from global energy models for stabilization of CO_2 concentrations are typically much higher, on the order of hundreds of US dollars. Despite the moderate CO_2 tax rate in our scenario, a significant reduction results in the share of coal in power generation due to the high emissions factor of coal. The reduction in coal-fired generation is compensated by investments in low and zero carbon power generation options. Low power densities and high water requirements for some renewable power generation options significantly changes the mix, as some options face scientific-technical and sociopolitical constraints.

The generation from solar thermal and wind power installations in the CO_2 tax scenario shows only a minimal increase compared to the baseline scenario. In fact, based on the assumed cost projections,[447] these technologies will gain market competitiveness even in a scenario without carbon tax.[447]

2°C and 4°C scenarios

The integrated GLUCOSE model does not include a climate model. Instead, GHG emission constraints were applied. Figure 41 shows the total primary energy mix for the 2°C and 4°C scenarios.

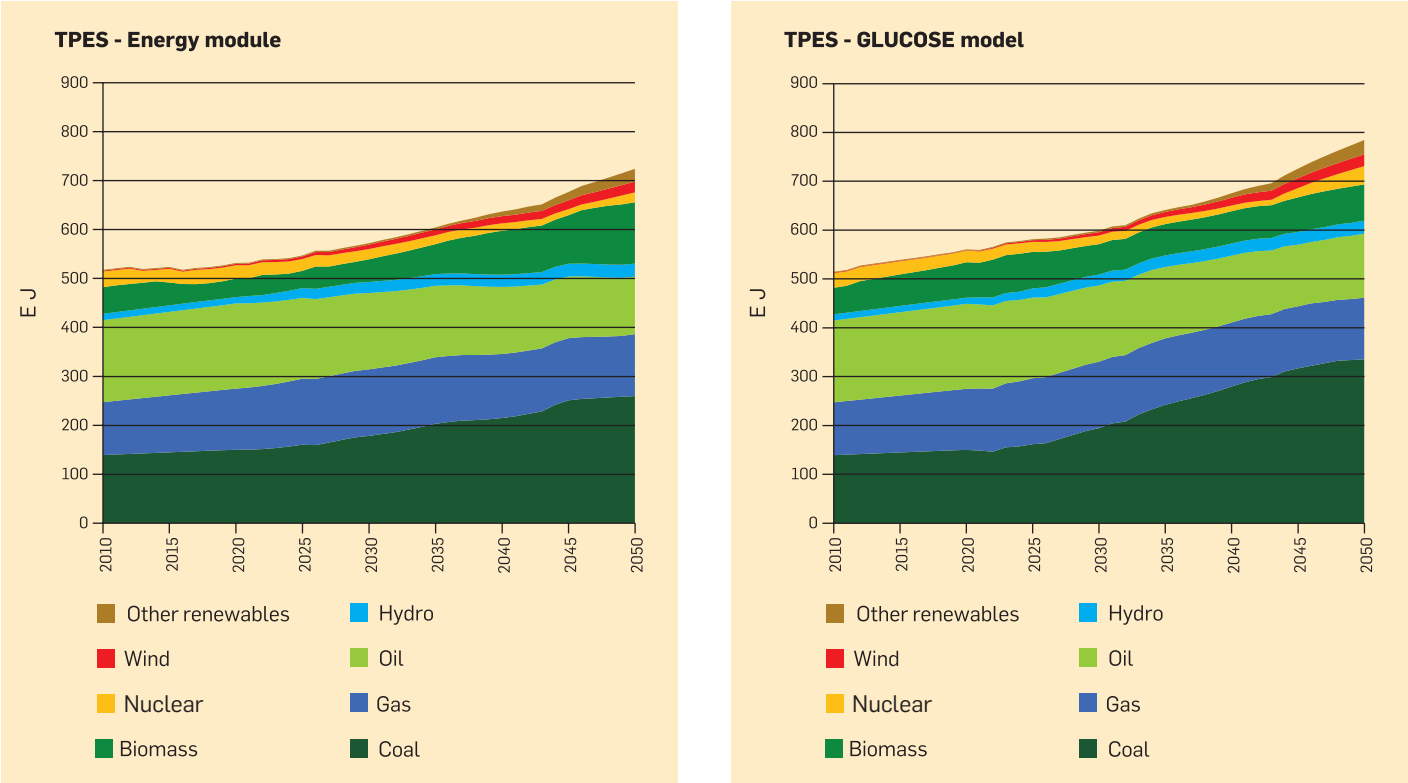
The differences between the 4°C scenario (Figure 41) and baseline scenario (Figure 37) are small. Some variances in total primary energy supply are visible post 2030 when the contribution of coal and gas is slightly lower and complemented with nuclear and biomass. This can be explained by the fact that even though the baseline scenario has a constraint of emission release corresponding to a 6ºC temperature rise, the actual release is relatively close to the 4ºC scenario (Figure 42). Similarly, emissions from the CO_2 tax and 4ºC scenarios are almost identical, which means that even with a conservative CO_2 tax the investment portfolios can easily be directed towards cleaner technologies.

However, in order to limit emissions below a 2ºC warming without any compromises on the demand side, the energy supply needs to be completely restructured. Results from the GLUCOSE model show that nuclear power and biofuels are part of the least-cost solution to achieve this. Coal use diminishes, while gas and oil retain a significant share of energy supply. By the end of the projection period, land-based transport sector relies mostly on electricity, while in roadway travel, biofuel vehicles exceed 25 per cent of the fleet by 2050. Once again though, there is the issue of feasibility. A system transformation of such scale requires immense political and financial support and surely costs will trickle down to the consumer base. As a result, it is uncertain how demand will respond to such a development and it is a dynamic which cannot be captured by the current GLUCOSE structure but which will be implemented in future model enhancements.

