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Sustainable development

Implementation of Agenda 21, the Programme for the Further Implementation of Agenda 21 and the outcomes of the World Summit on Sustainable Development and of the United Nations Conference on Sustainable Development

Report of the Secretary-General

Summary

The present report, prepared in response to General Assembly resolution [72/216](#), provides an update on the [implementation of Agenda 21](#), the Programme for the Further Implementation of Agenda 21 and the outcomes of the World Summit on Sustainable Development and of the United Nations Conference on Sustainable Development. It provides, [in accordance with the request](#) in the resolution, an [analysis of the unfinished business of Agenda 21](#), the Programme for the Further Implementation of Agenda 21 and the outcomes of the World Summit and of the Conference, including on demographic dynamics, trade, land resources, toxic chemicals and groundwater contamination, waste, transfer of and cooperation on technology; and promotion of sustainable patterns of production and consumption, as well as the lessons learned in their full implementation. It also includes, by way of example, success stories and best practices. In that context, the report is based on recent studies and analysis by the United Nations system, the outcomes of intergovernmental deliberations, including the high-level political forum on sustainable development, convened under the auspices of the Economic and Social Council, the discussions of the multi-stakeholder forum on science, technology and innovation for the Sustainable Development Goals and other relevant forums and discussions. The present report should be read in conjunction with the report of the Secretary-General, submitted pursuant to paragraph 11 of Assembly resolution [72/216](#), on the mainstreaming of the three dimensions of sustainable development throughout the United Nations system ([A/73/81-E/2018/59](#)).

* [A/73/50](#).



I. Introduction

1. The present report has been prepared pursuant to General Assembly resolution [72/216](#), paragraph 14, in which the Assembly requested the Secretary-General to submit to the Assembly at its seventy-third session a report on the implementation of that resolution and to include in the report a **comprehensive and substantive analysis of the unfinished business of Agenda 21**: Programme of Action for Sustainable Development, the Programme for the Further Implementation of Agenda 21 and the outcomes of the World Summit for Sustainable Development, held in Johannesburg, South Africa, from 26 August to 4 September 2002, and of the United Nations Conference on Sustainable Development, held in Rio de Janeiro, Brazil, from 20 to 22 June 2012, including on demographic dynamics, trade, land resources, toxic chemicals and groundwater contamination, waste, transfer of and cooperation on technology and promotion of sustainable patterns of production and consumption, and to include the lessons learned in their full implementation, as well as success stories and best practices.

2. The report is based on recent studies and analysis conducted by bodies and organizations of the United Nations system, the outcomes of intergovernmental deliberations, including the high-level political forum on sustainable development, convened under the auspices of the Economic and Social Council, the discussions of the multi-stakeholder forum on science, technology and innovation for the Sustainable Development Goals and other relevant forums and discussions. The present report should be read in conjunction with the report of the Secretary-General, submitted pursuant to General Assembly resolution [72/216](#), on the mainstreaming of the three dimensions of sustainable development throughout the United Nations system ([A/73/81-E/2018/59](#)).

II. **From Agenda 21 to the 2030 Agenda for Sustainable Development**

A. Overall assessment

3. Since the convening of the United Nations Conference on Environment and Development in Rio de Janeiro in [1992](#), the world has witnessed **profound changes** in the discourse, policy and implementation of sustainable development. In developing from a relatively unknown idea into an inspiring global policy framework, sustainable development has guided the international community in initiating a paradigm shift, largely thanks to the leadership of the United Nations. As a major milestone in the endeavours of the United Nations to save the planet, the Conference was held 20 years after its predecessor conference in Stockholm and led to international agreements, including legally binding conventions, ideas and concepts outlined by the World Commission on Environment and Development. In 1987, the Commission defined sustainable development as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs”, a definition that was applied in sustainable development discourse for the ensuing 20 years.

4. The United Nations Conference on Environment and Development gave rise to a number of international instruments that continue to provide inspiration and guidance for sustainable development, including the groundbreaking Agenda 21, a blueprint for implementing sustainable development policies at local and national levels, and the Rio Declaration on Environment and Development, in which a set of 27 principles was enshrined. The Declaration promoted concepts such as the centrality of human beings to the concerns of sustainable development (principle 1);

the primacy of poverty eradication (principle 5); the importance of the environment for current and future generations and its equal footing with development (principles 3 and 4); the special consideration given to developing countries (principle 6); and the principle of common but differentiated responsibilities (principle 7). Two critical economic principles were also enshrined in the Declaration: the polluter pays principle (principle 16) and the precautionary approach (principle 15).¹

5. The United Nations Conference on Environment and Development also led to the launch of a series of international legal instruments that addressed specific sector issues, such as the Non-legally Binding Authoritative Statement of Principles for a Global Consensus on the Management, Conservation and Sustainable Development of All Types of Forests (Forest Principles), the Convention on Biological Diversity, the United Nations Framework Convention on Climate Change, the United Nations Convention to Combat Desertification in Those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa, and the Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks (Fish Stocks Agreement). As an international event, the Conference is now generally regarded as one of the seminal moments in the development of multilateral solutions to global challenges, a landmark that ushered in a new era of global, multilateral approaches to cross-border environmental, social and economic challenges.

