



## TAKING ACTION TO IMPROVE LIVES

2018 ECOSOC Integration Segment, 1-3 May 2018

### **Innovative communities: leveraging technology and innovation to build sustainable and resilient societies**

#### **Conference Room Paper**

#### **\*\*\* Executive Summary \*\*\***

The Conference Room Paper (CRP)<sup>1</sup> consolidates the contributions received from Member States, ECOSOC subsidiary bodies and the United Nations system on the theme of the 2018 Integration Segment of the Economic and Social Council (ECOSOC), *“Innovative communities: leveraging technology and innovation to build sustainable and resilient societies”*. It also draws on analytical work conducted within DESA. The paper aims to contribute to the Segment’s deliberations by providing an overview of current initiatives, lessons learned and recommendations on how policy makers can use integrated policy approaches to enhance resilience and inclusion as key enablers to meet the ambition of the 2030 Agenda. It will further explore how technology and innovation, particularly pro-poor and gender-sensitive solutions, can be leveraged as tools to design a resilient future, leaving no one behind.

#### **I. Resilience decoded – building blocks towards 2030**

For this paper, resilience has been defined as the capacity to prepare to resist a shock or disaster, recover from calamity or to adjust to change. The concept of resilience has been applied to various areas and at different levels: first introduced in natural sciences, it became prevalent in many other areas. Yet, the debate has only recently broadened to encompass an interdisciplinary account of the phenomena, evolving around a definition for resilient societies.

A resilient society in today’s world recognizes the pivotal transformative forces at play – climate change, globalization, technological progress and demographic patterns – and develops strategies to address systemic challenges and transform them into opportunities. This definition encompasses the recognition of international cooperation for coherent and coordinated action through global frameworks such as the 2030 Agenda for Sustainable Development, the Addis Ababa Action Agenda, the Paris Agreement on Climate Change, the Sendai Framework for Disaster Risk Reduction and the New Urban Agenda. These international frameworks provide solid bases for the formulation of national resilience strategies. In this context, policy integration is a critical tool that enables policymakers to properly address phenomena of interrelated and complex nature. Integrated policies, however, require strategic thinking and foresight analysis, based on short- and long-term trends and other relevant data. Thus, the resilience debate is often framed in terms of systems; systems theory studies the organization of phenomena and explores both the principles common to all complex entities and the models that can be used to describe them.

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<sup>1</sup> The Conference Room Paper is available at: <https://www.un.org/ecosoc/en/node/3613435>

However, the gap between the growing scale and complexity of global challenges and the financial, institutional and operational support any given stakeholder can tap into is widening. Capacity development and other means of development cooperation are essential complements to efforts on domestic resource mobilization, particularly for LDCs. In addition, a more comprehensive approach is required. The latter implies strengthening inclusive decision-making, as committed in SDG 16, and policy implementation processes, and building stronger partnerships with and trust between a wide range of actors, including civil society and the private sector.

The success of policies developed at the international and national levels largely depends on how well they are translated to and implemented at the local level. At the same time, national and global processes need to take into account the needs and concerns of local communities. Communities have often come together to address challenges using inclusive participatory processes, increasing ownership and, thereby, the success of sustainable, custom-made solutions to the community's needs. Many cities around the world have put in place resilience strategies. Innovation and technology-enabled solutions have been leveraged in this regard. 'Smart cities' rely heavily on networks, both in terms of physical infrastructure and social cohesion. With the spread of digitalization and networks, services have become more efficient and cheaper, but also potentially more vulnerable to a new type of threat. Cybersecurity, sustainability and social cohesion are considered essential elements in cities' resilience strategies.

As the world becomes ever more globalized, the foundations for its resilience and sustainability strongly rely on individual behaviors. As a part of the network, individuals receive and issue information that will add to the data produced by the network. This process of knowledge production and dissemination implies a decentralization of knowledge, and potentially an empowerment of the individual. Sensitizing people for global challenges with evidence-based information, through education and training, is crucial to inform individual opinions that will ultimately be reflected in public policy.