Investment needs

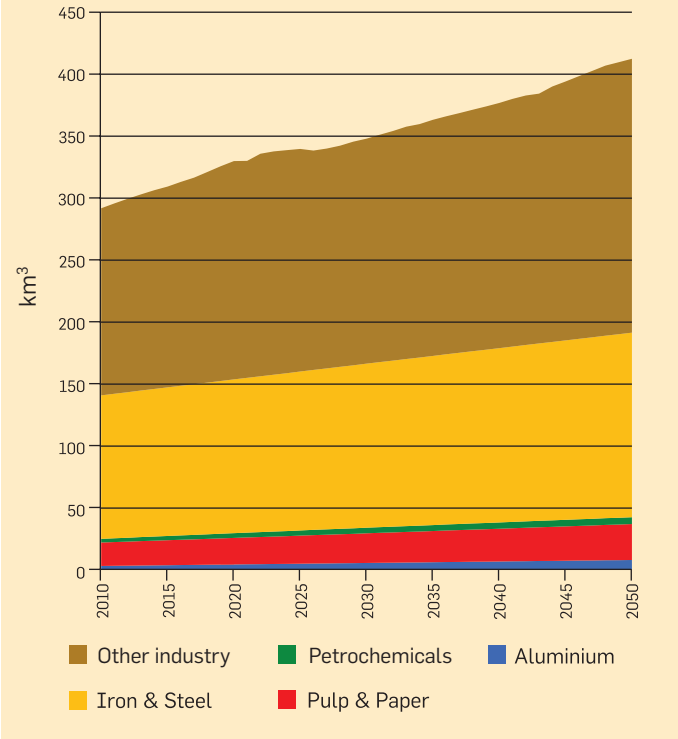
Interestingly, when CLEWD interlinkages are taken into account, GHG mitigation costs turn out to be much less than currently suggested by separate global energy models. When we are realistic about trade-offs between different resources under a changing climate, most of the cheaper sectoral baseline scenarios will not be feasible. Feasible baseline scenarios without climate mitigation policies will require higher investments, and integrated approaches that achieve a range of sustainable development goals may turn out to be cheaper than the feasible business-as-usual alternatives.

Figure 37. Total Primary Energy Supply in the baseline scenario of the separate energy module (left) and the integrated GLUCOSE model (right)



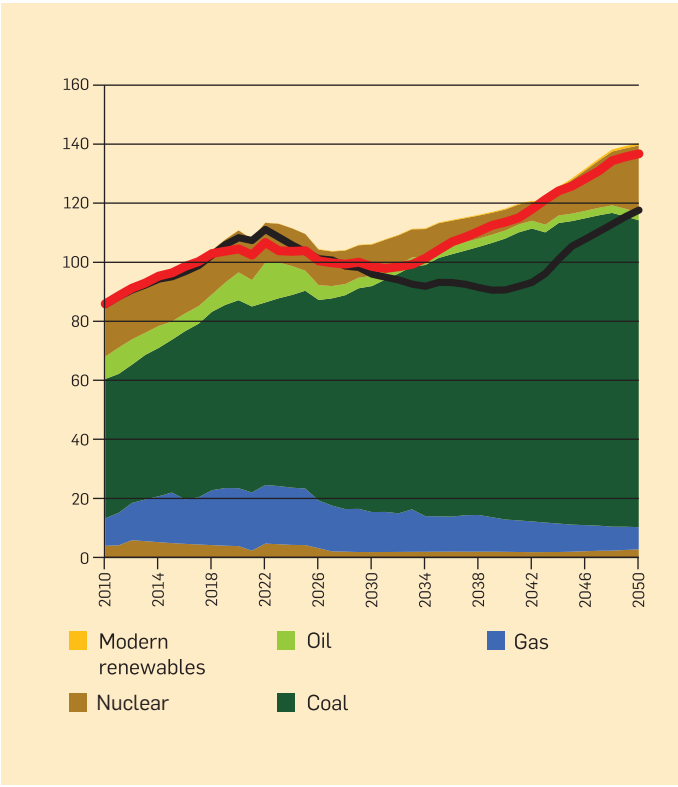
Source: Taliotis et al. (2013).