6. Agenda 21 was also the first United Nations document to identify roles and responsibilities for stakeholders. Its nine chapters on major groups have had a large impact on engagement in its implementation and monitoring.² The United Nations Conference on Environment and Development also marked a critical point that brought many stakeholders into a relationship with the United Nations at the global level. The participation of the major groups, as outlined in chapter 23, has been improved, with formalized processes in place to acknowledge their contributions to dialogues on sustainable development.

7. Since the United Nations Conference on Environment and Development, the world has seen a mixed picture in advancing sustainable development. Encouraging headway has been made in a number of areas. Overall, however, **the journey towards global sustainability has not progressed as far as the international community had envisioned in 1992.** On the one hand, there have been notable successes in reducing extreme poverty, with hundreds of millions of people having been lifted from poverty. On the other hand, pockets of extreme poverty stubbornly persist. The latest global estimate suggests that 10.9 per cent of the world population, or 783 million people, lived below the threshold of extreme poverty in 2013. More than half of the world's extreme poor live in sub-Saharan Africa, while about one third live in Southern Asia (see E/2018/64, paras. 5–6).

8. After a prolonged decline, world hunger appears to be on the rise again. Conflict, drought and disasters linked to climate change are among the key factors causing the reversal in the long-term progress achieved in fighting global hunger, making the prospect of ending hunger and malnutrition by 2030 more difficult. It is estimated that the **undernourishment** rate increased from 10.6 per cent in 2015 to 11 per cent in 2016. In absolute terms, the number of undernourished people

¹ United Nations, Department of Social and Economic Affairs, "Issue 1: Development cooperation in the light of sustainable development and the SDGs – Preliminary exploration of the issues", Rio+20 working papers (November 2012).

² Stakeholder Forum for a Sustainable Future, *Review of Implementation of Agenda 21 and the Rio Principles: Synthesis* (January 2012).

worldwide increased from 777 million in 2015 to 815 million in 2016 (see [E/2018/64](#), para. 13).

9. Despite considerable gains in education enrolment worldwide, the adjusted net enrolment rates were 91 per cent for primary education, 84 per cent for lower secondary education and 63 per cent for upper secondary education in 2014. About 263 million children and young people were out of school, including 61 million children of primary school age. Sub-Saharan Africa and Southern Asia account for more than 70 per cent of the global out-of-school population in primary and secondary education.³

10. On the health front, many more people lead healthy lives now than in previous decades, but far too many people still die prematurely, and preventable diseases still take many people's lives. Globally, the under-5 mortality rate dropped to 41 deaths per 1,000 live births in 2016 from 78 in 2000, a 47 per cent decline. The total number of under-5 deaths dropped from 9.9 million in 2000 to 5.6 million in 2016. However, in 2015, an estimated 303,000 women throughout the world died as a result of complications of pregnancy and childbirth, with a global maternal mortality ratio of 216 maternal deaths per 100,000 live births. Almost two thirds of those deaths occurred in sub-Saharan Africa (see [E/2018/64](#), para. 22).

11. In 2015, 5.2 billion people used safely managed drinking water services — an improved water source located on the premises, available when needed and free of contamination — which represents 71 per cent of the global population. But 2.3 billion people still lacked even a basic level of sanitation services, and 892 million continued to practise open defecation (see [E/2018/64](#), paras. 59–60).

12. Between 2000 and 2016, the proportion of the global population with access to electricity increased from 78 per cent to 87 per cent, with the absolute number of people living without access to electricity dipping to just below 1 billion. Even with that progress, 3 billion people are still cooking with polluting fuel and stove combinations (see [E/2018/64](#), paras. 67–68).

13. In 2015, forests covered about 4 billion hectares, or 31 per cent, of the world's land area. Despite a decrease in forest area over recent decades, the rate of forest loss has been cut by 25 per cent since the period 2000–2005, with most of the losses occurring in sub-Saharan Africa, South-Eastern Asia and Latin America, mainly as a result of the expansion of agricultural activities. Promisingly, the shares of protected forest area and forests under long-term management plans are increasing (see [E/2018/64](#), para. 116).

