ROLE OF ICTS ON SUSTAINABLE DEVELOPMENT-A SOCIOLOGICAL ANALYSIS

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Abstract

The future we want was the motto of the Rio+20 conferences on sustainable development that took place in Rio de Janeiro, Brazil in June 2012. While the conference addressed a broad range of issues, including the role of a green economy towards sustainable development and poverty reduction and the improvement of international coordination, the role of ICTs was recognised in a number of ways. In the Rio+20 outcome document, the role of ICTs is explicitly mentioned in regard to five key areas of action toward the achievement of sustainable development. Article 44 of the outcome document recognises the role of ICTs in facilitating the flow of information between governments and the public, enabling public engagement in sustainable development. The document calls for governments to "work toward improved access to ICT, especially broad-band network and services, and bridge the digital divide, recognizing the contribution of international cooperation in this regard".

Introduction

Article 65 of the outcome document acknowledges the potential of ICTs to promote knowledge exchange, technical cooperation, and capacity building for sustainable development. The article emphasizes the role of these tools in fostering experiences and knowledge sharing in different areas of sustainable development in an "open and transparent manner".

With the aim of improving agricultural productivity and sustainability, Article 114 of the outcome document calls for government action to improve access to "information, technical knowledge, and know-how, including through new ICTs that empower farmers, fishers, and foresters to choose among diverse methods of achieving sustainable agricultural production".

Article 128 of the outcome document recognizes the need to improve energy efficiency and the role of energy-efficient technologies in addressing sustainable development and climate change goals, including energy efficiency measures in urban planning, buildings, and transportation, and in the production of goods and services. These constitute areas in which ICTs have proven potential to reduce emissions through 'smart' applications (e.g. smart motor systems, smart logistics, smart buildings, and smart grids).

Recognizing the importance of youth education and of ensuring that education systems provide the tools to pursue sustainable development, Article 230 of the outcome document calls for a more effective use of ICTs to enhance learning outcomes. The document also acknowledges the role of ICTs in indirect ways by stressing the need to support initiatives such as the Global Environmental Outlook process led by the United Nations Environment Program (UNEP), the Agricultural Market Information System hosted by the Food and Agriculture Organization (FAO), as well as the need to develop comprehensive hazard and risk assessments and reliable geospatial information, among others.

In addition to their inclusion into the final outcome document, several key international stakeholders organized ICT side events during the Rio+20 process, aimed at raising awareness on concrete ICT applications, benefits and challenges to address sustainable development, environmental and climate change goals.

Why is this important?

The increasing diffusion of ICT applications, from interactive Web portals, text messages (SMS), community radio, mobile phone-based monitoring systems, community mapping or social media tools such as Twitter and Facebook, among others, is offering new mechanisms for empowerment, engagement and multi-stakeholder participation in the processes of change and transformation that surround us. Emergent experiences, particularly from developing countries, suggest the potential of ICTs in face of the challenges posed by pervasive poverty, environmental degradation and climate change impacts.

However, for ICTs to be truly transformative there needs to be a solid basis of awareness and a better understanding of their role in the achievement of sustainable development goals, particularly among policy and decision makers. This includes the potential and risks involved in the use of ICTs within specific development settings, as well as the enabling environment required for the implementation of ICT solutions in the field (e.g. regulations, standards, financial, institutional and human resources etc). The recognition of ICTs in the Rio+20 process -as the focus of several preparatory meetings, side events and discussions, and as part of 'The Future We Want' outcome document- constitutes an important step to raise the awareness of policymakers on the value of including ICTs as part of sustainable development processes and strategies, and to foster multi-stakeholder dialogue and collaboration in this field.

Where do we go from here?

Further work will be required towards the development of policy instruments of governance and management (e.g. legal norms such as laws, decrees, and enforcement actions, licensing, planning, and funding regulations) that help create an enabling environment where ICTs can effectively contribute to the achievement of sustainable development objectives, including those related to climate change mitigation and adaptation.