## **II. Technology and disaster risk reduction**

Changing behaviors towards increased investments in disaster risk reduction requires a clear articulation and communication of the resulting social and economic benefits. As illustrated once more by the 2017 hurricane season, extreme weather events and natural hazards cause substantial hardship to affected communities. Yet, resources continue to flow primarily to post-disaster activities rather than towards disaster risk reduction and the improvement of coping capacity. Understanding disaster loss and the dynamic risk landscape, therefore, is the first step for risk-informed, evidence-based decision making. Accelerated efforts are required to ensure all countries systematically account for disaster losses and conduct risk assessments to develop national and local disaster risk profiles, as a basis for coherent and inclusive disaster risk reduction policies and plans. As women and girls are disproportionately affected by disasters, the development and implementation of integrated and gender-sensitive policies and plans are critical in this regard. It can be supported by comprehensive data sets, the collection of which is facilitated by new technology, including Information and Communications Technologies (ICTs), artificial intelligence, drones or social media to name a few.

To strengthen understanding and capacities for resilience building, the Sendai Framework calls for prioritizing the development and dissemination of science-based risk knowledge, technology and innovation and to strengthen the science-policy interface. Existing technology-enabled solutions that can be leveraged to increase preparedness to and manage the risk of disasters include spatial

data, monitoring and early-warning systems, disaster resilience scorecards for cities, and emergency telecommunications.<sup>2</sup> The potential of big data and drone-technology is being explored in several countries. Innovative solutions are also being applied to ‘build back better’ once a disaster struck.

### **III. Balancing infrastructure development and sustainability at the local level**

Population growth, the changing demographic structure of populations already settled in cities, and the increasing migration between cities determine contemporary urban demographic dynamics. While good urban planning and governance can facilitate economic and social development without impeding on the environment, rapid and unplanned urban growth threatens sustainable development. Moreover, as extreme weather events intensify, the exposure of informal settlements to disaster risk are likely to become more severe. Addressing inequalities both through social policy tools and urban planning, in addition to policies for affordable urban land and housing access is essential for building urban resilience. In this respect, investing in gender-responsive and quality, reliable, sustainable and resilient water and sanitation, energy, transport and ICT infrastructure, both in urban and rural areas, can significantly increase a community's response to shocks.

In addition to spatial planning and infrastructure development, technological advances can play an important role in enhancing communities’ resilience to external shocks. However, limited growth rates in fixed broadband subscriptions pose a major challenge to a community's capacity to reap the benefits of ICTs and to fully capitalize on the opportunities of e-commerce, paperless trade, transport facilitation, e-health and e-learning. Furthermore, risk management in the digital realm becomes increasingly important as cities across the globe are building a ‘smart’ infrastructure - using networked solutions to increase the effectiveness of their transportation systems, water management and electricity networks. Often, IT infrastructure would be the first to be affected in case of a disaster, and their own resilience needs to be built as well.

Building ‘cyber-resilience’ and providing stable, sustainable and affordable energy will be critical in this regard. The ways energy is produced, transmitted, and accessed are transforming with electricity remaining one of the key commodities in the modern world that must be produced, distributed and delivered in real time to meet demand. In this transitioning energy environment, approaching the energy sector in a holistic manner – considering climate technology and innovation, energy systems and infrastructure, as well as climate policy and partnerships – is imperative.

### **IV. National strategies for resilience**

Reducing vulnerabilities and risk exposure across multiple sectors requires strategic planning and coordination. Yet, capacity gaps remain at the local, national and global levels to effectively do so. The main risks faced by many countries around the globe are related to climate change induced extreme weather events and earthquakes, exacerbated by water and food crises. As many of these hazards are of transboundary nature, cross-border and regional initiatives, policies and institutional frameworks are important additional layers in resilience planning, which requires coordination at and between different levels of governance. Institutional frameworks at the international level also play an important role in driving political support, increasing public awareness and catalyzing financial and technical assistance, as well as in helping to ensure coherence of actions and providing a framework

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<sup>2</sup> See Conference Room Paper for examples of technology and innovation for disaster risk reduction, response and recovery.

for monitoring and follow-up. The coordination within government and between the different levels of governance has been highlighted as critical for building resilient societies. Participatory approaches involving civil society, the private sector, scientists and academia in the policy making and implementation processes of resilience strategies are also crucial for the effectiveness of the latter.<sup>3</sup>

Countries are also investing in early warning and climate prediction systems to make informed decisions about natural resources management, and to strengthen national policy frameworks for resilience, in line with international frameworks. The use of technology has allowed to refine, amongst other things, early warning, information gathering and needs assessment, thereby improving the disaster response. Innovation can contribute to enhance the understanding of risk factors and thus, strengthen evidence-based decision making. While ICT and social networks are becoming increasingly available, there remain coverage gaps in rural areas. Likewise, indigenous languages need to be taken into account for inclusive and efficient transmission of risk reduction protocols and information.