14. The United Nations Conference on Environment and Development also launched the global response to climate change through the adoption of the United Nations Framework Convention on Climate Change. In that Convention, a framework was set out for action aimed at stabilizing atmospheric concentrations of greenhouse gases to avoid “dangerous anthropogenic interference with the climate system”. The Convention, which entered into force on 21 March 1994, now has a near-universal membership of 197 States parties. In December 2015, the twenty-first session of the Conference of the Parties convened in Paris and adopted the Paris Agreement, a universal agreement aimed at keeping a global temperature rise for the twenty-first century well below 2 degrees Celsius, with the goal of driving efforts to limit the temperature rise to 1.5 degrees Celsius above pre-industrial levels.

15. Global carbon dioxide emissions from energy and industry have remained stable since 2014, but overall greenhouse gas emissions continue to rise slowly. Total global greenhouse gas emissions, including emissions from land use, land-use change and

³ See <https://sustainabledevelopment.un.org/sdg4>.

forestry, are estimated to have reached some 51.9 gigatons of carbon dioxide equivalent in 2016. The assessment of the emissions gap and the mixed progress in the implementation of the pledges under the Cancun Agreements and of the nationally determined contributions show that there is a significant distance between the current collective ambitions and commitments and the measures required to meet the temperature goals of the Paris Agreement.⁴

16. On balance, while the historic and groundbreaking principles, conventions, aspirations and action agenda of the United Nations Conference on Environment and Development have inspired more than two decades of initiatives and actions, taken together, those initiatives and actions are simply not sufficient to meet the growing challenges on the social, economic and environmental fronts. **The unfinished business of the Conference is now being carried forward through the 2030 Agenda** for Sustainable Development.

B. Demographic dynamics

17. The synergistic relationship between demographic trends and factors and sustainable development is recognized in section I, chapter 5, of Agenda 21. The growth of world population and production, combined with unsustainable consumption patterns, places increasingly severe stress on the life-supporting capacities of the planet. Those interactive processes affect the use of land, water, air, energy and other resources. Unless they are well managed, rapidly growing cities face major environmental problems. The increase in both the number and size of cities calls for greater attention to issues of local government and municipal management. The human dimensions are key elements to consider in that intricate set of relationships, and they should be adequately taken into consideration in comprehensive policies for sustainable development.

18. **Agenda 21 included a call for efforts to incorporate demographic trends and factors into the global analysis of environment and development issues;** to develop a better understanding of the relationships among demographic dynamics, technology, cultural behaviour, natural resources and life support systems; and to assess human vulnerability in ecologically sensitive areas and centres of population to determine the priorities for action at all levels, taking full account of community-defined needs.

19. Those issues were further elaborated in the International Conference on Population and Development, held in Cairo from 5 to 13 September 1994. Participants at the Conference underscored that intensified efforts would be needed in the coming 5, 10 and 20 years, in a range of population and development activities, bearing in mind the crucial contribution that early stabilization of the world population would make towards the achievement of sustainable development. They further spotlighted crucial social and economic aspects of demographic dynamics, including issues relating to sustained economic growth in the context of sustainable development; education, especially for girls; gender equity and equality; infant, child and maternal mortality reduction; and the provision of universal access to reproductive health services, including family planning and sexual health.

20. In the Plan of Implementation of the World Summit on Sustainable Development (Johannesburg Plan of Implementation), demographic dynamics were integrated into actions on various social, economic and environmental challenges, including gender, children, health, consumption and regional development.

⁴ United Nations Environment Programme, *The Emissions Gap Report 2017: A UN Environment Synthesis Report* (November 2017).

21. The outcome document of the United Nations Conference on Sustainable Development, entitled “The future we want”, continued the integration approach by linking demographic dynamics with action on urbanization, migration, and national, rural and urban development strategies and policies. With reference to the International Conference on Population and Development, the outcome document included a call for the full and effective implementation of the Beijing Declaration and Platform for Action and the Programme of Action of the International Conference on Population and Development, and the outcomes of their review conferences, including the commitments to sexual and reproductive health and to the promotion and protection of all human rights in that context. With emphasis on the social dimensions, the Conference stressed the need for the provision of universal access to reproductive health, including family planning and sexual health, and the integration of reproductive health into national strategies and programmes.