Figure 38. Water consumption in the materials sector in the baseline scenario



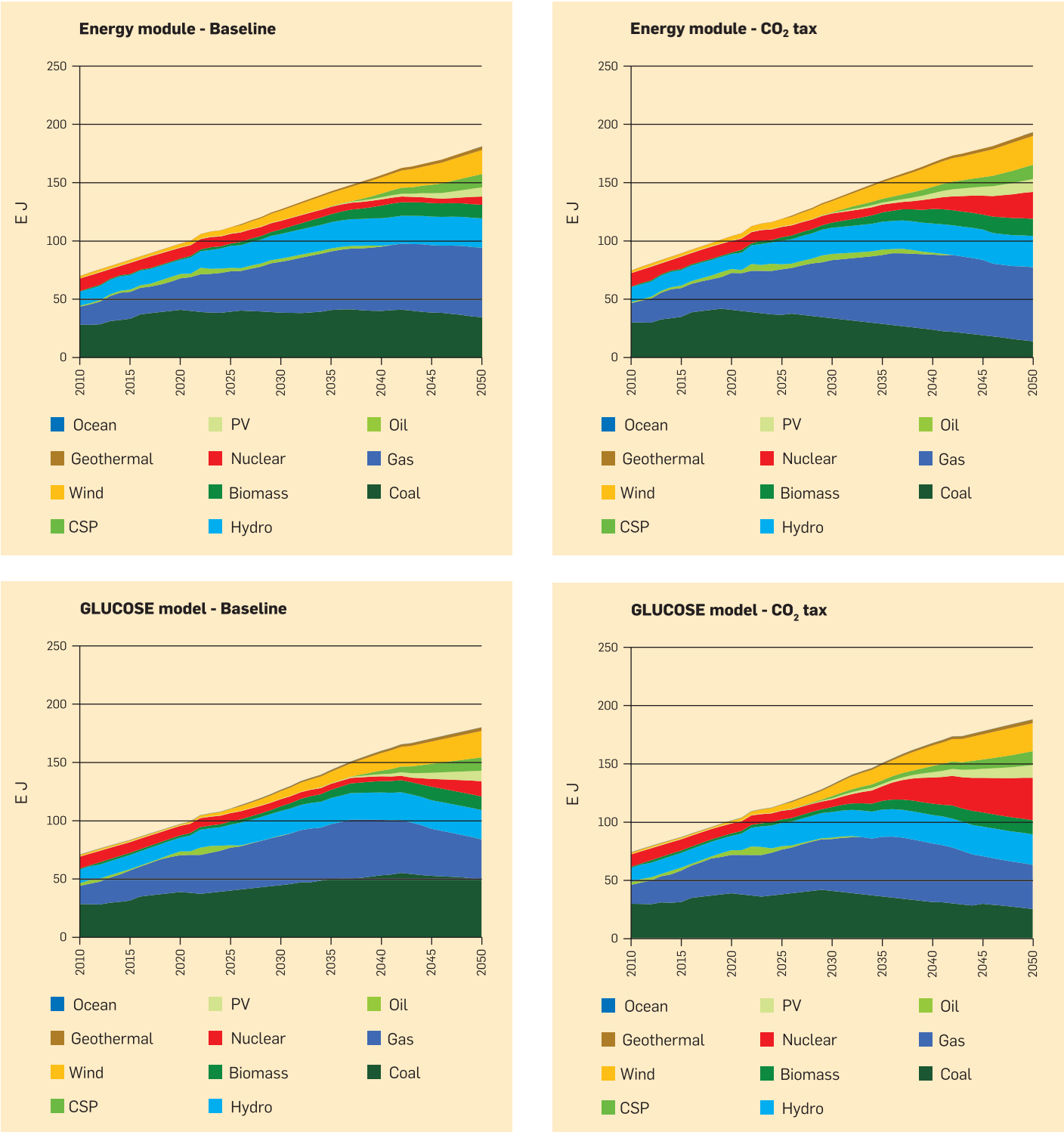
Source: Taliotis et al. (2013).

Figure 39. Water consumption in the energy sector, excluding hydropower



Source: Taliotis et al. (2013).

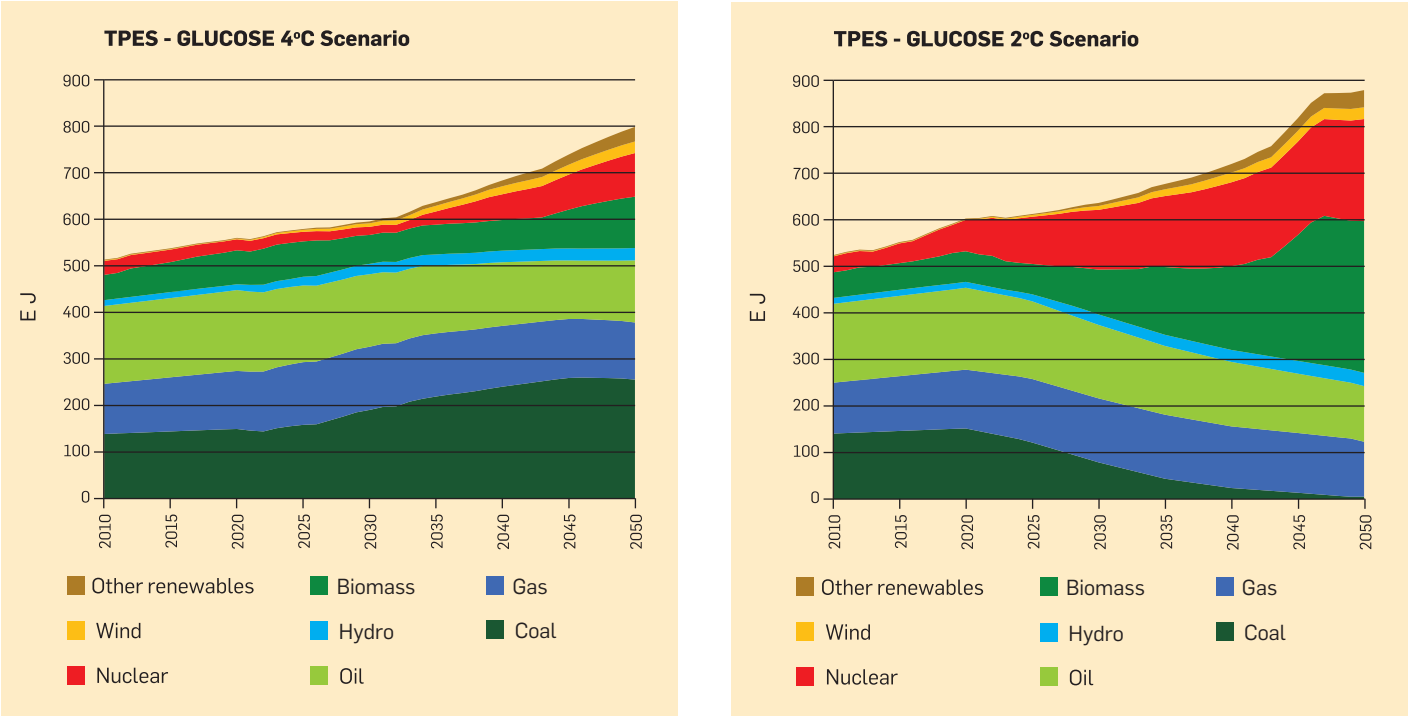
Figure 40. Power generation in the baseline (left) and CO_2 tax (right) scenarios



Note: The graphs at the top show results from the individual energy module, while the bottom graphs show corresponding results in the combined GLUCOSE model.

