

Sustainable and Resilient Cities: SDGs, New Urban Agenda and the Paris Agreement

This paper provides an overview on the current sustainable urban development through the analysis of key international policies, including Sustainable Development Goals, the New Urban Agenda and the Paris Agreement. Moreover, the paper describes the key results of a comparative analysis of the Nationally Determined Contributions under the Paris Agreement in relation to urban content, outlining the world's countries key challenges of and responses to the sustainable urban development of cities in relation to mitigation and adaptation. The primary objective of the paper is to assess the central role of urban systems in facing key global sustainability challenges and arguing for the importance of an integrated, systemic and resilient approach for sustainable urban development

DOI 10.12910/EAI2017-001

by **Nicola Tollin**, *International Program on Urban Resilience RESURBE, Recycling Cities Network RECNET, Spain, and UNESCO Chair on Sustainability, Technical University of Catalonia, Spain;* and **Johannes Hamhaber**, *TH Köln University of Applied Sciences, Germany*

Today, over 50% of the world population - 75% in the EU alone - lives in urban areas, and cities account for 60-80% of global energy consumption and the same share of greenhouse gases emissions, producing 50% of global waste, consuming 75% of natural resources, and producing 80% of the global GDP

(UNEP-DTIE, 2013). With future urbanisation, all those shares are on the rise. Actually, as cities are major centres of economic activity, social life and culture, innovation and knowledge-creation, they are also facing complex challenges. Under current conditions, urbanization, economic development and climate change dynamics are strongly inter-

connected and mutually enhancing. The challenges human settlements are faced with are systemic, substantially related to increasing inequalities regarding the redistribution of and just access to the resources, including access to appropriate shelter/housing, common spaces, fair jobs, and overall quality of life and health. Such challenges are common

for both developed and developing countries, with different paths and intensity, but nevertheless two sides of the same coin.

Rapidly increasing urbanization is accentuating current urban challenges, often leading to urban sprawl and the unplanned, unmanaged and uncontrolled growth of cities. This phenomenon is having direct negative effects, i.e. reduction of agricultural, natural and rural areas surrounding the cities, mobility issues and increased length and number of daily displacement, with consequent traffic congestion and increasing transport-related emissions, and - as - poorer quality of the built environment due to the lack of necessary urban infrastructures. Rapid urbanization is clearly exceeding economic resources and governance capability of city administrations, particularly but not only in developing contexts. They have been overburdened to provide not only physical infrastructures but also basic services, such as schools and hospitals, deepening socio-economic segregation and spatial inequalities, interconnected with the quality of life for the whole city over time.

Even more so, increasing levels of unsustainable consumption typical of urban systems pose the major threat to inter-generational equity and, consequently, of sustainable development, impairing the ability of future generation to meet their own needs. These consumption patterns exceed the earth's regenerative capacity and generate multiple negative externalities. Most prominent among them is the worsening state of our climate; indeed, cities and their regions are at the same time largely responsible for climate change and vulnerable to it. Climate change causes



and effects are raising complex challenges with a systemic impact on other key urban dynamics: demographic and migration patterns, also in the form of environmental internal and international refugees; changes in production/consumption patterns; and disruptive shifts in socio-technological systems due to, e.g., threatening basic supply infrastructures. Cities are thus called to find urgent solutions for, on the one hand, mitigating the emissions causing climate change, addressing key issues, including but not limited to transport and energy. On the other hand, cities have to adapt: to the increasing challenges posed by the impacts of climate change in several time scales; to slow and rapid on-setting disasters, including meteorological ones as droughts and floods, increasing by intensity, frequency and magnitude, in the short term; and to systemic climate change effects such as temperature and precipitation shifts in the long term.

An increasing number of cities are already pioneering to find local answers to address these challenges, using more integrated and systemic approaches able to tackle urbanization, sustainable development and climate change; at the same time, these efforts demand rethinking the way in which cities are planned, designed, managed and developed and incorporating the concept of resilience into the overarching quest for sustainable cities. Many of these examples/interventions/actions are made possible by the exchange of information and the support given by leading international initiatives, such as UN-Habitat's City Resilience Profiling Program, Rockefeller's Foundation 100 Resilience Cities, C40 Cities Climate Leadership Group and Global Covenant of Mayors for Climate and Energy. These initiatives are using an urban resilience approach re-thinking cities in the face of multiple and inter-related challenges, increasing their strategic ability to adapt in the short,

medium and long term in the wake of United Nations' major international policies, formerly the Agenda 21 and the Millennium development Goals (MDGs), and currently re-integrating local activities into the very recent global sustainability governance approaches, such as the Sustainable Development Goals, the New Urban Agenda and the Paris Agreement.