22. Since the United Nations Conference on Sustainable Development, significant change has occurred on the population front. According to the most recent results released by the Department of Economic and Social Affairs,⁵ the world’s population numbered nearly 7.6 billion as at mid-2017, implying that the population had grown by approximately 1 billion inhabitants over the past 12 years. Sixty per cent of the world’s people lived in Asia (4.5 billion), 17 per cent in Africa (1.3 billion), 10 per cent in Europe (742 million), 9 per cent in Latin America and the Caribbean (646 million), and the remaining 6 per cent lived in Northern America (361 million) and Oceania (41 million).

23. Although population growth rates have slowed, the world’s population is still growing by 81 million people per year. By 2030, the target year for the 2030 Agenda, the global economy will need to support approximately 9 billion people. With the exception of Europe, where total population is projected to decrease by slightly less than 1 per cent by 2030, all other regions are projected to grow by at least 10 per cent over the next 15 years. Africa will account for more than 40 per cent of the absolute increase in population, meaning that the region will account for nearly one fifth of the world’s total population by 2030.

24. From a historical perspective, the growth of the world’s population over the past 60 years has been unprecedented. The global population has doubled since 1969, reflecting the progress that has been made in combating infectious and childhood diseases and in reducing the burden of premature and avoidable deaths, especially in developing countries. Nevertheless, the rapid growth of the world’s population, in combination with increasing prosperity, higher standards of living and unsustainable patterns of consumption and production, has led to growing concerns about the impact of human actions on the environment and continuing challenges in maternal and child health care, universal access to health care and gender equality, among other areas. Those challenges are now being addressed within the framework of the 2030 Agenda and the Sustainable Development Goals.

25. An example of a successful initiative relating to demographic dynamics is the Youth Enterprise Model, which was implemented by the United Nations Population Fund to ensure that young people not only develop employable skills but also gain knowledge and learn safe decision-making behaviour in relation to sexual and reproductive health.⁶

⁵ United Nations, Department of Economic and Social Affairs, *World Population Prospects: The 2017 Revision — Key Findings and Advance Tables*, Working Paper No. ESA/P/WP/248.

⁶ For a specific example, see www.unfpa.org/news/youth-offer-solutions-global-problems-if-leaders-take-action-now.

C. Trade

26. The topic of trade and sustainable development was addressed in section I, chapter 2, of Agenda 21, and in chapters V and X of the Johannesburg Plan of Implementation. In Agenda 21, Governments were called upon to continue to promote an open, non-discriminatory and equitable multilateral trading system that would enable all countries, in particular developing countries, to improve their economic structures and the standard of living of their populations through sustained economic development; to improve access to markets for exports of developing countries; to improve the functioning of commodity markets and achieve sound, compatible and consistent commodity policies at national and international levels with a view to optimizing the contribution of the commodity sector to sustainable development, taking into account environmental considerations; and to promote and support policies, domestic and international, that make economic growth and environmental protection mutually supportive.

27. The Johannesburg Plan of Implementation included a call for urgent action at all levels to continue to promote open, equitable, rules-based, predictable and non-discriminatory multilateral trading and financial systems that would benefit all countries in the pursuit of sustainable development. It also included a call for action at all levels to enhance the capacities of developing countries, including the least developed countries, landlocked developing countries and small island developing States, to benefit from liberalized trade opportunities through international cooperation and measures aimed at improving productivity, commodity diversification and competitiveness, community-based entrepreneurial capacity and transportation and communication infrastructure development.

28. Experience in recent decades suggests that expanding trade is essential to reducing poverty and promoting sustainable development. Countries that are actively engaged in international trade tend to grow faster and provide more opportunities for sustainable development. Since the United Nations Conference on Environment and Development, the trade discussion has expanded to cover import tariffs and non-tariff measures that restrict access to markets. In addition, developing countries have to contend with bottleneck challenges such as a lack of infrastructure, which hinder access to regional and international markets.

29. While overall trade has expanded, growing from some \$4 trillion (merchandise exports) in 1992 to some \$17 trillion in 2015, the stagnation in global trade since 2011 has been accompanied by an interruption in the expansion of world market shares among developing regions and least developed countries. Among developing regions, the share of global merchandise exports declined for two consecutive years, dropping from 45.4 per cent in 2014 to 44.2 per cent in 2016, in sharp contrast to the average annual increase of 1.2 percentage points between 2001 and 2012. Among the least developed countries, the share of global merchandise exports decreased from 1.1 per cent in 2013 to 0.9 per cent in 2016, compared to the rise from 0.6 per cent to 1.1 per cent observed between 2000 and 2013. A similar trend was seen in service exports: the share of such exports attributable to least developed countries stood at 0.74 per cent in 2016, down slightly from its 2013 level. Much of the decline in their share of global exports can be attributed to a drop in commodity prices, since exports from many least developed countries are concentrated in primary commodities such as minerals, ores and fuels (see [E/2018/64](#), para. 142).