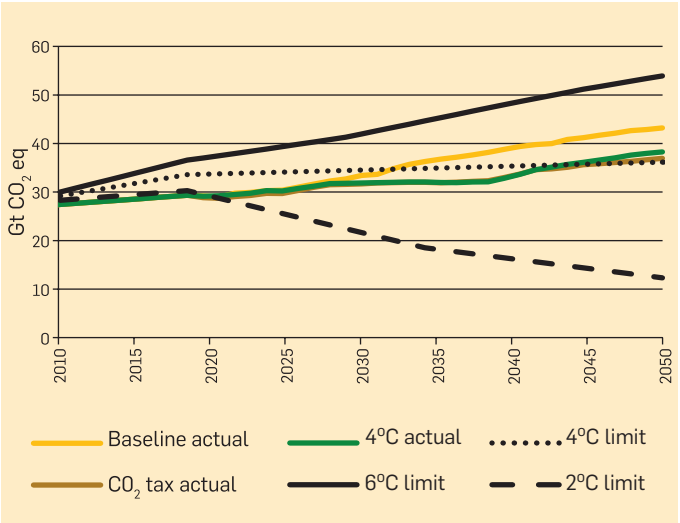
Source: Taliotis et al. (2013).

Figure 41. Total primary energy supply in the GLUCOSE model for the 4°C (left) and 2°C scenario (right)



Source: Taliotis et al. (2013).

Figure 42. Emission constraints and actual emissions in selected scenarios



Source: Taliotis et al. (2013).

Annex 6.
Response to the questionnaire on the scope and methodology of a global sustainable development report

All Member States, political groups and all 53 United Nations organizations of ECESA Plus were invited to make proposals on the scope and methodology of a Global Sustainable Development Report, inter alia, through a questionnaire. Written responses were received from China, Costa Rica, Croatia, the European Union, Indonesia, Japan, Jordan, Russian Federation, Switzerland, Tunisia, and the United Kingdom, as well as from CDP, ECLAC, ESCAP, UNCTAD, UNEP and WMO.[453] In addition, related inputs were considered from experts and United Nations partners who participated in expert group meetings that were convened in support of the Report in 2013.[454] This includes, *inter alia*, written responses by CBD, ECE, FAO, IAEA, UNEP and UNESCO.

Overall direction

In their responses to the questionnaire, a number of Member States and United Nations entities provide guidance on the overall direction for the Report.

Value added

Member States emphasize the need for the Report to be complementary to and to add value to existing processes and United Nations reports. In particular, a synthesizing report is expected to add value and provide improved access to the findings of a large number of existing assessments and to highlight synergies and trade-offs between actions taken in various settings.

As an integrated assessment of assessments, the Report is expected to become a useful instrument for the High-level Political Forum on sustainable development (HLPF), especially in agenda-setting and the post-2015/SDGs framework. The Report preparation process is expected to foster collaboration among analytical teams in the United Nations system, including the Bretton Woods institutions.

Focus and integration

Member States suggest focusing on the implementation of sustainable development and specifically the SDGs/post-2015 agenda, providing lessons learned and identifying good practices and challenges.

The emphasis should be on interlinkages between issues and on tools to address them in an intergenerationally equitable way. This might include, in particular, cross-sectoral analysis of progress made, obstacles encountered and potential integrated policy options.

Capacity needs

High-quality data and analysis capacity remains an issue, especially in developing countries, and lessons are available from existing assessments in this regard. Member States envisage a consultative, participatory process that will require building data and analysis capacity for integrated assessments and future scenarios. A joint United Nations effort is needed to address and monitor data availability, quality and analytical methodologies.

Role of the report in the HLPF and post-2015

In line with the Rio+20 outcome document, Member States envisage the Report to bring together findings of scientific assessments as input for the policy deliberations at the HLPF. The Report might have an important monitoring and accountability function and should be policy-relevant, but not make specific policy recommendations. Some Member States also envisage the Report to become one of a number of contributions to supporting implementation of the future SDGs and post-2015 development agenda.

Audience

The audience would comprise policymakers, notably at the highest level, senior government officials, the United Nations system and a wide range of stakeholders.

Scope

Preferred scope in terms of issue focus

Many respondents suggest to capture the priority issues identified in the Rio process, including *Agenda 21*, the Rio+20 outcome document, as well as in other important internationally agreed goals and commitments.

Most respondents have a clear preference for a science-based, yet practical Report that identifies policy solutions and supports the deliberations of the HLPF, as well as the implementation of future SDGs and the post-2015 development agenda. The Report would focus on identifying opportunities and challenges/obstacles to sustainable development progress, and would acknowledge the different priorities and capabilities of countries. Many respondents expect a focus on global issues considered by the HLPF, including new and emerging issues, whereas others suggest highlighting national and regional priorities.