Sustainable Development Goals

The United Nations General Assembly adopted, on 25 September 2015, the post-2015 development agenda, under the title *Transforming Our World: the 2030 Agenda for Sustainable Development* (United Nations, 2015b), which intends to renew the commitment toward sustainable development, following the 15 years of activity for the partial achievement of the eight Millennium Development Goals established in 2000 by the United Nations Millennium Declaration (United Nations, 2000).

The 2030 Agenda for Sustainable Development is a global call for action directed to all stakeholders and countries to act in partnership to eradicate poverty, considered as the key challenge to achieve sustainable development, integrating environmental, social and economic dimensions; the 2030 Agenda establishes, for this purpose, 17 Sustainable Development Goals and 169 targets to be achieved within the next 15 years, addressing five key areas of actions: poverty, planet, prosperity, peace and partnership.

Goal 11, *Sustainable Cities and Communities*, is specifically dedicated to urban systems, and to “Make cities and human settlements inclusive, safe, resilient and sustainable”; Goal

11 includes the following seven thematic targets:

- *Housing*: housing, basic services and slums upgrade.
- *Transport*: affordable, accessible and sustainable transport and infrastructures.
- *Urbanization*: participatory, integrated and sustainable planning and management.
- *Heritage*: protection and safeguard of natural and cultural heritage.
- *Disasters*: reducing human and economic losses due to disasters.
- *Environment*: reducing the environmental impact of cities, particularly air and waste related.
- *Public space*: providing universal safe, inclusive and accessible green and public spaces.

These seven thematic targets are complemented by three cross cutting ones:

- National and regional planning to interlink urban, peri-urban and rural sustainable development.
- Policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change, resilience to disasters.

- Developing countries support, financial and technical, for resilience and sustainable buildings using appropriate technologies.

Besides Goal 11, other Sustainable Development Goals related to key thematic issues are very relevant for cities, such as Goal 6 *Clean Water and Sanitation*, aiming at ensuring availability and sustainable management of water and sanitation for all, and Goal 7 *Affordable and Clean Energy*, aiming to “Ensure access to affordable, reliable, sustainable and modern energy for all”; Two more goals are particularly important with reference to urban resilience: Goal 9 *Industry, Innovation and Infrastructure*, to “build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation”; and Goal 13 *Climate Action* aiming at “taking urgent action to combat climate change and its impact”, with explicit reference to UNFCCC as primary forum for global climate action.

Furthermore, two Sustainable Development Goals are critical and fundamental to tackle the key challenges of sustainable development in cities, i.e. the concentration of human activities



Fig. 1 Sustainable Development Goals (www.un.org)

and the intensity of consumption/production in urban systems: Goal 8 Decent Work and Economic Growth aimed to “promoting sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all”; and Goal 12 Responsible Consumption and Production aiming at “ensuring sustainable consumption and production patterns”. Such goals refer to the very foundations of the current economic system based on a continuous and exponential growth which is intrinsically unsustainable as it is overcoming the ability of the planet to renew its limited environmental resources, thereby based on the false assumption that unlimited growth is possible in a limited world. Thus, the SDGs are offering a decided urban sustainability focus in Goal 11, that is largely sector driven and has a concrete, target on mainly short-term disasters. Only in combination with the wider goals on climate change and further social, economic and metabolism/consumption and production, the longer-term resilience gains relevance for sustainable urban development.