30. In its 2017 report on trade and development ([TD/B/62/2](#)), the United Nations Conference on Trade and Development pointed out that in today's challenging and unpredictable global environment, efforts to build inclusive economies and societies would need to accelerate. Reinvigorating the multilateral trading system as a global

public good with renewed momentum and relevance would also be essential for achieving the Sustainable Development Goals.

31. An example of a success story relating to trade and sustainable development is the Aid for Trade initiative, which was launched in 2005 to address the supply side and trade-related infrastructure constraints that often hamper the participation of developing countries in global trade. Since the initiative was launched, almost \$300 billion in support has been disbursed. Some 146 developing countries have received aid for trade, mainly in Asia (41.5 per cent) and Africa (38.7 per cent), with 27 per cent of total aid going to least developed countries.⁷

D. Land resources

32. The integrated planning and management of land resources is the subject of chapter 10 of Agenda 21, which addresses the cross-sectoral aspects of decision-making for the sustainable use and development of natural resources, including the soils, minerals, water and biota that land comprises. This broad, integrative view of land resources, which are essential for life-support systems and the productive capacity of the environment, continues to guide land resources management. Among other things, Agenda 21 included a call for efforts to review and develop policies to support the best possible use of land and the sustainable management of land resources, by not later than 1996, and to improve and strengthen planning, management and evaluation systems for land and land resources, by not later than 2000. The emphasis on integrated land management was further developed in the Johannesburg Plan of Implementation, in which land management was integrated with such topics as agriculture, water, forests, desertification and sustainable cities.

33. The economic and social significance of good land management, including soil and its contribution to economic growth and social progress, was recognized in paragraph 205 of the outcome document of the United Nations Conference on Sustainable Development. In that context, Member States expressed their concern about the challenges posed to sustainable development by desertification, land degradation and drought, especially for Africa, least developed countries and landlocked developing countries. At the same time, Member States highlighted the need to take action at national, regional and international levels to reverse land degradation, mobilize financial resources from both private and public donors and implement both the United Nations Convention to Combat Desertification and the 10-year strategic plan and framework to enhance the implementation of the Convention (2008–2018).

34. Furthermore, in paragraphs 207 and 208 of the outcome document, Member States recognized the importance of partnerships and initiatives for the safeguarding of land resources and stressed the importance of the further development and implementation of scientifically based, sound and socially inclusive methods and indicators for monitoring and assessing the extent of desertification, land degradation and drought. The relevance of efforts under way to promote scientific research and strengthen the scientific basis of activities to address desertification and drought under the Convention to Combat Desertification was also addressed.

35. Land degradation threatens the livelihoods of more than 1 billion people. The degradation of soil and land continues as a result of heightened competition for land use, undermining the security and development of all countries. From 1999 to 2013,

⁷ See Organization for Economic Cooperation and Development and World Trade Organization, *Aid for Trade at a Glance: Promoting Trade, Inclusiveness and Connectivity for Sustainable Development* (2017) and www.wto.org/english/tratop_e/devel_e/a4t_e/aid4trade_e.htm.

approximately one fifth of Earth's land surface covered by vegetation showed persistent and declining trends in productivity, primarily owing to land and water use and management. Up to 24 million square kilometres of land were affected (an area the size of China, India and the United States of America combined), including 19 per cent cropland, 16 per cent forest land, 19 per cent grassland and 28 per cent rangeland. For grasslands and rangelands, the global extent of areas experiencing declining productivity exceeds that of the areas showing increases. South America and Africa are most affected by diminished productivity: in some dryland areas, advanced stages of land degradation are leading to desertification. Reversing those worrying trends through sustainable land management is key to improving the livelihoods and resilience of more than 1 billion people inhabiting degraded lands.⁸

36. The unfinished business with regard to land management is integrated into Sustainable Development Goal 15, that is, to protect, restore and promote the sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification and halt and reverse land degradation and halt biodiversity loss. Efforts in this regard need to be scaled up to manage land, trees and forests, crops, livestock and fisheries in a more sustainable and integrated way, taking agroecological knowledge into account.

