GLOBAL ENVIRONMENT OUTLOOK
GEO-6
HEALTHY PLANET, HEALTHY PEOPLE

CAMBRIDGE
UNIVERSITY PRESS

University Printing House, Cambridge CB2 8BS, United Kingdom
One Liberty Plaza, 20th Floor, New York, NY 10006, USA
477 Williamstown Road, Port Melbourne, VIC 3207, Australia
314–321, 3rd Floor, Plot 3, Splendor Forum, Jasola District Centre, New Delhi – 110025, India
79 Anson Road, #06–04/06, Singapore 079906

Cambridge University Press is part of the University of Cambridge.
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www.cambridge.org
Information on this title: www.cambridge.org/9781108707664
DOI: 10.1017/9781108627146

First published 2019

This document may be cited as: UN Environment (2019). Global Environment Outlook – GEO-6: Healthy Planet, Healthy People. Nairobi. DOI 10.1017/9781108627146.

Job Number: DEW/2214/NA

Cover design: Joseph Shmidt-Klingenberg and Sebastian Obermeyer
Graphic Design: Joseph & Sebastian
Layout: Jennifer Odallo and Catherine Kimeu (UNON Publishing Services Section – ISO 14001-certified)

Printed in Singapore by Markono Print Media Pte Ltd

A catalogue record for this publication is available from the British Library.
ISBN 978-1-108-70766-4 Paperback

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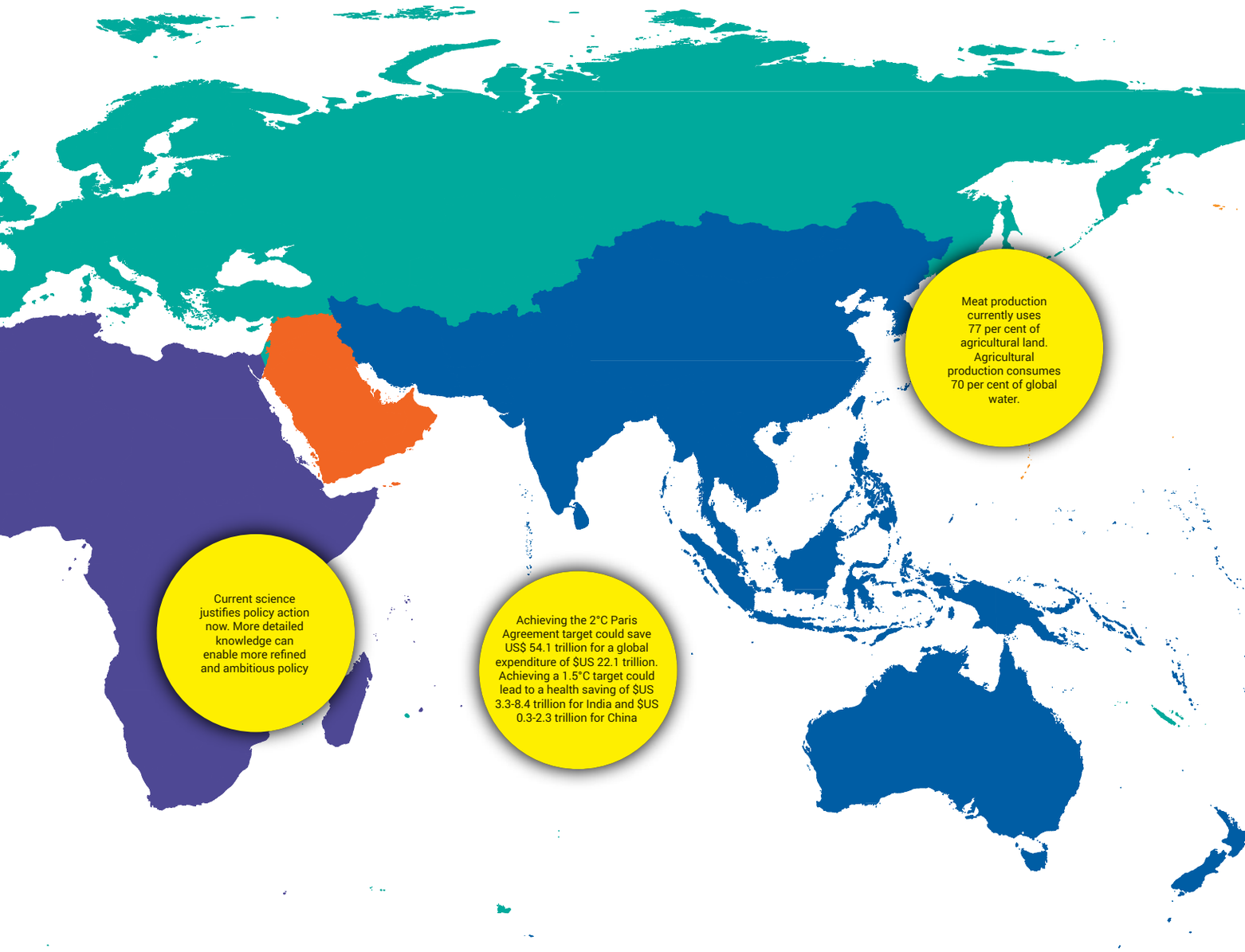