New Urban Agenda

The United Nations specialized agency on Human Settlements UN-Habitat, is by mandate leading the work in defining the top level sectorial policies on human settlements, through the United Nations Conferences on Human Settlements, known as HABITAT. The first HABITAT conference was held in Vancouver in 1976, followed by HABITAT II in Istanbul in 1996, when the Istanbul Declaration on Human Settlements was approved. The Habitat Agenda was set in Istanbul, in the frame of the United Nations

Conference on Environment and Development and the Rio Declaration, which established the Agenda 21 defining a decidedly local strategy and action plan to achieve adequate shelter for all and sustainable human settlements in an urbanizing world. In 2016 HABITAT III, the United Nations Conference on Housing and Sustainable Urban Development, took place in Quito, and the New Urban Agenda (UNHABITAT, 2016) was adopted, setting up a sustainable urbanization strategy and action plan for the next 20 years, anchored to the concept of cities for all, promoting inclusivity based on the equal use and enjoyment of cities, towns, and villages. It is designed to produce just, safe, healthy, accessible, resilient, and sustainable cities and human settlements that are understood as a common good that essentially contributes to prosperity and quality of life for present and future generations.

The New Urban Agenda action plan is structured through three key objectives:

- Sustainable and inclusive urban prosperity and opportunities for all
- Sustainable urban development for social inclusion and poverty eradication
- Environmentally sound and resilient urban development

to be achieved through two implementation strategies:

- Building the urban governance structure: establishing a supportive framework
- Planning and managing urban spatial development.

The New Urban Agenda recognizes the importance of clearly defin-

ing the means of implementation, including technology, innovation, science, knowledge transfer, capacity building; the Agenda also states the key importance of financial resources, in the frame of the cross-scale collaboration between developed and developing countries, supporting its implementation at national, regional, sub-national and local levels. It calls for cooperation and participation of all stakeholders, including public, private and civil society, by the guiding principles of equality, justice, non-discrimination and accountability, with particular focus on the inclusion and support of the most vulnerable and poorest parts of society, all this in line with the means of implementation established by the 2030 Agenda. Moreover, UN-Habitat’s role in the implementation is considered fundamental particularly in developing normative guidance and knowledge transfer, as well as tools aimed at supporting the design, planning and management of the sustainable development of cities.

For the implementation of the New Urban Agenda financial resources and their allocation are quintessential, thereby a number of clauses are dedicated to this topic. These lay out, for example, the importance of impact assessment to justify expenditure, accountability and transparency both on the capital sources and its investment on specific actions, the enhancement of financial management capacity of local governments and the ability to raise their own revenue, the financial transfer from national to local authorities, the equality based financial resources redistribution among sub-national territories and the establishment of financial intermediaries to support urban financing, appropriate and af-

fordable housing finance. Moreover, there is direct reference to the financial mechanism related to climate change and the Paris Agreement, stating the importance of supporting access of sub-national and local financial institutions to multilateral funds such as Green Climate Fund, the Global Environment Facility, the Adaptation Fund, the Climate Investment Funds.

The New Urban Agenda can potentially play a fundamental role in scaling the Sustainable Development Goals from the international to the national and local level for their operationalization and implementation, and establishing more accurate means of monitoring and evaluation, including a periodic follow-up and review every four years led by national authorities, with the participation of sub-national and local authorities. It has a broad understanding of sustainability and clear focus on municipalities and communities as critical actors, and therefore stresses the need of local governance capacities. In this framework, urban resilience is understood as a cross cutting concept facing natural and human-made hazards and linked to both mitigation of and adaptation to climate change.

The Paris Agreement

On 12th December 2016, the Conference of the Parties of the United Nations Framework Convention of Climate Change approved the Decision FCCC/CP/2015/L.9/Rev.1 (United Nations, 2015a) including the Paris Agreement by consensus, giving the clear and unequivocal signal that climate change is a real and unprecedented challenge for humanity, which requires an unprecedented and urgent global action, based on

the collaboration and contribution of all countries. The Paris Agreement was ratified by 128 out of 197 Parties to the Convention, and officially entered into force on 4th October 2016, after the date on which more than 55 Parties to the Convention, accounting for at least 55 % of the total global greenhouse gas emissions, deposited their ratification.

The Paris Agreement is a universal and legally binding agreement, providing a solid architecture and ambitious targets to face climate change challenges globally, mainstreaming and coordinating actions; the Decision, which is non-legally binding, contains fundamental provisions and a clear work plan and timeline supporting the entry into force and the implementation of the Paris Agreement itself, particularly focusing on enhancing action prior to 2020. The main feature of the Paris Agreement is related to the very ambitious mitigation targets, aiming at “holding the increase in the global average temperature to well below 2 °C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5 °C above pre-industrial levels” [Article 2 of the Agreement].