37. An example of a success story relating to the management of land resources is the development of *juncao* technology (*jun* meaning fungi, *cao* meaning grass) by the National Engineering Research Centre for Juncao Technology at the Fujian Agriculture and Forestry University in China, through a project supported by the United Nations peace and development trust fund. The technology has allowed farmers in mountainous areas and in regions experiencing drought, land degradation and desertification to grow several types of nutritious mushrooms from dried, chopped grasses, without cutting down trees or damaging the environment.⁹

E. Toxic chemicals, groundwater contamination and waste

38. The environmentally sound management of toxic chemicals, in line with the principles of sustainable development and the need to improve quality of life for humankind, was given special attention in chapter 19 of Agenda 21. The need for action was identified in six programme areas: (a) expanding and accelerating the international assessment of chemical risks; (b) harmonizing the classification and labelling of chemicals; (c) exchanging information on toxic chemicals and chemical risks; (d) establishing risk reduction programmes; (e) strengthening national capabilities and capacities for the management of chemicals; and (f) preventing illegal international trafficking in toxic and dangerous products.

39. In the Johannesburg Plan of Implementation, the international community renewed its commitment, as advanced in Agenda 21, to the sound management of chemicals throughout their life cycles and of hazardous wastes for sustainable development and for the protection of human health and the environment. To that end, Member States aimed to ensure, by 2020, that chemicals would be used and produced in ways that lead to the minimization of significant adverse effects on human health and the environment, using transparent, science-based risk assessment and risk management procedures and taking into account the precautionary approach, as set out in principle 15 of the Rio Declaration, and to support developing countries in

⁸ United Nations Environment Programme, *Food Systems and Natural Resources: A Report of the Working Group on Food Systems of the International Resources Panel* (2016).

⁹ See www.juncao.org.

strengthening their capacity for the sound management of chemicals and hazardous wastes by providing technical and financial assistance.

40. In that context, seven priority areas for action were set out in the Johannesburg Plan of Implementation, including encouraging partnerships to promote activities aimed at enhancing the environmentally sound management of chemicals and hazardous wastes, implementing multilateral environmental agreements, raising awareness of issues relating to chemicals and hazardous wastes and encouraging the collection and use of additional scientific data.

41. In paragraph 89 of the outcome document of the United Nations Conference on Sustainable Development, the international community reaffirmed that commitment by recognizing the significant contributions to sustainable development made by the multilateral environmental agreements, including the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal, the Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade and the Stockholm Convention on Persistent Organic Pollutants.

42. There is a close link between the sound management of chemicals and the prevention of groundwater contamination. Improving access to safe sources of water depends on efforts to protect water sources from harmful levels of chemical contaminants, including arsenic and fluoride, which pose significant health concerns. Long-term exposure to inorganic arsenic in water that is used for drinking, cooking and food preparation causes chronic arsenic poisoning, leading to skin lesions and cancer. Arsenic in groundwater is a widespread and significant problem in some regions. It is estimated that between 19 million and 39 million people in Bangladesh are at risk of exposure to arsenic concentrations higher than the guideline values defined by the World Health Organization. Exposure to hazardous chemicals in wastewater may also pose risks to public health, in particular downstream of industrial activities such as mining and manufacturing.¹⁰

43. In line with target 6.3 of the Sustainable Development Goals, the prevention of contamination will be key to long-term solutions. Chemical pollution from industry and agriculture should be minimized at the source. More efforts should be made to regulate the use of pesticides, the construction of landfills or gasoline stations over groundwater, and large, confined animal operations near vulnerable groundwater, among other activities.

44. The unfinished business of chemical management, groundwater contamination and waste will continue to be handled under Goals 3, 6 and 12 and other relevant targets.

45. One example of a success story in the field of toxic chemicals, groundwater contamination and waste is a project funded by the Quick Start Programme trust fund for the purpose of strengthening the capacity of smallholder farmers, extension staff and agro-dealers in the judicious use of herbicides. The project has helped those key groups to enhance their knowledge of the safe use of herbicides and other pesticides in order to improve crop outcomes, protect the health of communities and prevent damage to the environment.¹¹

¹⁰ United Nations, *Sustainable Development Goal 6 Synthesis Report 2018 on Water and Sanitation* (New York, 2018).

¹¹ See www.saicm.org/Resources/SAICMStories/Lesothofoodsecurityproperuseofpesticides/tabid/6283/language/en-GB/Default.aspx.

F. Transfer of and cooperation on technology and the promotion of sustainable patterns of production and consumption

46. In chapter 4 of Agenda 21, the issue of changing consumption patterns was addressed. The broad nature of that challenge was also recognized and addressed in several parts of the document, notably in those relating to energy, transportation and wastes, in the chapters on economic instruments and the transfer of technology, and in chapter 5, on demographic dynamics and sustainability. Agenda 21 also included a call for actions to develop national policies and strategies to encourage changes in unsustainable consumption patterns.

