



*"ICTs and an Environmentally Sustainable Internet: Another Challenge of Connecting the Next Billion Internet Users"*

*Internet Governance Forum Workshop*

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Organizers:

The Global Information Infrastructure Commission (GIIC);  
The World Information Technology and Services Alliance (WITSA);  
Keidanren



**Global Information Infrastructure Commission**



**Keidanren**



The challenge of connecting the next one billion users to the Internet should also include a discussion about how this can be done in an environmentally sustainable way. Overall, impact of ICTs and the Internet on the environment need to be fully explored. ICT has had the greatest benefit/effect on business and economic structures, such as efficiencies in business processes and the shift away from manufacturing toward the delivery of services. The Internet services and applications provide new ways to communicate and transfer information, including voice, data and video services. These services can facilitate telecommuting, teleconferencing, e-commerce, telemedicine and other applications that will save consumers and businesses travel expense, traffic congestion and time, as well as reducing greenhouse gas emissions. A main environmental impact has been the increasing power needs of ICT products as the production of electricity to support the spread of ICT and greater Internet can add to Green House Gases (GHGs).

The discussion focused on how to ICT and Internet use can address environmental problems. The workshop also highlighted data, policy, and directed research in areas where ICTs can help with climate change solutions (in a way similar to ICTs' effects on communications and business) while providing an environmentally sustainable Internet for the next one billion users or more around the world.

### **Speakers:**

Introduction WITSA - Anders Halvorsen, Director of Public Policy

Moderator ITAA - Mr. Jeff Lande, Senior Vice President, Information Technology Association of America (ITAA)

Panellist OECD - Graham Vickery, Head, Information Economy Group

Panellist Cisco - Robert Pepper, Vice President, Global Technology Policy

Panellist IISD - Heather Creech, Director of Global Connectivity, the International Institute for Sustainable Development (IISD)

Panellist Oracle - Joseph Alhadef, Vice President for Global Public Policy and Chief Privacy Officer

**Summary:** The workshop featured a lively discussion on the challenges of connecting the next one billion users to the Internet and how this can be done in an environmentally sustainable way. Audience participation was diverse, ranging from questions focused on business-government cooperation, e-waste and developing countries, and SME's awareness of energy consumption and efficiency.



Mr. Jeff Lande, Senior Vice President, Information Technology Association of America (ITAA) moderated this session.

In framing the discussion, it was pointed out that WITSA's work and recommendations focuses on:

1) Why technology matters: Research suggests that the rapid implementation and uptake of new energy-efficient technologies can produce much greater energy savings than policy measures. It is an obvious fact that the earlier we implement these new technologies, the better. This is because the longer we take to reduce emissions; the greater the accumulation of greenhouse gases in the atmosphere, and it is the concentration of those gases that influences climate change. The early implementation of

low carbon technologies will play a critical role here, so we must do everything we can to identify those technologies as quickly as possible, to accelerate their development and support their adoption.

2) What the ICT sector needs to do: We need to develop a more systematic approach to monitoring and measuring the energy demand of our own products and services. We need to improve environmental performance within our own supply chain by sharing best practice. We need to stimulate and encourage behavioural change. Most importantly, we must find ways to identify those technologies that have the greatest potential to tackle climate change, and accelerate their development and adoption.

The GIIC noted some of its findings that are linked to the workshop discussion:

- ICTs' contribution to monitoring, measuring and addressing climate change;
- ICTs' role as an "enabler" for behavioral and economic changes in other industries which can reduce carbon demand; and
- the ICT industry's efforts to reduce its own electrical power demand through innovation and cooperation.

It was also noted that both the future network society and climate change will require increasing use of ICT and that poses such challenges as:

- 1) The ICT sector will need to better articulate its internal efforts to emphasize energy efficiencies for the benefit of the environment;
- 2) The ICT sector will be called upon to help other sectors as they seek to find solutions for reducing their contributions to climate change; and
- 3) The ICT sector, as represented in developed nations, will need to find ways to share and collaborate with the economies of the developing world to find solutions that meet the needs of those rapidly growing economies in a manner that is respectful of resources and technology's contribution to the climate change phenomenon.