Acknowledgements

The sixth Global Environment Outlook (GEO-6) assessment report is a product of the generous dedication and extraordinary investment of numerous individuals, whose knowledge, expertise and insight helped shape this important body of work. UN Environment acknowledges the contributions made by many governments, individuals and institutions to the preparation and publication of this report. A more complete list of names of individuals and institutions involved in the assessment process is included following the annexes of this publication. Special thanks are extended to:

High Level Inter-Governmental and Stakeholder Advisory Group (HLG)

Nassir S. Al-Amri, Hæge Andenæs, Juan Carlos Arredondo, Sara Baisai Feresu, Benon Bibbu Yassin, Simon Birkett, Gillian Bowser, Joji Carino, Fernando E.L.S. Coimbra, Marine Collignon (alternate), Victoria de Higa Rodriguez, Laksmi Dhewanthi, Noasilalaonomenjahary Ambinintsoa Lucie, Arturo Flores Martinez (alternate), Sascha Gabizon, Prudence Galega, Edgar Gutiérrez Espeleta, Keri Holland (alternate), Pascal Valentin Houénou (Vice-chair), Yi Huang (Co-chair), Ingeborg Mork-Knutsen (alternate), Melinda Kimble, Asdaporn Krairapanond, Yaseen M. Khayyat, Pierluigi Manzione, Veronica Marques (alternate), Jock Martin, John M. Matuszak, Megan Meaney, Naser Moghaddasi, Bedrich Moldan, Roger Roberge, Najib Saab, Mohammed Salahuddin, Jurgis Sapijanskas (alternate), Paolo Soprano (Co-chair), Xavier Sticker, Sibylle Vermont (Vice-chair), Andrea Vincent (alternate), Terry Yosie.

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GEO-6 Funders

Producing an assessment of this scale requires many generous contributions. The following organizations provided funding directly or indirectly to the sixth *Global Environment Outlook*: The Government of Norway, the European Union, the Governments of Italy, Singapore, China, Mexico, Switzerland, Denmark, Egypt and Thailand. Together with UN Environment's Environment Fund and Regular Budget, these contributions allowed for the production of GEO-6 and its accompanying Summary for Policymakers, as well as subsequent outreach activities.

Norwegian Ministry of Climate and Environment

This project is co-funded by the European Union

Ministero dell'Ambiente e della Tutela del Territorio e del Mare

Ministry of the Environment and Water Resources

MEE

SEMARNAT Secretaría de Medio Ambiente y Recursos Naturales

Schweizerische Eidgenossenschaft
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Federal Office for the Environment FOEN

Ministry of Environment and Food of Denmark
Environmental Protection Agency

Ministry of Environment

GEO-6 Partners

GEO-6 also benefited from the generous contributions of several partners, including: GRID-Arendal, World Conservation Monitoring Centre (WCMC), The Centre for Environment and Development in the Arab Region and Europe (CEDARE), The Big Earth Data Science Engineering Program (CASEarth), the European Space Agency (ESA), the Netherlands Environmental Assessment Agency (PBL), the Freie Universität Berlin and the Massachusetts Institute of Technology (MIT).

GRID ARENDAL

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MIT Center for Collective Intelligence

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Maps and Graphics
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Foreword

The sixth *Global Environment Outlook* is an essential check-up for our planet. Like any good medical examination, there is a clear prognosis of what will happen if we continue with business as usual and a set of recommended actions to put things right. *GEO-6* provides both a statement of the problems and a how-to guide to advance us on the path set out in the 2030 Agenda and the 17 Sustainable Development Goals.

The theme, "Healthy Planet, Healthy People", highlights the inextricable link between the environment and our survival and progress. The challenges outlined are multiple. From climate change to the extinction of species, economies too dependent on the wasteful use of resources and unprecedented pressure on terrestrial and marine ecosystems, we are at a decisive moment in our role as custodians of the planet.

It is not all bad news. Many indicators point to progress on issues such as global hunger, access to clean water, sanitation and clean energy. We can also see some signs of the decoupling of environmental degradation and unsustainable resource use from economic growth, as well as unprecedented technological innovation.