One Member State suggests four sections for the Report: landscape, review of progress, opportunities and challenges, and policy recommendations. The analytical focus should be on the interaction among economic, social and environmental dimensions, on key drivers of change, and on clusters of strongly interlinked issues (e.g. the food–water–energy nexus). Most would like the Report to present good practices of integrated policies and some would also like to see in-depth sectoral analyses.

Many respondents expect an empirical analysis of progress on the means of implementation. In particular, the Report could present good practices of leveraging financing, technology, trade, capacity-building, international cooperation and multi-stakeholder partnerships. Some suggest reviewing existing mechanisms in support of sustainability and highlighting their advances or failures at different levels and timescales, including an analysis of the efficiency, effectiveness and financial and technical contributions of the institutional framework to support the achievement of the MDGs and SDGs.

In addition, a number of specific issues are suggested for inclusion: poverty eradication; inclusive growth; sustainable management of natural resources (water, energy, biodiversity, land-use and soil protection); sustainable consumption and production; terrestrial and marine ecosystems management; climate change; SDGs; international, technical and financial cooperation; technology transfer; health; resilience–adaptation–sustainability–development nexus; decision-making tools; and enhancing preparedness and building resilience.

Geographic scope

Interlinked sustainable development issues operate at widely different, but interacting geographic and timescales.

Most respondents agree that the Report should have a global and regional geographic scope, that it should be based on national reporting and use the five official United Nations regions, and take into account the differences between developed and developing countries. Most respondents suggest UN DESA to continue coordinating the global scope and the United Nations regional commissions to assist with regional sections of the Report.

Many suggest to include analysis for country groups – for countries in special situations or with high vulnerability (e.g. SIDS, LDCs, LLDCs, sub-Saharan Africa) and/or for country groups categorized by development stage (e.g. developing countries, developed countries, economies in transition) or by income (e.g. high-income, middle-income and low-income countries).
In view of the fact that global issues need to be addressed nationally and locally, many also suggest to report on trends and experiences at national and local levels, based on countries' own national sustainable development reports and/or local reports.

Time horizon

Most respondents recommend the report to adopt a long-term, transformative vision, while using a pragmatic, flexible approach to match the different timescales of sustainable development issues. Some define "long term" as a time horizon of 20–30 or 50 years. In particular, it is suggested to report on or around 1992, today, 2030, and 2050, in order to reflect progress since *Agenda 21*, where we are now and where we will be heading. Other respondents suggest adopting the time horizon of the future SDGs. A particular focus might be on the 4–5 years leading up to the report. The vision should be the vision of "real people in real places, not a vision of experts" alone.

Scope of scientific knowledge

Respondents suggest establishing a scientific, coherent and robust assessment framework. The Report might comprise a readable executive summary and a detailed scientific analysis covering all dimensions of sustainable development.

One group of respondents suggests including different types of knowledge, ranging from peer-reviewed literature and existing international assessments to local and multi-stakeholder knowledge, reflecting the perspectives of scientific communities and science users across the world. Another group of respondents recommends an exclusive focus on peer-reviewed scientific information and research.

Key national, regional and global priority issues to be reflected in Report

Global priority issues to be reflected in the report should be linked to global challenges, such as those highlighted in *Agenda 21*, the Rio+20 outcome document, and the future SDGs and post-2015 development agenda. The Report would focus on policy coherence, integrated policy, interlinkages and implementation challenges at all levels.

Regional priority issues should be defined by each of the regions and national priority issues identified in national development strategies. Member States could each highlight the most important tasks, which could then be reflected in the Report.

Respondents generally support a focus on the global aspiration for the next two generations to eliminate poverty and hunger; to feed, nurture, house, educate nine billion people by 2050; to secure inclusive growth, equity and development; and to preserve the Earth's life-support systems. In particular, respondents specifically referred to the following priority issues: poverty and hunger eradication; wealth creation; agriculture, food security and nutrition; sustainable consumption and production; resource intensity; employment and decent work; jobless growth; inclusive growth and income distribution; social equity and security; education and learning; health and sanitation; population; financing; ODA; international debt management; trade; green economy; science and technology innovation; access to and transfer of technologies; urbanization; energy; water; climate change; land-use and soil protection; forests; oceans and seas; marine protection and fishing; ocean acidification; biodiversity and ecosystems; housing; sustainable tourism; waste management; infrastructure development; transport; universal access to safe water, sanitation, sustainable energy, quality education, health services; equality; social protection; resilience to the impacts of climate change; disaster risk reduction; resilient buildings and communities; urbanization; slums; land use; land degradation; desertification, drought and deforestation; environment–poverty–inequality nexus; resource management; mining; macro-economics; pricing; barriers and disincentives to sustainable industrialization; intergenerational equity and welfare systems; governance and institutions; ecological-civilization society; and peace and security.

Role of the Report in identifying new and emerging issues

All respondents do see a role for the Report in identifying and addressing new and emerging issues, through sound scientific evidence, assessments and forward-looking projections, taking into account ongoing discussions in other relevant United Nations forums. Some believe this role to be even imperative. Others emphasize the need for political independence and objectivity of

the Report, and believe that it should not be considered the only source for such analysis. Even those who want the Report to focus primarily on implementation believe that it will most probably need to raise new and emerging issues in the process of identifying barriers to progress.

In this context, respondents note a range of unexpected changes and shocks that typically lead to new and emerging issues. Examples include economic and financial crises, natural disasters, and social and political instability.

Many respondents suggest identifying new and emerging issues through a combination of analysis of existing assessments and peer-reviewed literature; expert surveys; multi-stakeholder inputs from scientific communities, government officials, decision-makers, and civil society (e.g. using crowdsourcing and local knowledge); analysis of international agreements, commitments, and meeting outcomes; and country-level consultations.

