

ICTs, the Internet and Sustainability: A discussion guide for Rio+20

by **Don MacLean, David Souter and Heather Creech**¹

We recognize that the twenty years since the Earth Summit in 1992 have seen progress and change. There are deeply inspiring examples of progress, including in poverty eradication, in pockets of economic dynamism and in connectivity spurred by new information technologies which have empowered people.

We acknowledge, however, that there have also been setbacks because of multiple interrelated crises—financial, economic and volatile energy and food prices. Food insecurity, climate change and biodiversity loss have adversely affected development gains. New scientific evidence points to the gravity of the threats we face. New and emerging challenges include the further intensification of earlier problems, calling for more urgent responses. We are deeply concerned that around 1.4 billion people still live in extreme poverty and one sixth of the world's population is undernourished, pandemics and epidemics are omnipresent threats. Unsustainable development has increased the stress on the earth's limited natural resources and on the carrying capacity of ecosystems. Our planet supports seven billion people expected to reach nine billion by 2050.

Excerpt: United Nations (2012, January 10). *The future we want*. United Nations Zero Draft Outcome Document for Rio+20. Retrieved from: www.uncsd2012.org/rio20/mgzerodraft.html

The year 2012 marks the 25th anniversary of the publication of the Report of the Brundtland Commission, *Our Common Future*. The report defined the concept of sustainable development, introduced it into global policy discourse and recommended a set of policy directions to put the world on a new sustainable development path. These policies sought to reconcile economic growth and social development with environmental sustainability by ensuring that development would take place within the Earth's natural limits. In this way, the Commission believed it would be possible to meet the needs of the present, particularly those of the world's poorest people, without compromising the ability of future generations to meet their needs.

This year also marks the 20th anniversary of the United Nations Rio Summit on Environment and Development. This summit built on the work of the Brundtland Commission and adopted

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Agenda 21, a comprehensive action plan that sought to address a wide range of economic, social and environmental challenges through coordinated actions involving governments and major stakeholder groups at the international, national and local levels.

On June 20-22, 2012, governments and other members of the world community will reconvene in Rio to assess progress made over the past two decades toward the goal of sustainable development. Participants intend to adopt a new action plan that will take account of the changes that have taken place in the world since the first Rio summit, as well as the lessons learned from 20 years of sustainable development efforts. As a result of this experience, the Rio+20 Summit plans to take a more focused approach to sustainable development by concentrating on two agenda themes only—the green economy in the context of sustainable development and poverty eradication, and the institutional framework for sustainable development.

The “zero draft” of the summit outcome document published by the United Nations in January 2012 acknowledges that there have been many setbacks on the road to sustainable development and that many of the challenges facing the world today loom larger than they did in 1992, in spite of efforts that have been made by different actors and of the effects of new developments such as information technology. This view is shared by the report of the High Level Panel on Global Sustainability, which was established by the UN secretary-general to provide input to Rio+20.

The main purpose of IISD’s online forum on “ICTs, the Internet and Sustainability” is to raise awareness of and stimulate debate about a question that should be central to the discussions that will take place at Rio+20, but which seems to be largely absent from its agenda. As David Souter’s introductory discussion paper makes clear, rapidly evolving information and communications technologies (ICTs) and the Internet have had significant impacts—both positive and negative—on the components of sustainable development in the 20 years that have passed since the first Rio conference. This suggests that one of the main questions participants in Rio+20 should be asking themselves is: what actions are needed to maximize the benefits and minimize the harms resulting from the impact of ICTs and the Internet on sustainability?

In the interview that accompanies this discussion guide, Jim MacNeill is blunt in his assessment of where the world stands today. In his view, because most governments ignored the commitments they made at the 1992 Earth Summit, instead of a rapid transition to more sustainable development, “we got 25 more years of unsustainable ‘business-as-usual’ forms of development in agriculture, in industry—you name it—with the result that economic and life support systems have degraded at an increasing rate.” These words should carry considerable weight since MacNeill served as secretary-general of the Brundtland Commission, was lead author of *Our Common Future* and has remained involved in sustainable development policy at the highest levels.

While acknowledging that the Internet and ICTs provide powerful tools for achieving the reforms that need to be made in development, and that they have had a profound effect on all aspects of economy and society, politics and culture, MacNeill doubts that ICTs make it easier to grow and prosper within Earth’s natural limits, since they can be used both by those who favour change and those who oppose it. While hoping studies may prove him wrong, in MacNeill’s view, ICTs:

- Have reinforced a number of environmentally unsustainable trends
- Are large and increasing sources of environmental harm themselves
- Facilitate runaway consumption and short-term decision-making
- Are having a profoundly negative effect on the capacity for governance
- Make it more difficult politically to challenge the massive power of the status quo regarding unsustainable forms of development

MacNeill concludes this assessment by suggesting that there is no way of controlling the rate at which ICTs are advancing, even if we wanted to, and that “we will have no choice but to react to every new development that comes along and live with whatever the consequences are.”

Vint Cerf, who was a co-designer of the basic Internet Protocols in the 1970s and now serves as Chief Internet Evangelist for Google, has very different assessments of the relationship between ICTs and sustainable development, and the possibility of controlling their advance.