47. In the Johannesburg Plan of Implementation, the critical importance of action on advancing sustainable patterns of production and consumption was reaffirmed. In chapter III, it was emphasized that fundamental changes in the way societies produce and consume were indispensable for achieving global sustainable development. All countries should promote sustainable consumption and production patterns, with the developed countries taking the lead and with all countries benefiting from the process, taking into account the principles of the Rio Declaration, including the principle of common but differentiated responsibilities set out in principle 7. Governments, relevant international organizations, the private sector and all major groups should play an active role in changing unsustainable consumption and production patterns.

48. In the outcome documents of the United Nations Conference on Sustainable Development, the international community recognized that urgent action on unsustainable patterns of production and consumption where they occurred remained fundamental to addressing environmental sustainability and promoting the conservation and sustainable use of biodiversity and ecosystems, the regeneration of natural resources and the promotion of sustained, inclusive and equitable global growth. In that context, Member States adopted the 10-Year Framework of Programmes on Sustainable Consumption and Production Patterns (see [A/CONF.216/5](#), annex).

49. Recent studies show that, overall, the development of national policies on sustainable consumption and production patterns points to positive trends, as demonstrated by the fact that the number of such policies and instruments has almost continuously increased since 2002. In total, 71 countries plus the European Union have documented their macro-policies and regulatory, voluntary or economic instruments that support the shift towards sustainable consumption and production patterns. According to other sources of information, a total of 109 countries have or have had national policies and initiatives relating to sustainable consumption and production patterns.¹²

50. Despite evident progress in the development of policies, knowledge resources and technical tools, the application and implementation of those tools to foster concrete and tangible changes in practices and impacts remains limited. As regards compliance with environmental agreements, for example, while the Montreal Protocol on Substances that Deplete the Ozone Layer has a 100 per cent compliance rate with regard to transmitting information on the implementation of obligations, the Rotterdam Convention shows a rate of 71 per cent, and reporting rates for the Basel

¹² United Nations, Department of Social and Economic Affairs, “2018 HLPF Review of SDGs implementation: SDG 12 – Ensure sustainable consumption and production patterns – Status of Progress on SDG 12”. Available at <https://sustainabledevelopment.un.org/content/documents/196532018backgroundnotesSDG12.pdf>.

Convention and the Stockholm Convention are as low as 57 and 51 per cent, respectively.¹³

51. In terms of trends in sustainable consumption and production patterns, the per capita material footprint of developing countries grew from five metric tons in 2000 to nine metric tons in 2017, representing a significant improvement in their material standard of living. Most of that increase is attributed to a rise in the use of non-metallic minerals, pointing to growth in the areas of infrastructure and construction.

52. Although the per capita material footprint of developing countries has grown significantly, developed countries still have at least double the per capita footprint of developing countries for all types of materials. In particular, the material footprint for fossil fuels is more than four times higher in developed than in developing countries. As fossil fuels directly impact the environment in various ways, the need to decouple their use from economic growth is key to achieving sustainable consumption and production patterns.

53. Food and agriculture are sectors that face enormous challenges concerning sustainable production and consumption. In developing countries, one third of the food produced is lost in production and transportation, while in developed countries 40 per cent of food is lost in retailing. Governments should promote evidence- and science-based approaches to reduce food loss and waste and implement policy innovations and reforms for sustainable and nutritious diets, including reforming subsidies as well as taxes on emission-intensive foods (see [E/HLPF/2018/6](#), para. 58).

54. Micro- and informal enterprises play an essential part in advancing sustainable production and consumption patterns in both developed and developing countries. Those enterprises have innovation and technology diffusion potential that should be taken into consideration in the promotion of technologies for sustainable consumption and production. Efforts must target poor communities, scale up partnerships and promote science and technology through doing, using and acting (see [E/HLPF/2018/6](#), para. 59).

55. The unfinished business from the United Nations Conference on Environment and Development with regard to sustainable consumption and production patterns is now being carried forward under the 2030 Agenda, in particular through Sustainable Development Goal 12. Sustainable consumption and production patterns are among the most cost-efficient and effective ways to achieve economic development, reduce impacts on the environment and advance human well-being. Achieving those patterns will deliver not only Goal 12, but also simultaneously make a significant direct or indirect contribution to the achievement of almost all the Goals.

56. More resource-efficient production can also create opportunities for productivity increases that can have positive effects on value added and therefore on the remuneration of workers. Particular attention to micro-, small and medium-sized enterprises is needed, as such enterprises face greater challenges to enhancing resource and energy efficiency.