At the same time, several respondents emphasize that the identification of new and emerging issues has to be based on sound scientific evidence. Others suggest a process whereby each country would identify its emerging priority issues, based on evidence, followed by HLPF agreement on a list of emerging issues for the purpose of agenda setting.

Type of content

Most respondents suggest capturing past and future trends, policy lessons and scientific findings indicating potential areas for policy action, in order to enable evidence-based decision-making of the HLPF. A particular focus might be determined for each edition of the Report.

The Report should provide policy-relevant advice, not policy recommendations per se. It should indicate how interlinkages can be addressed and what the leverage points and gaps are for the implementation of SDGs and post-2015 agenda.

It might showcase good practices and innovative sustainable development policies, plans, programmes, initiatives and technologies from around the world, and identify enabling success criteria and conditions. Some suggest to emphasize both successful and unsuccessful national cases, and to capture the institutional and political dimension.

The Report is expected to feature scientific findings indicating potential areas for policy action. In this regard, it should take into account the work of independent, scientific advisory groups and cooperate with assessment initiatives.

Monitoring and accountability framework for SDGs and the post-2015 development agenda

Most respondents envisage the Report to be part of – or to contribute to – the monitoring and accountability framework for the future SDGs and the post-2015 development agenda. They also expect the Report to engage a broad range of stakeholders. However, several respondents who favour this approach think that such decision would be premature, as the post-2015 framework will not be decided before 2015.

One Member State outlines potential elements of a larger monitoring and accountability framework for the post-2015 agenda:

a) National reporting by countries and national stakeholders; a synthesis of lessons learned based on national reviews of sustainable development commitments could feed into the Global Sustainable Development Report submitted to the HLPF session under the United Nations General Assembly every four years

b) Monitoring of targets and indicators of the post-2015/ SDG agenda at international level which is likely the role of the enlarged United Nations Development Group interagency report, as successor to the MDG reporting

c) Sectorial in-depth reporting, as carried out by specialized agencies and others, such as the IPPC, UNEP/GEO, WHO, ILO and others

d) Analysis of interlinkages, data availability, science policy interface etc., which could be the primary role of the Global Sustainable Development Report

e) Another respondent suggests to have a separate accompanying report prepared on monitoring and accountability, and to summarize it in the Report.

Several respondents emphasize the intergovernmental, Member States-driven nature of the processes under the United Nations General Assembly leading up to the SDGs and post-2015 development agenda. Against this background, they suggest that the Report might be used by these processes, but that it would not be part of a monitoring framework. Instead, the Report's primary function would be to support deliberations of the HLPF which provides political leadership and facilitates sustainable development implementation at the global level.

Periodicity of the report

Respondents differ in terms of preferred periodicity of the Report, ranging from one to five years. However, those that favour a multi-year cycle with an in-depth report to be prepared every four or five years do suggest intermediate and/or focused reports every one (or two) years, in order to support all sessions of the HLPF. An iterative approach might be chosen with an explicit evaluation and adjustment phase.

Most respondents suggest an in-depth report to be produced every four years coinciding with the convening of the HLPF in the United Nations General Assembly. The periodicity must be based on the needs of the HLPF and the post-2015 development agenda and take into account national reporting capacities. In particular, they suggest additional reports to be drafted in case of unpredictable circumstances with major impacts.

Those who would like to see a role of the Report in monitoring and accountability suggest more frequent quantitative indicator updates once or twice each year.

Some suggest adjusting the periodicity of contributing reports and assessments, such as the GEO report, which is being produced every five years.

Methodology

Organization of the preparation of the global report

Most respondents expect an important role for the United Nations system in the preparation of the Report. They suggest a joint United Nations system effort (including the Bretton Woods organizations), coordinated by the Division for Sustainable Development as Secretariat for the HLPF. In particular, some respondents suggest the chief scientists (or equivalent) of relevant United Nations entities[455] to collaborate in the preparation process. The five United Nations regional commissions could coordinate consultative meetings to prepare regional reports as inputs for the global Report. Some welcome the preparation of the prototype edition as a good general direction for future editions of the Report.

Many suggest national focal points to be part of this process in one form or another, and emphasize the need for United Nations technical support for developing countries. Some suggest encouraging national sustainable development reports for synthesis at the regional and global levels, whereas others prefer the Report to be drafted by scientists chosen by Member States or the United Nations Secretariat.

The report would build on existing reports and assessments, such as those mentioned in the prototype edition of the Report, including national sustainable development reports, United Nations publications and international assessments. Many respondents suggest a multi-stakeholder process engaging scientists, experts, Governments and civil society in undertaking analysis and assessments, possibly through joint working groups.

Transparency and fairness of the process is seen as essential, including in terms of selection of the experts. The Report should undergo a peer review process by scientists, policymakers and other relevant stakeholders. Data collection should be made through platforms spanning global, regional, national and local levels, and should engage international scientific platforms.

Choosing the thematic focus of a given edition of the Report

Many respondents suggest the thematic focus of a given edition of the Report to be related to or to coincide with the theme of the HLPF session. While some respondents suggest the HLPF to choose the thematic focus, others prefer a multi-stakeholder process under the HLPF which would include Member States, relevant United Nations entities agencies, civil society and regional consultations. Another suggestion is for the United Nations Secretariat to carry out a multi-stakeholder survey, the results of which would be considered and prioritized by Member States.