In his interview, Cerf suggests that “we may be able to compute our way to sustainability” by using computer power, sensor networks and large-scale data analytics to build sustainable industries, make more efficient use of energy, build more eco-friendly structures and make more efficient use of transportation systems. In addition, he suggests ICTs will help us adapt to climate change by improving our ability to predict its consequences for weather patterns, sea levels and food production among other things, as well as give individuals the capacity to better understand and manage the environmental consequences of the choices they make in their daily lives.

While he sees significant potential for ICTs to contribute to sustainable development in these and other ways, Cerf warns that the Internet—the infrastructure that underpins many ICT-enabled innovations—may not be sustainable in its present form.

Cerf sees three main threats that could undermine the Internet:

- The first threat comes from governments that want more control over the Internet and how it is used within their jurisdictions and internationally.
- The second threat comes from within the Internet community itself, which so far has largely failed to adopt “IPv6,” a new version of the Internet Protocol needed to support the continuing growth of the Internet, as well as to enable the development of innovations such as smart systems and the “Internet of Things.”
- The third threat arises from information and network security issues that must be resolved to ensure that the Internet, which was not originally designed to be secure, can function as a critical infrastructure for sustainable development.

In Cerf’s judgment, these challenges are not insurmountable but “it will take a great deal of will to maintain the system going forward.”

David Souter’s discussion paper that introduces the issues to be debated in this forum sets out three general questions:

- What impacts are new media and the Internet having on the achievability of the core elements of sustainability—economic and social development, environmental protection, cultural diversity and governance—and on the balance between them?
- To what extent do these impacts enhance sustainability and to what extent do they, on the contrary, raise new sustainability challenges?
- Do the economic, social and cultural implications of these impacts imply that we need to revise, rethink or readjust our understanding of what sustainability means from the ways in which it was defined in 1987/1992, before today’s ICTs became available?

The contrasting views of Jim MacNeill and Vint Cerf on these questions provide a good starting point for discussing the relationship between ICTs, the Internet and sustainability in advance of the Rio+20 Summit. In addition, to help focus discussion and stimulate debate, it may be useful for participants to consider these three general questions in terms of two other, more specific, frames of reference.

The first of these frameworks is based on distinctions between the direct, indirect and systemic effects of ICTs on the various dimensions of sustainable development. This framework, which has provided the foundation for most of the analytic work done on the relationship between ICTs and sustainability in the past decade, is described in the discussion paper. It suggests that participants in the online forum may want to address the following kinds of more specific questions:

- In terms of **direct effects**, what policies, programs and practices are needed to ensure that the ICT sector itself is sustainable, from technical, economic, social and environmental perspectives? What role should ICT and sustainable development policy-makers and stakeholders play in “greening” the ICT sector? What are the responsibilities of the ICT industry, its customers and consumers in moving toward this objective?
- In terms of **indirect effects**, what policies, programs and practices are needed to enable and promote the development, deployment and use of “smart systems” in the energy, transportation, building, manufacturing, agricultural and resource sectors? What are the responsibilities and roles of policy-makers, the various industry sectors involved in these activities, their major customers, ordinary consumers and other stakeholders? What are the implications of smart systems for developing countries that lag in their development? Are they a new form of digital divide that will maintain or widen development gaps?
- In terms of **systemic effects**, what has been the impact of “virtualization” on the components of sustainability? What policies, programs and practices are needed to maximize the benefits and minimize the harms resulting from the virtualization or dematerialization of products, services, processes and structures throughout the economy and society? In particular, what kinds of policies and practices are needed to control “rebound effects”—for example, the propensity to consume more when efficiency improvements cause the prices of products and services to fall or when people enjoy longer leisure hours? What is needed to transform individual and societal attitudes and values in support of sustainability? What different challenges are faced in developed and developing countries?

The second frame of reference is provided by the agenda for the Rio+20 Summit itself. As mentioned previously, only two themes are on the agenda—the green economy and the institutional framework for sustainable development. Participants in the online forum who wish to address the role of ICTs in relation to either of these themes will find copious amounts of background documentation available on the summit website that could assist in making linkages and identifying issues. In general, though, in order to connect with the Rio+20 process, it might make sense to discuss the following kinds of questions:

- With respect to the **green economy**, what role can ICTs play, in terms of their direct, indirect and systemic effects, in relation to the main topics to be discussed under the green economy theme—jobs, energy, cities, food, water, oceans, disasters? What policies and practices are needed to enable these roles? What are the respective roles and responsibilities of ICT policy-makers, the ICT sector, sustainable development policy-makers, green economy sectors and other stakeholders?

- With respect to the **institutional framework**, what role can ICTs play in strengthening the institutional framework for sustainable development at the global, national and regional levels, including its economic, social and environmental pillars (e.g., through improved access to and sharing of information, new forms of stakeholder engagement, improved analysis of policy options and evaluation of policy outcomes)? What policies and practices are needed to enable these improvements? What are the roles and responsibilities of different actors and stakeholders?

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