#### **V. Leveraging technology and innovation to support resilience and inclusiveness in Africa in the context of the 2030 Agenda and Agenda 2063**

Since 2000, several African countries have achieved significant socio-economic progress. Strong domestic demand, a thriving business environment and improved macroeconomic management continue to enhance investment and growth. In addition, the continent is rapidly urbanizing and the middle class is growing. Africa's youth population is expected to double, reaching over 830 million by 2050. While all these present great opportunities, it also comes with challenges, at a time when the continent continues to face significant sustainable development challenges, with 389 million Sub-Saharan Africans still living in extreme poverty.

Building resilience is therefore a priority for Africa. Both the 2030 Agenda and Agenda 2063 share the commitment to promote resilience and inclusiveness. Challenges to strengthening resilience across the continent include economic challenges, such as economic diversification, the need for structural transformation, climate-proof economies, and the lack of human and institutional capacity, amongst others. Diversified and robust socio-economic sectors and ecosystem assets are essential for Africa's resilience. Agriculture is recognized as a critical sector in driving the continent's transformation, yet shortcomings have impeded on the realization of the sector's full potential and many of the challenges facing rural communities are among the root causes of fragile situations. Mainstreaming inclusive green economy principles in the agriculture and industry sectors could offer vast opportunities to enhance resilience across the continent. However, institutional set-up and regulatory frameworks need to be developed and adapted, market participation should be fostered, and investment in research and development in the agricultural sector should be reinforced. Investment in resilient and sustainable energy infrastructure is also considered critical in this regard.

Challenges also persist in the area of health infrastructure and services which will need to be addressed. Africa bears one-quarter of the global disease burden, yet has only two per cent of the world's doctors. Moreover, the continent is at serious risk of not attaining its development goals if climate change is not integrated into development planning at all levels. The lack of access to quality, timely climate data and information services needs to be addressed, if climate change is to be effectively mainstreamed in the planning of sustainable and resilient development. In the absence of adequate meteorological infrastructure, accessible and customizable numerical weather prediction

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<sup>3</sup> See Conference Room Paper for examples of integrated national strategies and policies for resilience.

systems based on open source tools become essential. However, these services require reliable Internet access. Africa is still lagging with only 18 per cent of households having Internet access at home. While the gender gap in Internet use has narrowed in most regions, it has widened in Africa. Thus, harnessing the full potential of ICT for development requires targeted investments in broadband infrastructure, networks and technologies.

## **VI. Designing a resilient and sustainable future – a toolkit to better prepare for tomorrow**

Innovation-oriented elements that can be leveraged for integrated policy planning include foresight techniques and horizon scanning as well as modelling instruments.<sup>4</sup> Building resilience requires the capacity to understand complexity and to employ a systems-thinking approach. Futures thinking and foresight can increase the capacity of governments to create contingency plans and devise procedures for responding to different scenarios, coping with uncertainty but also recognizing opportunities.

As the world grows ever more connected, governments and societies at large need better data collaboration, harnessing vast data flows for targeted policies and actions that strengthen resilience while addressing new risks emerging from big data. Risks are generated, for example, when data sets identify communities or demographics within a group and tie them to a place, or when data is collected, shared and used without authorization. Moreover, interoperability challenges arise between data sets collected by different stakeholders. The promotion of integrated policies on digital identification, i.e. electronically captured and stored attributes that can uniquely identify a person, has been identified by various UN entities as an action area that ECOSOC may wish to consider for promoting resilient and inclusive societies. A multi-stakeholder approach is required to align incentives and ensure that digital identity is rolled out in a manner that is interoperable, scalable, secure, sustainable, and responsible.

Multi-stakeholder partnerships and capacity building underpin all initiatives aimed at fostering the transition from disaster management and risk minimization to long-term resilience and sustainable development. While technology can go a long way in supporting efforts to shift the world onto a resilient pathway, promoting the transfer of knowledge and context-sensitive technology, as well as innovative financing models, are critical to bring about and sustain this shift.