Principles

Respondents suggest the Report should follow the spirit of the *Rio Principles* and of other internationally agreed principles. They further suggest using the same principles and methods which are being used for preparation of other United Nations reports, including objectivity and political independence of conclusions, as well as balanced reflection of country- and region-specific information and data.

In particular, respondents recommend the following guiding principles for the Report: universality; legitimacy; representativeness; common-but-differentiated responsibilities; uniformity; comparability; objectivity; accuracy; transparency; inclusivity; balance; accountability; clarity; accessibility; leadership by example; continuous improvement; and the right of each country to decide on their own development pathways. They emphasize the need for adequate funding. They suggest an integrated, scientific approach, timely information, and multi-stakeholder perspectives. Research presented should be replicable and verifiable; hypotheses must be tested; and analytical work should be peer-reviewed. Member States express a clear preference for a policy-relevant – but not policy-prescriptive – report that is aligned with public policy needs.

Legitimacy of the Report at the global level requires that the scientific organizations or the scientific advisory mechanisms involved are representative of the scientific community worldwide; preferably have already some track record of providing scientific advice to policymaking bodies; and that the functioning of the organization and/or the process is fully transparent. Making participation in science-policy processes open, inclusive and geographically balanced is seen as indispensable for ensuring a politically legitimate product.

Scientific methods

Many respondents agree that the prototype edition that was presented at the inaugural meeting of the HLPF in September 2013 provides a useful basis on the methodological side for future editions. They suggest a multidisciplinary, integrated approach in the spirit of sustainability science and to draw on a multitude of sources and data. Respondents also suggest to learn from existing international assessments, and to allow scientists and Member States the flexibility to choose the relevant methods on a case-by-case basis.

Respondents specifically recommend to consider the following elements: report both scientific elements and official data, in order to create greater buy-in from stakeholders, experts and government representatives; statistical analysis and evaluation of past and future trends; use of global sustainable development scenario models to analyse trade-offs across policy objectives; inductive and empirical methods using quantitative and qualitative data; sustainable development indicators; backcasting; likelihood approach and capturing uncertainties.

Best way to organize national and regional contributions

Respondents comprise two groups with different views on the best way to organize national and regional contributions. However, both groups agree that the process would combine research, analysis and consultations.

One group emphasises the need to make use of existing structures avoiding new focal points and preparatory processes. In their view, the existing networks and focal points can facilitate discussions and consultations at all levels and would allow for external expert participation.

The other group would like to see the establishment of a targeted network of national and regional focal points/experts who would be nominated by Governments. Regular consultations with the focal points would ensure the consideration of stakeholder inputs across the world. The focal points would gather data, review progress and conduct focus group discussions. Some would like to see an IPCC-

style model in which the nominated experts would meet regularly and draft the Report.

Many respondents in the second group suggest countries and regions to develop their own national and regional sustainable development reports – on a voluntary basis – as input for the global report. In this model, the United Nations system would provide capacity-building and technical support. United Nations regional commissions would organize regional consultations. Existing national sustainable development councils or similar committees in charge of implementation of sustainable development would play an important role.

Some also suggest organizing a participatory process to define a template and web-based toolkit for national reporting for consideration by Member States and supported by United Nations capacity-building efforts.

Proposed concrete steps to involve scientists from a wide range of countries and regions

Respondents suggest a number of concrete actions. For example, the United Nations Secretariat might want to request countries to nominate candidates to the Report writing team, which would ensure consideration of views of scientific communities, practitioners and policymakers. Others suggest using existing mechanisms of government consultation with civil society in order to seek policy advice and to create scientific forums around specific policy questions in support of the Report.

Several respondents also suggest various institutions, communities or networks to be mobilized for the Report, such as the existing networks of national academies of science; networks of scientific institutions; scientists among United Nations staff; the Secretary-General's Scientific Advisory Board (SAB); United Nations system networks and communities; the Future Earth Initiative; Indonesian Institute of Science; Joint Research Centre; Sustainable Development Solutions Network; and statistical offices.

Several respondents suggest to involve all sectors and major groups identified in *Agenda 21*, including the United Nations system; planning agencies; prominent universities, research institutes, and think thanks; professional societies; scientific associations; civil society and opinion makers; experts and scientists from national academia and line ministries; independent scientists; civil society networks; knowledge exchange platforms; and R&D institutions in private and public domain.

Scientific advisory group or working group

While respondents agree on the usefulness of some kind of scientific advisory group (or working group) to provide overall guidance, they express different views on the composition and expected role of the group.

Some believe that the existing networks of national academies of sciences would best serve the role of an advisory group and also be the appropriate mechanism to peer review the Report. Others prefer the group of chief scientists of relevant United Nations entities to play an important role and envisage a scientific advisory board under the auspices of UN DESA, UNESCO, UNEP, UNDP, ILO, WHO, FAO, CBD, UNFCCC, UNCCD and UNIDO that would be closely related to the HLPF. Some of them emphasize the need for a mix of representatives from Governments, the United Nations system and representatives of civil society and academic institutions. Still others would like to see an involvement of the Secretary-General's SAB.

Another group of respondents would like to see a stronger ownership by Member States. They encourage the United Nations Secretariat to consider establishing a working group of experts nominated by Governments. In particular, they suggest following the practice of the OWG on SDGs, in order to take fully into account geographical balance and representation. The United Nations system and other international organizations could provide inputs to the draft and the working group of experts would arrange meetings to interact with stakeholders on a regular basis.

In another variant of the Member States-driven approach with national focal points, each country would establish a national scientific advisory committee that could be involved in national and global reports for which the United Nations would provide technical assistance.