57. There needs to be a shift away from economic models that value growth for growth's sake towards a new mindset in which ecological boundaries are respected, the economy is recognized as a subset of nature, and the concept of living in harmony with nature is supported (as reflected in particular in targets 8.4, 12.2 and 12.8 of the Goals).

58. A number of thematic issues are interlinked with sustainable consumption and production patterns, such as climate action, sustainable transport and ocean and

¹³ Ibid.

marine resource conservation, including actions to combat plastics pollution. For example, in the 2030 Agenda and the Paris Agreement, a range of universal transformative objectives were set out for shifting all countries onto a sustainable and low-carbon development path. The two instruments are deeply interdependent and exhibit strong potential for mutual benefits, and the need for a shift to sustainable consumption and production lies at their core. Goal 12 is instrumental for reconciling economic, social and environmental objectives and decoupling greenhouse gas emissions from economic growth. For sustainable transport solutions, the principles of sustainable consumption and production, such as resource efficiency, are of the utmost importance. The achievement of sustainable transport can be supported through policies and actions for those patterns on both the supply and demand sides of the transport sector.¹⁴

59. An illustrative link exists between sustainable consumption and production patterns and the issue of plastic pollution in the ocean. Eighty per cent of all pollution in the sea comes from land, including some 8 million tons of plastic waste each year. Solutions are found in the life cycle management approach to plastics, the aims of which are to avoid the unnecessary use of plastics, to prevent waste and to ensure that plastics are designed for collection, reuse, recycling and end-of-life management.

60. Technology cooperation, especially in technologies that help reduce resource consumption, pollution and emissions and enhance material efficiency, will be critical to fostering sustainable consumption and production patterns. Areas where developing countries could benefit from strengthened technology cooperation include water supply, energy efficiency, renewable energy, agricultural production, sustainable industry, building and construction, transport, and technologies for flexible consumption and the sharing economy. Decoupling economic growth from the use of natural resources is fundamental to sustainable development. A circular economy approach, combined with sustainable modes of consumption and production, could improve the resilience of the entire global socio-economic system.

61. Developing and disseminating clean and environmentally sound technologies are central to the success of the 2030 Agenda. All countries will need appropriate technologies and know-how to support inclusive economic growth while moving away from unsustainable consumption and production on a scale of efforts that matches that of the challenge.

62. Investment in new and efficient end-use technologies (such as renewable energy technologies) also needs to be promoted by policy frameworks and de-risking strategies. Policy instruments should provide stability and predictability for the often substantial initial investments by the private sector. Furthermore, investment in research and development needs to increase and must be accompanied by the vigorous promotion of capacity-building and education.

63. One specific success story relating to the transfer of and cooperation on technology and the promotion of sustainable patterns of production and consumption is the programme launched by the United Nations Industrial Development Organization for the transfer of environmentally sound technologies for the southern Mediterranean. In Tunisia, for example, water-saving measures implemented through the programme have enabled clothing manufacturers to contribute to achieving the industry-related targets of Sustainable Development Goal 6 on clean water and Goal 12 on sustainable consumption and production.¹⁵

¹⁴ Ibid.

¹⁵ See www.unido.org/stories/reducing-industrial-water-consumption-tunisia.

III. Conclusions

64. At the time of the United Nations Conference on Environment and Development, humanity was at a defining moment in history, confronted with a perpetuation of disparities between and within nations, a worsening of poverty, hunger, ill health and illiteracy, and the continuing deterioration of the ecosystems on which the world depends for its well-being. Those interrelated challenges remain today; while progress is evident in some areas, there has been deterioration in others. While the persistence of those challenges can be a source of frustration, the international community must carry forward the unfinished business of Agenda 21, the Programme for the Further Implementation of Agenda 21 and the outcomes of the World Summit on Sustainable Development and of the United Nations Conference on Sustainable Development. The international community owes that obligation to present as well as future generations.

65. In pursuing this unfinished journey, the international community draws guidance and inspiration from a series of interlinked frameworks for action and international legal instruments, building on lessons learned, success stories and partnerships. It is guided by the 2030 Agenda and its 17 Sustainable Development Goals, which provide a visionary road map for all countries and stakeholders to strive for a world of sustainable prosperity, social inclusion and equality, while at the same time preserving the planet and leaving no one behind. By no means is this an easy mission. In order to succeed, countries need to undertake this journey together, learning from each other and from the efforts of the past decades, both successes and failures, and to carry forward the common vision of a sustainable, peaceful and prosperous future — a future we all want.