## **VII. Key messages and recommendations**

Based on the contributions received from Member States, ECOSOC subsidiaries and the UN system, showcased throughout the CRP<sup>5</sup>, the following recommendations are suggested to promote science, technology and innovation to reduce economic, social and environmental shocks and enhance sustainable and resilient societies:

1. In an interdependent world, there is a need for a holistic, systems-based approach to enhancing resilience through participatory, and science and technology-based decision-making that is demand-driven and takes into consideration indigenous knowledge.
2. Advancing sustainability and enhancing resilience requires long-term action that integrates different policy areas. There is the need to coordinate different government levels and involve

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<sup>4</sup> See Conference Room Paper for experiences shared by Member States and UN entities.

<sup>5</sup> The Conference Room Paper is available at: <https://www.un.org/ecosoc/en/node/3613435>

society at large. Experience show that governments alone cannot tackle multidimensional hazards and address existing risks. Partnerships involving multiple actors are critical to identify potential options and implement the necessary actions. Access to information is necessary to provide a solid foundation for these partnerships and to ensure that decisions take on board public concerns.

3. The resilience and adaptive capacity of all people should be strengthened to respond to and recover from economic, social and environmental shocks, humanitarian emergencies and adverse impacts of climate change, natural disasters and extreme weather events, including through leveraging appropriate technologies.
4. It is important to base decisions on science and technology, but this also requires validating indigenous knowledge and using it systematically along with modern innovations and technologies. It is also important to ensure that risk reduction decisions at all levels are based on appropriate science and technology, and are designed and communicated in an inclusive and transparent manner. This is especially relevant for infrastructure development, revising standards and guidelines, and developing early warning systems and the like.
5. Investments in science, technology and innovation, as well as capacity building, will be critical, both from governments as well as the private sector. Research institutions and universities should be encouraged to undertake innovative research through the establishment of appropriate grant systems and partnerships with the private sector and other stakeholders.
6. In the context of Africa, investment in human capital is critical to spur innovation, research and development that would enhance the multiplier effects of technology and innovation in development across the region and prevent a 'brain drain' effect. The realignment of public finance with development plans and better mapping of domestic resources should also be undertaken to ensure adequate financing to unlock opportunities and strengthen the competitiveness of the African economy.
7. In the context of technological progress, risk management in the digital realm becomes increasingly important. The fact that new technologies are relatively unregulated poses significant risks, such as invasion of privacy, while methodologies such as behavioral insights also pose questions regarding the ethics of nudging humans to adopt certain behaviors. Also, as cities and countries across the globe are building a smart infrastructure, the protection of these infrastructures depends on innovative solutions to build 'cyber-resilience.'
8. More than 1 billion people lack an officially-recognized identity and, without that, they face financial and social exclusion. A multi-sectoral, multi-stakeholder approach is necessary to align incentives and ensure that digital identity is rolled out in a manner that is scalable, secure, sustainable, responsible and properly regulated, so that it does not interfere with privacy.
9. The UN system should strengthen processes to scale innovation effectively across the system in a lean and agile manner, including through increased inter-agency collaboration and internal operational and regulatory frameworks to support the use of frontier technologies. It should develop internal innovative capacity through a process of human-centered design to develop

products and services that fit the needs of vulnerable communities; and engage with grassroots companies and start-ups, to integrate the potential of entrepreneurship and youth.

10. To ensure sustainable and resilient societies, innovative projects should be focused on desired impact using technology as a means to an end. Innovation efforts should be tied to concrete outcomes with scalability at the heart of the design and initiatives should utilize foresight techniques to analyze alternative future scenarios and determine the solutions that will have the highest chance of endurance. Initiatives should assess risks in advance and aim to harness the power of new technologies or methodologies in responsible ways.
11. The UN system could facilitate the exchange of good practices among countries with similar contexts and help share robust methodologies and databases. It could also facilitate regional cooperation of countries sharing similar risks and interests. Sustainable development will not be achieved without effective disaster risk reduction and adaptation to climate change. It is therefore essential to act on the interlinkages between the 2030 Agenda and the SDGs, the Paris Agreement and the provisions of the Sendai Framework for Disaster Risk Reduction.

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