The overall message, however, is that we need a significant shift in trajectory – indeed, the kind of transformational change prescribed by the Intergovernmental Panel on Climate Change in its recent report on limiting global warming to 1.5 degrees.

GEO-6 details both the perils of delaying action and the opportunities that exist to make sustainable development a reality. We have the necessary policy guidance and the science that underpins it. The only missing ingredient for success is our collective resolve.

António Guterres
Secretary-General of the United Nations

January 2019

Foreword

"Grow now, clean up later". That's sadly been the business model for much of the world since the industrial revolution. It's as if looking after environment is a needless distraction, but ultimately a nice add-on when economies are doing well, and when luxuries can be afforded.

The *Global Environment Outlook*, now in its sixth edition, has been a key driver of the shift in this mindset. Grounded in the best available science and real-world case studies, it underscores the fact that a healthy planet is a prerequisite for healthy people, and that is in turn the foundation of any healthy economy. And most importantly, it shows how it's possible to win on all fronts.

In this drive towards a green economy, greater sustainability and the hope that we can thrive rather than merely survive, there has never been a more critical moment than now. The science and data are crystal clear on the multitude of challenges we face, but also the small window of opportunity we have to turn things around.

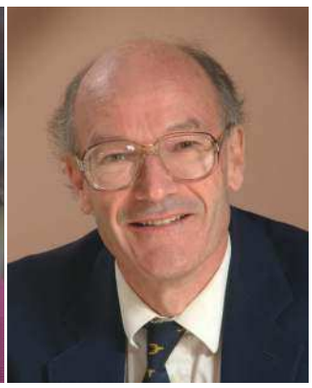
The *Global Environment Outlook* is therefore a roadmap to achieving the United Nations' Agenda 2030, in which hunger and poverty are consigned to history, and where biodiversity, oceans, land and freshwater are protected and restored to health.

It makes it clear that achieving this requires a transformation in human lifestyles and productive activities: our industry, agriculture, buildings, transport and the energy system which powers them. It means renewables like wind and solar must be the new norm, as must energy efficient, green buildings and transport. At the same time, this work also opens up huge economic opportunities – a new, better industrial revolution.

The task may be enormous, but we should also be inspired. Global environmental actions like the Montreal Protocol, our innovative defence against the hole in the Ozone layer, prove that we have the institutions and capacity to come together. The issue of plastics pollution has shown how diverse communities around the world – school children in Bali, coastal residents in Mumbai or surfers from Cornwall – can come together. After all, making the world a better place and cleaning up our act is a non-partisan, unifying cause we can all get behind.

Joyce Msuya
Acting Executive Director, UN Environment

Co-Chairs' Foreword



What is the Outlook for humanity? This sixth *Global Environment Outlook (GEO-6)* shows clearly that our species now stands at a crossroads. It can choose a challenging but navigable path towards a new golden age of sustainable development as envisaged by the United Nations' Agenda 2030 in which human hunger and poverty are consigned to history through the sustainable use of Earth's resources and the natural environment that leaves no-one behind. Or it can continue with current trends and practices, which will lead to a losing struggle against environmental disruptions, which threaten to overwhelm large parts of the world.

GEO-6 clearly identifies the problems that have to be addressed if this latter outcome is to be avoided. But it also points to the solutions to these problems, to ways in which the aspirations of the Sustainable Development Goals (SDGs) can be realised and Earth's air, biodiversity, oceans, land and freshwater restored to health, to the incalculable benefit of Earth's people: Healthy Planet, Healthy People, the title of *GEO-6*.

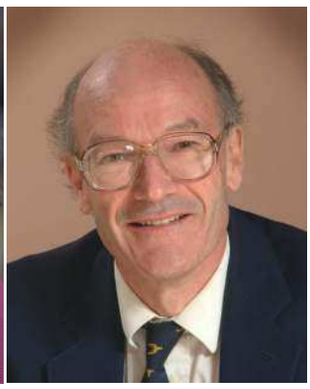
GEO-6 makes clear that achieving the SDGs will require a transformation in human lifestyles and productive activities: our industry, agriculture, buildings, transport and the energy system which powers them. This necessary transformation over the coming decades represents an enormous economic opportunity to those countries, policy makers and businesses who show the enterprise and innovative spirit to put in place the technologies, social practices and institutions that can make sustainable development a reality.