At the same time, as acknowledged by the ITU in their input to Rio+20, efforts will need to be made towards the identification of concrete targets and a specific 'roadmap' for the utilisation of ICTs as part of sustainable development strategies, as well as to mobilise the financial and human resources required to implement ICT strategies towards 'greener' and more resilient societies at the international, national and local levels. While the recognition of ICTs' role in key areas of sustainable development (i.e. multi-stakeholder engagement, knowledge exchange and capacity building, food security and sustainable agriculture, energy efficiency and education) contributes to awareness raising and future collaboration in this field, many other areas of potential, resources and specific targets of action remain to be defined.

Rio+20 evidenced that much more needs to be done for ICTs to help bridge the gap between the 'present we have and 'the future we want, to translate political intentions into ICT practice, and to broaden the understanding of these tools to encompass their informational, productive and transformative potential.

The United Nations Group on the Information Society (UNGIS) organised a side event during Rio+20 titled "ICTs, the Foundation of Our Sustainable Future". The event was focused on specific ICT applications and services that can assist in the transition towards a green economy, and in discussing the enabling environment needed to facilitate the uptake of ICT applications.

- The International Telecommunication Union (ITU) and the Ministry of Communications of Brazil organized a side event titled "Broadband and ICTs for Smart, Inclusive and Sustainable Societies". Participants explored the opportunities and benefits offered by broadband and ICTs in the context of sustainable development, as well as the challenges and solutions for the application of broadband-enabled innovation.
- The International Telecommunication Union (ITU) and the World Intellectual Property Organization (WIPO) were also involved in the preparatory process of Rio+20, hosting a side event on "The Future We Want with ICT and Innovation", held during an Intersessional meeting, march 2012) to highlight the role of information communication technologies (ICTs) in achieving a sustainable future.

ICTs and Rio+20: Bridging the 'Design-Reality' Gaps

One of the main challenges faced within international policy processes is that of striking a balance between traditional and novel approaches needed to address development challenges. Decision makers face the daunting task of acknowledging lessons learned (from both success and failure), while at the same time adopting innovative strategies needed to achieve sustainable growth amidst an uncertain future. While the international landscape has witnessed significant changes since the 1992 United Nations Conference on Environment and Development (UNCED) that took place in Rio de Janeiro, Brazil, one of the most important global transformations relates to information. The widespread use and rapid development of Information and Communication Technologies (ICTs) such as mobile phones, radio and the Internet, have added new challenges and opportunities to the way in which information and knowledge are created, managed, disseminated and shared, and thus, their role is gaining momentum within decision-making processes.

During the last decade, the developmental potential of ICTs has been increasingly acknowledged within international policy processes, mainly in regards to 'traditional' development issues such as governance and education. More recently, and thanks to the leadership of organisations such as the International Telecommunication Union (ITU), their role has also been acknowledged at high political levels in regards to environmental sustainability, climate change responses and 'green growth'. Emerging initiatives, research and advocacy at the intersection of ICTs, environmental sustainability, climate change and development are evidencing the need to acknowledge and integrate the role of these tools as part of international strategies and agreements, such as those that will be discussed at the Rio+20 Conference (20^{th}-22^{nd} June 2012, Rio de Janeiro, Brazil).

As a high level forum aimed at achieving 'renewed political commitment for sustainable development, assess the progress to date and the remaining gaps in the implementation of the outcomes of the major summits on sustainable development, and most of all, aimed at 'gathering high-level political commitments towards new ways of addressing new and emerging challenges' (UNCSD, 2012), Rio+20 will be an important forum to open

new opportunities for innovation –including those opportunities supported and enabled by ICTs.