In this multinational framework, cities are understood as non-party stakeholders. Nevertheless over 400 mayors were present at COP21 in Paris, stating the importance of cities for the implementation of the Paris Agreement, and calling for the active involvement of sub-national and local authorities. This engagement is considered as indispensable in defining and implementing innovative solutions to reduce the causes and the effects of climate change both locally and globally. This is also recognizing that 5 billion people, and thus a growing majority of global popula-

tion, will live in urban areas by 2050 and that cities and the local authorities can champion the ambitious transformative changes which are indispensable to reduce emissions and limit the damage and negative impact of climate change.

The Paris Agreement mentions directly cities only twice within the text, outlining that a stronger and more ambitious climate action is requiring the full support of non-party stakeholders, including cities: Section 5 [Section V, Paragraphs 134 to 137 of the Decision] is dedicated to Non-Party Stakeholders, including cities, civil society and sub-national stakeholders, explicitly recognizing the important role of domestic policies and the need to strengthen and to increase efforts, practices, technologies and knowledge of local communities, including urban ones. Cities are called to increase and upscale their efforts for both mitigation and adaptation actions, reducing the emission and building resilience, adapting to rapid and slow on-setting climate extreme events and enduring conditions; this requiring more integrated and holistic approaches aimed to develop and implement systemic action coupling mitigation and adaptation.

Moreover, the Decision recognizes the importance and encourages the creation of a dedicated platform/s for exchanging experiences and sharing best practices, for addressing and responding to climate change, ultimately favouring a continuous knowledge co-creation and exchange, for which networks of cities are playing a central role, also supporting the systematization and normalization of these best practices, leading to the development of common standards as well. In relation to the role of cities imple-

menting the Decision and the Paris Agreement, the resolutions regarding mitigation and adaptation are of central importance, without forgetting also other resolutions including *inter alia* finance, technology and capacity building.

The Paris Agreement is not specifically focused on urban areas, yet it recognizes cities as highly relevant actors. Also, there is no specific reference to sustainable cities, however, the resilience concept is highly relevant in relation to adaptation and also serves as concept in coupling climate mitigation and adaptation in an integrating approach.

Nationally determined contributions

Nationally Determined Contributions (NDCs) are the main instru-

ment for the implementation of the Paris Agreement, the recent comparative review of Nationally Determined Contribution for urban content presented by UN-Habitat at the Conference of the Parties 22 in Marrakesh (UN-Habitat, 2015) shows the pivotal role of cities in addressing climate change mitigation and adaptation, listing 110 NDCs with urban content, including direct reference within headers (dark blue in Figures 2 and 3) and/or within the text (light blue in figures 2 and 3). Asia-Pacific and Africa are having the largest number of NDCs with strong reference to urban challenges; for Latin America and Caribbean most countries are showing some reference to urban issues, meanwhile European and most of the developed countries are not including urban related challenges and measures.

The key urban challenges identified in the INDCs are mainly related to adaptation and showing just a minor urban content related to mitigation challenges. Also, urban related financial, technical and institutional capacity challenges are acknowledged, but only by some 20% of the countries. The first climate key issues are floods, sea level rise and droughts, followed by temperature rise, storms, land degradation, vector borne diseases, salt water infiltration and heat waves.

In terms of specific actions and measures, the report highlights that over fifty NDCs include adaptation actions/measures and over forty NDCs include mitigation actions; the key urban measures included in the NDCs are related to transport, buildings, energy and waste, fol-