National sustainable development report processes

Many respondents would like to see voluntary national sustainable development report processes and national experiences featured in the Report. However, there is a link to future HLPF decisions, including on regular reviews on the follow-up and implementation of commitments and objectives and the registry of voluntary commitments.

There are different options available which have to reconcile the needs for flexibility, streamlined reporting, and national consultations. Respondents suggest the national reports to become building blocks of an international reporting system. An advisory group might guide the preparation of the national reports. National reports would address the SDGs/post-2015 agenda and all areas of the national sustainable development strategy. Developing countries should receive capacity-building support. National processes might include interministerial dialogues.

How should the report inform the work of the High-Level Political Forum?

Many respondents suggest the Report to be integrated in and to provide scientific evidence to the deliberations of the HLPF, in order to enhance the science–policy interface for sustainable development. They would like to see the HLPF consider the method of integration and to decide what role and follow-up it would see for future Reports.

The Report should play a role in providing the HLPF with scientific knowledge in an easily comprehensible way. It could be us by the HLPF as a source of scientific analysis for setting its agenda, but it would not be the only agenda-setting input.

Many respondents expect the Report to provide scientific analysis of issues on the HLPF agenda, to provide evidence in support of HLPF decision-making and follow-up analysis, to disseminate HLPF activities, to channel feedback from the international community, and to carry out scientific monitoring of the future set of post-2015 goals.

Annex 7.
Selected areas for action identified in the SD21 study

Who? Where?	Sustainable development as the overall objective	Visions for sustainable development	Goals and strategies	Action plans	Implementation
Ideal overall aspiration	Agree that sustainable development is the overarching paradigm, at national and international levels.	Many visions for sustainability coexist. Agree on what to develop and what to sustain. Agree on fair sharing rules for use of the global commons (e.g. open oceans, atmosphere).	Develop integrated strategies and strong institutions that can guide all actors towards global sustainability.	Sectoral action plans should be based on agreed integrated strategies.	Ensure coordination of implementation of sectoral strategies.
Global level / United Nations	Reconfirm sustainable development as the overarching goal. Agree on a desired level of intergenerational equity and on thresholds for global planetary limits that should not be trespassed.	Agree on, or reconfirm, a minimal set of things to be developed and sustained. Re-examine the roles of various groups of countries in an updated allocation of rights and responsibilities.	Agree on division of labour between the international system and the national level. The United Nations, international community could focus on: (1) managing global commons; (2) interface with Member States on international rules that affect global human impacts on the environment (trade, corporations, financial and capital flows, pollution); (3) mechanisms for ensuring that national commitments on issues of global interest "add up". Adopt a small, consistent set of SDGs.	Coherent action plans for the implementation of agreed strategies and goals.	Agree on credible mechanisms for enforcement of commitments.
Political commitment	Actively engage to eliminate the duality in "sustainable" and "mainstream" institutions, at national and international level. Inscribe the maintenance and development of natural capital into the core mandates of ministries of finance, economy and development.	Empower lower levels of Governments to act on their own and try new approaches to sustainability.	Governments at all levels should lead by example by putting public procurement rules and practices in line with their publicly advertised sustainability goals. Reorient public investment (e.g. infrastructure, transports) in a direction that facilitates sustainable choices and behaviours.	Ensure maximal impact of public procurement on sustainability objectives.	Mobilize the political will to manage natural resources sustainably.
Institutions and society	Integrate global environmental limits and related risks in rules, institutions, and decision-making at all levels. Increase the voice given to future generations in institutions at all levels.	Incorporate resilience of social systems and ecological systems in decision-making. Manage the global commons equitably and sustainably. Define ways in which conflicts between rules and institutions can be resolved in a way that is compatible with overarching sustainable development objectives. Design mechanisms that ensure that commitments from different groups and different levels on issues of global interest "add up".	Look for robust strategies instead of "efficient" strategies. Consider all relevant instruments at our disposal – from acting on values and tastes, to demand management, to production efficiency. Integrate sustainability thinking in educational curricula. Develop strong institutions. Use integrated approaches to evolve sectoral goals and strategies that are consistent with broader goals ("nexus approaches"). Design systemic mechanisms to bring United Nations conventions into the debate.	Build flexibility into institutions so that their scopes and mandates can be readjusted periodically. Ensure consistency of sectoral development strategies with broader sustainability objectives.	Conducive rules and support for projects and initiatives.
Participation and civil society		Provide forums for discussion and decision-making among all parts of society to elicit long-term strategies that achieve strong buy-in. Reintroduce equity as a dimension of decision-making, as opposed to an add-on to economic choices.	Put participation at the heart of decision-making at all relevant levels.	Participation	Participation
Science	Improve the science–policy interface, including on global limits and tipping points.	Design an institutional framework that allows for monitoring of major sustainability areas and providing adequate feedback to decision-making on areas of global importance.	Design transparent, independent and participatory monitoring and evaluation systems that provide the needed information to readjust course as needed. Sharing data is needed.	Increase priority and resources for measurement and evaluation of action plans, institutions and standards.	Reinforce monitoring and evaluation capacity.
Private sector	Fully incorporate the concept of social responsibility.	Share a common vision.	Improve the compatibility of the system of rules governing the private sector with sustainable development objectives. Reassess roles for the public and private sectors in the economy. Commit to providing a level playing field for local, low-technology, and non-market solutions, in order to enable local knowledge, skills and technologies.	Improve regulatory systems for financial and capital markets and corporations. Ensure they do not discriminate against local, low-tech or non-market solutions.	Investments and projects.

Source: Adapted from United Nations (2012). *Back to Our Common Future.* Sustainable Development in the 21st century (SD21) project. Summary for policymakers[456].