As co-chairs of the sixth *Global Environment Outlook* we have overseen the work of the tireless authors and experts who have contributed to this analysis. The scientific integrity of the process has been monitored by the Scientific Advisory Panel. The High Level Group helped us to find the language that can communicate to policymakers. The Secretariat provided the staying power to ensure that the entire process moved smoothly. Some States provided the necessary funding, encouraged us and hosted some of our meetings. We feel that the *GEO-6* has gathered the evidence to show what needs to be done, and what can be done. We respectfully present it to the world's decision makers, and ask them to face and address these challenges, for all of our sakes and future generations.

Joyeeta Gupta

Paul Ekins

Co-Chairs' Message



UN Environment's sixth *Global Environmental Outlook (GEO-6)* has reviewed the state of the health of the environment and the related health of the people, and the prospects for meeting the Sustainable Development Goals (SDGs) of the UN's Agenda 2030. As co-chairs, we draw six key messages from the report:

First, a healthy planet supports healthy people: A healthy planet is important for the health and well-being of all people. It directly supports the lives and livelihoods of 70 per cent of the Earth's population living in poverty [SPM 2.2.2; 6, 6.3.4, 6.6.3; boxes 6.5, 13.2], in particular those who are very poor, and it provides the basis for the production of the goods and services that are necessary for the global formal economy, which had a global GDP value of $US 75 trillion in 2017. Overall the biosphere is essential for human survival and civilization and its value to humans is therefore effectively infinite. However, for some purposes it is useful to calculate the monetary value of ecosystem goods and services; as an example the total global ecosystem services have been valued at $US (2007) 125 trillion/year [1.3.1]. This number does not capture the benefits of, for example, a climate suitable for agriculture or how melting glaciers affect the water security of more than a billion people [4.2.2], and so is clearly an underestimate. The value of lost ecosystem services between 1995 and 2011 have been estimated at $US 4-20 trillion (Costanza *et al.* 2014). More particularly, the value of pollinators which provide crucial services for commercial and non-commercial food production, has been estimated at $US 351 Billion/year to the commercial sector (Lautenbach *et al.* 2012).

Second, an unhealthy planet leads to unhealthy people: The planet is becoming increasingly unhealthy through the negative impacts of biodiversity loss (including pollinators, coral reefs and mangroves), climate change and other air pollution, water pollution, ocean pollution and depletion, and land use change. An unhealthy planet has huge social costs in terms of human health and well-being as well as on the formal economy and livelihoods worldwide. As with ecosystem goods and services, these costs are difficult to express comprehensively in monetary or other terms. However, *GEO-6* provides data that illustrate the sort of costs involved. For example, exposure to indoor/outdoor air and water pollution costs at least 9 million lives annually [4.1.1] including 300,000 in the G7 countries in 2015 (Organisation for Economic Co-operation and Development [OECD] 2017). About 2.8 million people died in 2015 from indoor air pollution [5.3.1] and about 2.8 million depend on unclean traditional biomass [21.2.3]. Many more millions suffer from ill-health and loss of livelihoods. Pollution-related costs have been estimated at $US 4.6 trillion annually [1.3.1]. 29 per cent of land is degraded affecting the lives and livelihoods of 1.3-3.2 billion people [8.3.2] and slow onset disasters are triggering migration [9.3.4; 9.7.3]. In 2016, 24.2 million people were internally displaced in 118 countries as a result of sudden-onset disasters [4.1.2]. Such disasters affected not just the poor countries, but also rich countries like the USA and Japan. Between 1995-2015, 700,000 people died and 1.7 billion people were affected by extreme weather events costing $US 1.4 trillion [4.1.2; Figure 4.2] (Centre for Research on the Epidemiology of Disasters and United Nations Office for Disaster Risk Reduction 2015). Between 2010 and 2016, an average of around 700 extreme events each year cost an average of $US 127 billion per annum. While 90 per cent of the losses came from high and upper-middle income countries, the less than 1 per cent of the losses from low-income countries amounted to around 1.5 per cent of their GDP, a much higher proportion than in high-income countries, and was almost all uninsured (Watts *et al*. 2017). The damage of climate variability and change to some small island regions is in the order of 1-8 per cent of GDP averaged over 1970-2010 (United Nations Environment Programme [UNEP] 2016a); if average global warming is not limited to 1.5°C, small island states and coastal populations may face existential threats. Water-related health costs are estimated at about $US140 billion in lost earnings and $US 56 billion in health costs annually (LiXil, Water Aid and Oxford Economics 2016). Such impacts are likely to exacerbate inequalities within and between countries, as opposed to reducing them in line with SDG10.