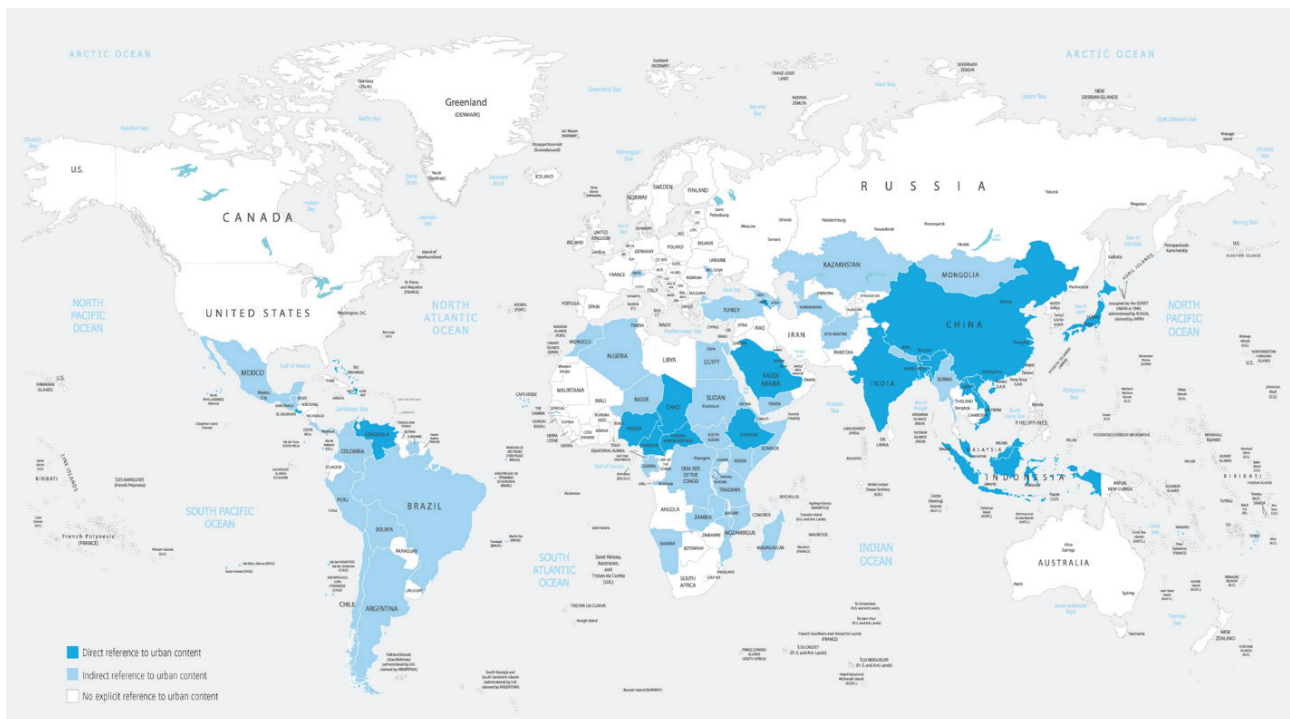


Fig. 2 Urban content of Nationally Determined Contributions by Geographic Distribution (UN-Habitat, 2016)

lowed by land use, water, food production and industry.

Conclusions: the role of cities in global sustainability governance

Sustainable development, rapid urbanization and climate change are the major global challenges that cities are facing as outlined by international policies as Sustainable Development Goals, New Urban Agenda and the Paris Agreement, and by an increasing number of international initiatives/networks and local initiatives and actions. In order to address these challenges effectively and to manage the transition toward sustainable urban development it is necessary, in the first place, to better harmonize and integrate policies, strategies and action across scales, particularly between the national and sub-national/local level, and reconcile international policy objectives with local implementation.

One of the main issues faced in the implementation of these international policies as a response to global challenges is the scarcity of financial resources, a problem that affects both developed and developing context, and requiring more integrated and cross-sectorial approaches in order to maximize the impact of policies and actions through the generation of co-benefits, and tackling different challenges at once; the issue of finance scarcity can also be addressed by more accurate evaluation monitoring and impact assessment measures, in order to both support informed decision making and justify the financial investments, in a clear, measurable and transparent manner, also avoiding overlapping and replication of efforts.

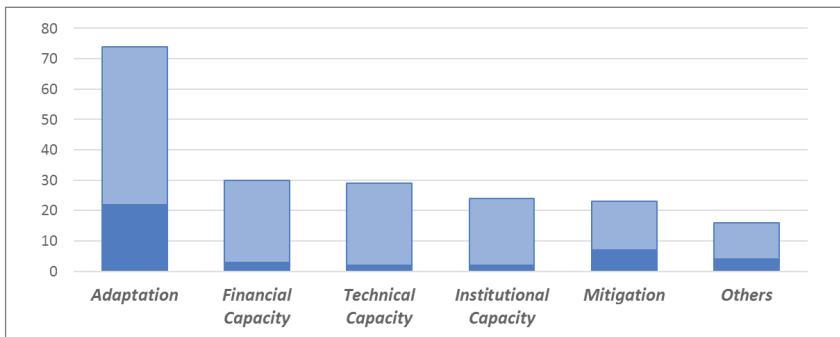


Fig. 3 Urban content of Nationally Determined Contributions by urban challenges (UN-Habitat, 2016)

A radical change in the approach to urban design, planning and management is required to foster the sustainable urban transition, finding solutions for both causes and effects of global challenges, integrating immediate actions and long-term strategies, international/national policies with concerted local sub-national/actions, beyond sectorial approaches; urban resilience can serve as a systemic and integrated concept which can be used for radically innovate planning practices, addressing not only risk and climate adaptation, but also mitigation issues, and in the wider frame for sustainable development supporting the understanding of cities as socio-ecological systems, helping to tailor actions to address the specific local challenges.