The explicit inclusion of ICTs in the 'zero draft' of "The Future We Want" outcome document of Rio+20 constitutes an important step into that direction. The draft document acknowledges the role of these technologies in accessing and sharing information, providing new mechanisms for citizen participation, people empowerment and accountability, and it also calls for greater efforts to achieve universal access to ICTs.

While the document is still in draft form, the acknowledgment of ICTs' potential as part of Rio+20 outcomes would send a valuable high-level message to leverage and foster the adoption of more holistic and innovative approaches to sustainable growth with the help of these tools. It would serve as an important precedent towards the explicit inclusion of ICTs in future policy processes and agreements at the international and national levels, particularly in regards to the achievement of 'green growth' goals and climate change responses (for example, as part of the negotiations of the UN Climate Change Conference COP 18, to be held in Qatar later this year).

Experiences from the ICT for development (ICT4D) field can yield valuable lessons to be considered by policy and decision-makers involved in events such as Rio+20. A study of the failure risks for e-government projects conducted by Heeks in 2003 suggests that the underlying cause of project failure constitutes the oversize gaps between project design and on-the-ground reality. Similar 'design-reality gaps' can also be found between ICTs' acknowledgment in international agreements, and the actual use of ICT tools as part of sustainable or 'green' practices in the field.

1. Information Appropriateness: International agreements should to acknowledge the diversity of information needs and capacities that exists within and between developed and developing contexts. ICT-enabled information provision should be based on knowledge resources that are valued nationally and locally, and that can be appropriated and used within specific development contexts (e.g. through the provision of contents that respond to local priorities, delivered in appropriate formats and languages).

2. Stakeholder Diversity and Participation: International agreements should acknowledge the variety of stakeholders and institutions involved in national/regional policy design and implementation, as well as the 'disconnect' that often exists between them. Agreements should foster the adoption of ICT- based mechanisms aimed at facilitating participative decision-making and multi-stakeholder coordination towards the implementation of climate change responses and 'green' initiatives.

3. Resource Allocation and Monitoring: International agreements should promote the implementation of bottom-up needs assessments aimed at identifying the resources needed to implement ICT initiatives in the field. This includes an assessment of the human, the technological and the physical resources required for ICT tools to be effectively accessed, appropriated and used at the local level, particularly within remote rural contexts. Agreements should include recommendations on the implementation of ICT-based resource monitoring and accountability mechanisms.

4. Ensuring ICT Policy Coherence: International agreements should recognise the importance of fostering the role of development in ICT policy, but also the role of ICT in development policy (Heeks et al, 2010). This implies opening new channels of dialogue and

discussion between stakeholders from different sectors (e.g. environment, ICTs, agriculture, industry), and supporting the role of local leaders that have a clear and credible vision on the contribution that ICTs can make to sustainable development.

Avoiding or minimising the 'design-reality gaps' in this field requires building upon available experience (e.g. from the development, climate change and the ICT for development fields), while at the same time fostering innovation (e.g through new technological approaches to the green economy or to sustainable agricultural practices, or through ICT-enabled mitigation and adaptation responses). It implies finding a balance between current challenges and future threats, between emerging knowledge and traditional practices, between thinking 'outside the box' and drawing on lessons learned, and between utilising effectively available resources and identifying new ones. The ICT4D field has a rich body of knowledge and experiences that can serve as a solid basis to innovate and adopt sustainable development practices. The outcomes of the Rio+20 conference will tell us more about how (and if) international processes are managing to bridge the 'design-reality gaps', and will certainly stimulate new discussions on the role that ICTs can play towards a sustainable future.

Conclusion

Above all, it involves identifying new ways of solving problems, of making decisions, of accessing and processing information, and of applying knowledge to agricultural practices in order to achieve more resilient production systems. Emerging experiences from the field suggest that Information and Communication Technologies (ICTs) are playing an increasing role as enablers of change and transformation within vulnerable contexts. Mobile phones, radio, Internet-based applications and social media are being integrated as part of strategies to adapt to, mitigate, and monitor climate change.

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