Third, the drivers and pressures leading to an unhealthy planet need to be addressed: The drivers and pressures result from a continuing failure to internalize environmental and health impacts into economic growth processes, technologies and city design. The pressures arise from massive use of chemicals (many with toxic health and environmental implications), huge waste streams (many largely unmanaged), committed and intensifying climate change impacts, and inequality which contributes to demographic changes and other drivers and pressures. The environmental footprint of rich people is significantly higher than that of poorer people. For example, the monthly emissions per capita in rich countries are mostly higher than the yearly emissions per capita in poorer countries (Ritchie and Roser 2018). The wealthiest countries consume 10 times the materials per person compared to the poorest countries (UNEP 2016b). While ideas around a green, healthy and inclusive economy aim to address these challenges, these ideas have yet to be systematically reflected in existing national policies. The IPCC 1.5°C report highlights

the very limited time left to reduce greenhouse gas emissions to the extent necessary to limit average global warming to this level, thereby avoiding the potentially very expensive adaptation costs that will otherwise be required (Intergovernmental Panel on Climate Change 2018).

Fourth, current science justifies policy action now, but more detailed knowledge can enable more refined and preemptive policy. Existing knowledge is sufficient to mobilize action now [1,2, 4-9]. New knowledge including disaggregated data from earth observation, in-situ data, citizen science, ground truthing and indigenous and local knowledge are necessary in national policy and accounting more broadly [3]. There are major benefits in accounting systems that register the details about who causes damage to the environment, how and why; what is the extent of nature's contributions to humans, the loss of ecosystem goods and services; and who is affected [Figure 3.6]. Statistics and accounting systems also need to recognize the realities of the predominantly poor people in the informal economy, who are often particularly dependent on nature's contributions to people, and hence more vulnerable to environmental degradation.

Fifth, environmental policy is necessary but inadequate by itself to address systemic ecological problems, solutions to which require a more holistic approach. Current (inter) national policies are not on track to address the key environmental challenges effectively and equitably, in line with the aspirations of the SDGs. Environmental considerations need to be integrated into all policy areas, such that the potential and actual implications for natural resources and the environment are robustly included in policies for economic growth, technological development and urban design, so that there is effective long-term decoupling between economic growth, resource use and environmental degradation. Climate mitigation needs to be accompanied by policy for the equitable adaptation to committed climate change. Policies will only be effective if they are well designed, involving clear goals and flexible mixes of policy, including monitoring, instruments aimed at achieving them [12-17] and when access to judicial remedies are available [23.3; 23.11; 24.2]. Such a holistic approach need not require additional economic costs. If 2 per cent of global GDP is invested in maintaining and restoring natural capital, it could deliver the same economic growth outcome as a similar investment along current lines [18.1]. The health benefits from reduced air pollution of achieving the 2°C target could be 1.4-2.5 times the cost of mitigation, the higher figure involving benefits of $US 54.1 trillion for a global expenditure of $US 22.1 trillion. Moving from a 2°C to a 1.5°C target would generate further substantial health benefits for China and India [Box 24.1]. Food security could be enhanced if food wastage, currently running at 33 per cent globally, is curtailed [SPM 2.2.4].

Sixth, healthy people, a healthy planet and a healthy economy can be mutually supportive: Healthy diets (less meat) and lifestyles, healthy cities with good waste management (2 out of five people lack access to waste disposal services [SPM 2.2.6; 4.4.1]) and the use of green infrastructure in built-up areas, and healthy mobility can increase labour productivity, reduce the need for land for agriculture (e.g. meat production currently uses 77 per cent of agricultural land [SPM 2.2.4; 8.5.1, 8.5.3]) and reduce the costs associated with urban congestion and transport-related pollution and address the potential trade-offs between land for food/biofuel and biodiversity protection (OECD 2017). Technological and social innovation that supports environmentally sound economic development provides a viable and attractive alternative to the 'grow now, clean up later' practices of the past. In addition, a healthy people approach requires implementation of the rights of access to clean water and food, tenure rights, and gender equality. Millions of lives could be saved and livelihoods improved by access to clean air, water, fuel and food. Secure tenure rights for poor and indigenous people would enhance their ability to protect biodiversity and the different ecosystems that sustain them – for example, indigenous and poor people live on 22 per cent of the land that supports 80 per cent of global biodiversity (Sobrevila 2008) generating billions of dollars' worth of carbon sequestration, reduced pollution, clean water, erosion control, etc. (SPM 2.2.4; 8.5.3]. If gender equality is promoted, including the right to inherit and own land, then food security and many health issues relating especially to women and children could be better addressed [4.1.12]. Embracing the urgent and transformative changes that are required to accelerate the transition to a more equitable and environmentally sustainable economy, and a healthier society, through top down policy guidance and bottom-up initiatives will underpin the well-being and prosperity of countries and their people now and in the future.

Joyeeta Gupta

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