Urban resilience, then, aims at increasing the ability of the whole urban system, including physical, environmental and socio-economic perspectives, to develop its adaptive capacity, resisting and recovering shocks and stresses, and at the same time to reduce its vulnerabilities; urban resilience can be used to respond to urban shocks and stresses, that are the effects of unsustainability, urbanization and

climate change, but it can also be instrumental to address the very causes of these challenges, contributing to tackle fundamental issues as sustainable production system, urban sprawl/inequalities and climate change mitigation, in a strategic perspective coupling short- and long-term strategies and cross-sectorial action.

Regarding mitigation, cities are playing a key role in defining and implementing much more ambitious mitigation goals, both because most world emissions are produced within cities and an increasing number of cities have pioneered the process as they developed local action plans and pledges that already go beyond the Nationally Determined Contributions for the Paris Agreement, communicated by their own countries. It is well recognized that transport and energy are key sectors for action, both for cities in developed and developing countries in differentiated manners, as well as for the construction sector and change in land use; shifting from sectorial to more integrated and holistic approaches and rethinking how and which cities are planned, constructed, managed and lived are the first step towards the development of appropriate urban

climate solutions. Emission reduction shall be coupled with removal of emission, preferably using appropriate technologies as for example, through greening of cities, stopping urban sprawl, reversing urban sprawl dynamics and land use change, also through the re-naturalization of both central and border areas of the cities.

The key adaptation issues that cities are facing include flooding, drought, and more frequent extreme weather events of higher magnitude, which put in danger the function and ability to recover their structure and infrastructures, directly and indirectly jeopardizing human living conditions and lives. Therefore, regarding adaptation, cities are also expected to play a

central role in the definition of national adaptation plans, to be used for the implementation of policies, programs and projects aimed to coordinate and harmonize efforts, also because adaptation can be hardly addressed at local level only; in fact for cities the definition and implementation of adaptation measures will be particularly challenging, for a number of reasons including the scale of rapid and slow on-setting climate driven disasters and negative impacts, the limited predictability of both extreme events and long lasting conditions, the need of increasing resilience of key infrastructures the control of which is often beyond the cities reach. Here, the exchange of best practices, lessons learned and knowledge is of

great importance for cities also regarding adaptation measures, and fundamental are also radical innovations in the forms of governance, planning, managing the cities as well as methods and tools to evaluate and appraise the urban adaptive capability.

In connecting adaptation and mitigation approaches, “urban resilience” as an urban management term may also be able to effectively connect the multiple scales of climate action. It can relate short-term disaster response with longer-term climate adaptation, and help to put cities in the spotlight as a leverage for effective mitigation while providing safe and healthy environments for the majority of people in an ever increasing urban world.

REFERENCES

- UN-HABITAT 2016. Sustainable Urbanization in the Paris Agreement: Comparative Review of Nationally Determined Contributions for Urban Content. Nairobi: UN-Habitat
- UN-HABITAT 2016. HABITAT III New Urban Agenda. Quito Declaration on Sustainable Cities and Human Settlements for All. Quito: UN-Habitat
- UNEP-DTIE 2013. Cities and Buildings. Paris: UNEP
- UNITED NATIONS 2000. General Assembly resolution 55/2. United Nations Millennium Declaration. New York: UN
- UNITED NATIONS 2015a. Durban Platform for Enhanced Action (decision 1/CP.17). Adoption of a protocol, another legal instrument, or an agreed outcome with legal force under the Convention applicable to all Parties. Adoption of the Paris Agreement. Paris: UNFCCC
- UNITED NATIONS 2015b. Resolution adopted by the General Assembly on 25 September 2015. Transforming our world: the 2030 Agenda for Sustainable Development. New York: UN