Heather Creech (IISD) demonstrated that our global economic and social lifestyle already is well beyond the point of sustainability and that by 2050, it would take two whole planets to sustain our way of life. In other words, we're in the midst of an "ecological credit crunch" in the sense that we're consuming the natural resources of our world and the "ecological services" provided by the environment at a more rapid rate than they can be replenished by natural processes. There are a number of reasons we're in this situation. However, the main reason we are in ecological debt is because of our carbon footprint, and the environmental impacts of the climate changes resulting from greenhouse gas emissions. According to Ms. Creech, the Internet is the fastest growing source of CO<sub>2</sub> to the atmosphere as it doubled from 2002 to 2006.

Ms. Creech identified three main challenges to the ICT sector: The first challenge concerns the *direct ICT effects* (reducing greenhouse gas emissions, consumption of energy and materials, and generation of waste). This involves actions in the areas of R&D, standardization, good practices, and user awareness. This work is now well underway, in the ITU and other standardization bodies. The second sustainability challenge concerns the

*indirect ICT effects*, developing products and services that enable other sectors to work towards sustainability. ICT can boost innovation, enabling dematerialization, and managing virtualization. It is also important to control “rebound effects” – i.e. the human tendency to consume more as efficiency increases and prices fall. The third challenge concerns *systemic ICT effects*, enabling the long-term changes in economic and social organization that will be needed to solve the “ecological credit crunch” and get the world out of “ecological debt”.

In setting recommendations, Ms. Creech urged the ICT sector to: review critical issues through a sustainable development lens; embrace a full lifecycle approach to ICTs, support open network architectures and global connectivity, support open, uncensored, accessible, multilingual content, and provide leadership on third order effects and systemic transformation, including networked models, dematerialization etc., and recognize the importance of good governance processes for the management of the Internet.



Mr. Graham Vickery (OECD) looked at various fields of application of wireless sensor networks, as these could have a significant impact on the environment (e.g. smart buildings, logistics and transportation, environmental monitoring, security and surveillance, health care, animal tracking and precision agriculture, and smart grids & energy control systems). According to Mr. Graham, there appears to be limited interaction between these areas and ICT, and he sought ICT experts to help shed light on the potential implications of these applications on the environment.

The OECD has studied 75 different *green ICT initiatives* from 40 different industry associations and 35 governments, measuring the direct impacts of ICTs. It also studied initiatives *using ICT as an enabler*, and the positive effects IT may have on the environment. The most common focus of these studies was on global warming and energy use. However, many other potentially important areas had not been closely examined. Mr. Graham urged a more thorough study of all areas that have a potentially significant impact on the environment, and also that a broader perspective be sought: e.g. what impact ICT will have on the economy.



Mr. Robert Pepper elaborated on the various projects CISCO was involved with and which had a positive impact on the environment. A full 40 percent reduction in power usage of networks can be obtained through smart save modes; offering huge incentives for businesses to adopt these simple, straight-forward technologies. CISCO is currently running several pilot projects using connectivity to improve efficiencies, including in transportation (Amsterdam), smart offices, travel assistants and road pricing systems (Seoul), and smart bus transportation (San Francisco). Mr. Pepper also advocated the development of a smart electrical grid, using ICT for efficient delivery and monitoring of electricity. Other areas include improved space utilization management; using space more efficiently saves energy, space and materials.

In addition to facilitating the use of telecommuting through connecting the workplace, CISCO also is an elaborate user of telepresence, “a set of technologies which allow a person to feel as if they were present, to give the appearance that they were present, or to have an effect, at a location other than their true location”. Interactive telepresence centers have been installed in over 200 locations throughout the world. Mr. Pepper estimated that one flight from San Francisco to Tokyo left a carbon footprint equal to 98 six-hour telepresence sessions. More than 37,000 physical meetings have been prevented since the launch of the telepresence centers in 2006 (with \$150 million saved in direct travel costs), equivalent to 74,000 metric tons of carbon.



Joseph Alhadeff emphasized that the impact of ICT on the environment needs to be looked at holistically, including its broader transformation of the economy and impact on the ecosystem as a whole. ICT can play an important role in reducing the carbon footprint in many industry sectors, such as making coal burning plants burn cleaner, etc. Of particular importance, regulators needed to tread carefully when considering how to deal with green ICT objectives. Noble, while misguided regulations (e.g. flat energy consumption taxes) could stifle innovation and have the opposite effect vis-à-vis energy reduction goals. The entire ecosystem must be considered, including the benefits that ICT brings to that ecosystem.



If you have any questions about the event, please contact Anders Halvorsen ([ahalvorsen@witsa.org](mailto:ahalvorsen@witsa.org)) or Dan O’Neill, GIIC executive director ([doneill@giic.org](mailto:doneill@giic.org)).