

Environment and ICT: “enemies or friends”?

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The issue of Information and Communication Technologies (ICT) and Environment is a complex and multifaceted one. ICT can play both positive and negative roles in environmental sustainability. This feature aims to show that the positive impact of ICT on the environment is immeasurably high and so, outweighs its potentially negative impact.

In my personal proposal I will try to answer questions I have raised with colleagues. These questions are: Environment and ICT: enemies or friends? What are good examples of the positive roles that ICTs can play in assuring environmental sustainability? What are the examples of the negative impacts?

ICTs are a powerful tool for civil society in protecting environment. But more is needed to streamline ICT work of different groups and communities. Environmental Information Systems (EIS) are the core of contemporary urban environment management systems, and a prerequisite for proper and timely dissemination of information to the public.

“Technological advances require systems that can make optimum use of informatics and telecommunications infrastructures to address environmental management needs. Yet these can be open, flexible, modular and inexpensive to implement and operate. On this basis, a number of existing EI components for wireless, mobile phone and web-based applications are presented. Overall, the right of access to information related to the quality of the environment that citizens live in, appears to be well matched with the concept of open source” (Aarhus Convention) (Sands P., (2003)). This type of service addresses today’s needs concerning EI access and supports an active participation of citizens in decision making.

Sometimes the relationship between ICT and the environment might seem distant or its nature may not seem obvious. Environmental issues relate to natural resources and their complex dynamics, including water, soil, forests, flora, fauna, climate, and so on, and the

world of ICTs is premised on a virtual construct of the world. One is "as real as it gets" and the other quite 'short-lived'. What then is the link between ICTs and the environment?

Perhaps this is where the power of ICTs lies and this can have a great bearing on virtually every aspect of human life and the rapidly expanding surroundings of human habitats. Like any other area, an understanding of the environment is deeply dependent on correct, relevant, and recent information being available to all those people, whose decisions and actions affect this field.

In a larger perspective, however, ICTs and the environment have a much deeper connection. "Environment relates to the profound relationship between matter, nature, and society, and in such a context ICTs bring new ways of living in a more interconnected society, all of which reduces our dependency on matter and affects our relationships with nature" (Hargroves K. C. and Smith H., (2005)).

Today the impact of ICT on the Environment is one of the broadest issues. It relates to one of the Millennium Development Goals (MDG), as ICT in national and international efforts assures environmental sustainability.

"ICT in the environment sector is often used to:

- communicate traditional forms of environmental knowledge to communities and to facilitate the citizen monitoring of environmental issues
- make a valuable contribution to sustainable environmental management by improving monitoring and response systems, facilitating environmental activism and enabling more efficient resource use
- reduce the consumption of energy, water and other essential natural resources through

more efficient agriculture and industrial procedures

- play an important role in *the fight against pollution*—not only by providing more useful metrics and information, but also by enabling population decentralization and large-scale telecommuting
- provide an ideal platform for local voices to be heard, overcoming physical and social barriers, and for allowing special-interest groups and virtual communities to be formed” (<http://www.opt-init.org/framework/pages/2.2.5.html>)

ICT is also being deployed extensively to *monitor and respond to environmental disasters* in developing countries and not only, they also warn and predict disasters.

“ICT in the environment sector is often used to communicate traditional forms of environmental knowledge to communities and to facilitate the citizen monitoring of environmental issues” (<http://www.wsis.ethz.ch/>).

The power of ICT as an information and networking medium can also enable citizens to act as *environmental enforcement agents*, alerting decision makers to infringements of all kinds and leveraging the power of ICT to reach and influence public opinion.

At a *higher level*, ICTs enable greater participation and involvement of human beings with activities that are critical to protecting the environment at several levels. At the *institutional level*, they enable less use of paper and better resource management, networking, and information exchange. *For researchers*, they provide tools that are critical in observation, simulation, and analysis of environmental processes; and *for educators*, they make learning and teaching more effective, while extending educational resources to a larger community. At the *individual level*, ICTs can be critical in equipping a new generation of people who are more informed, more sensitive, and more involved in the formulation of policies that affect their communities, nations and the world.

ICTs have proved critical in environmental monitoring and the associated information management systems; for the exponential growth and integration of data and information on the environment at national and international levels; for knowledge sharing and community building around general and specialized environmental issues across borders; for enabling remote sensing and constant mapping of natural resources; for environmental research; and for raising public awareness about environmental issues and policy implications.

Perhaps the most visible area of a positive impact of ICTs on the environment is their potential to reduce consumption of paper through paperless government, paperless office operations (e.g. via electronic document flows, reduced bureaucracy and paper work).

As with other not fully recyclable products of technological progress, ICTs can also increase the burden on the environment, as is in the case of toxic e-waste polluting the environment in both developed and developing countries.

In conclusion, I want to add that when we speak of the environment or ICT, both should be typically understood at two levels: *local* and *global*. Both perspectives are critical, and both should be understood independently, as well as in conjunction with each other, to approach the subject. ICTs can indeed be critical in providing this dual perspective, while facilitating knowledge sharing at both levels simultaneously.

Reference:

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