



**RIO+20**  
United Nations Conference  
on Sustainable Development



# ICT for a greener economy

## Recommendations to the platform Rio+20

june 2012



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## Introduction

Information and Communication Technology (ICT) can make a difference in realising a greener economy. But just putting technology in place and expecting to see results, will not work. That's why IICD offers a series of key recommendations for using ICT to achieve greener economies and sustainable development in countries in the global south, based on our profound experiences in Africa and Latin America.

These recommendations can be used as a guideline during The United Nations Conference on Sustainable Development (Rio+20), but can also be used by practitioners outside of the conference.

An interactive summary is available at: <http://www.iicd.org/recommendations-rio-20>



## Background

The UNEP defines a green economy as ‘an economy that results in improved human well being and social equity, while significantly reducing environmental risks and ecological scarcities’.

IICD believes that greener economies are achievable only when they are rooted locally. Based on our experience, a strong connection to place is an essential precondition to sustainability. Programmes are only successful if seen as an aggregate of individual communities by meeting the needs of the community’s members through the responsible, local production and exchange of goods and services.

In order to effectively address the development challenges that inhibit the realisation of improved human well being and social equity, IICD supports and facilitates innovation and positive change within key social systems; in other words, Social Innovation.

IICD sees Social Innovation as “A novel solution to a social problem that is more effective, efficient, sustainable, or just than existing solutions and for which the value created accrues primarily to society as a whole rather than private individuals.”

IICD believes that the introduction and use of appropriate ICT solutions can and does contribute to socio-economic development and helps to create opportunities for people to shape their own individual future and that of society around them. IICD’s core competencies are to enable and support social innovation through the practical application of ICT, as well as implementing and supporting interventions to ensure that the use of ICT is embedded in concrete development interventions in priority social sectors, thereby contributing to the Millennium Development Goals.

IICD wishes to show that ICT can significantly contribute to accelerating equitable economic development while at the same time conserving the environment by introducing and enhancing the use of sustainable agricultural practices, enhancing resource efficiency and maintaining biodiversity.

At the same time, IICD recognises that ICT can introduce additional challenges related to sustainability. Nevertheless, if well-guided and smartly implemented, ICT can also be a core element of the solution.



## ICT for development explained

What is ICT for development (ICT4D)?

When we talk about the use of ICTs for development we are referring to the appropriate and sustainable use of information, communication and supporting technologies, both modern (PC, internet, mobile phones) and traditional (radio, television), to support the development objectives of people and organisations (see also annex 1).

For many years IICD has been working in the field of agricultural livelihoods/economic development, education, health, governance and the environment in Africa and Latin America, where it has been using ICTs to enable positive change. Much of this work contributes to the larger Green Economy agenda, for example accelerating economic development while conserving the environment, introducing and enhancing the use of sustainable agricultural practices, supporting resource efficiency and more sustainable food production, and maintaining biodiversity. At the same time our work in the education and health sectors contributes to the creation of an educated and healthy workforce.

# Recommendation 1: Use ICT to introduce and enhance the use of sustainable agricultural practices

How could this be achieved?

- ☒ By making small-scale farmers more productive, innovative and responsive to changing markets and social and environmental conditions, thereby improving their incomes (including development).
- ☒ By supporting ecological and organic production by small-scale producers' and traders' organisations.
- ☒ By supporting a better domestic exchange of production and market information (enhancing food security based on local production systems and limiting (international) transport).

## Sharing farming experiences by using multimedia in Bolivia

Multimedia presentation tools were used to support the exchange of successful experiences related to ecological agriculture and the sustainable use of natural resources among farmer communities. In addition ICTs contributed to ease the way for the dissemination of information concerning a wide range of experiences, valuable knowledge and the use of innovative technologies among small-scale farmers.

As a result, remote communities of small scale organic farmers were able to take advantage of this information. This was achieved through registration of experiences and production as well as dissemination of training materials, based mainly on multimedia presentation tools, combining texts, digital photography, audio, video, printed material and the production of testimonial radio programmes broadcast through rural and community radio stations.

## Obtaining international certification for organic products in Zambia

The Organic Producers and Processors Association of Zambia (OPPAZ) is helping to build an internal control system for Quality Assurance and Marketing for their crop inspectors. By using an open source database, the inspectors are able to collect the necessary data (plot data, crop type, crop produce) on a handheld computer. OPPAZ is helping around 700 farmers to obtain international certification. The system is being tested at three pilot sites (Chongwe, Mongu and Mpongwe). The data collected will also be published on the internet.

Once published, this information can be viewed by international partners who would like to buy the produce from those farmers who are members of OPPAZ. The system therefore has a double function: as an internal control system and as a marketing tool.

Mr Munshimbwe Chitalu, Chief Executive Officer, OPPAZ: *"Information comes in the centre of everything. Zambia is a very big country and by using information and communication technology, we are able to communicate and capture data from 400 km away, within seconds"*.

## Recommendation 2:

# Use ICT to accelerate economic development while conserving the environment and maintaining biodiversity

ICT can strengthen inclusive economic development by providing opportunities for rural communities to generate enhanced sources of income and create alternative economic options. For example, marketing and advertising of community produce or assets using ICT, significantly speed up the communication and transaction processes, and extend the potential market. At the same time, community actors can use Information and Communication Technologies to ensure that their environmental assets are protected and remain a sustainable source of income for the future.

### Geographical information to conserve mangroves in Ecuador

C-CONDEM promotes community production initiatives in the mangrove ecosystem for increased economic sustainability of the marginalised population of the mangrove swamp, in a setting of competition for scarce resources with commercial shrimp producers. ICT is used by poor fishermen's communities dealing with ecotourism in Muisne and for the repopulation of fish and shellfish in Limones, both in the coastal province of Esmeraldas.

The local knowledge and capacities of organisations and local communities strengthens and their management of production initiatives related to conserving the ecosystem are improved. In this manner, grassroots communities and organisations benefit from ICT in their efforts to recover, conserve, and defend the mangrove ecosystem, which is the natural heritage of the Coast and considered to be among the five most productive ecological units in the world.

Mari Cruz Valencia, Promoter of the FEPP-ICT: "In my opinion the importance of the ICT Mangrove Forest project was to transform all the collected data into information understood by the communities. Now people can value the ecosystem and feel this is part of their life".

### Strengthening tourism in Ecuador

Promotion, Dissemination and Marketing of Community Tourism Income from alternatives to agriculture, such as tourism or handicrafts production, is important to strengthen Ecuadorian communities. Therefore, it is vital to promote and strengthen community tourism initiatives in Ecuador to improve the quality of life of the local population and to guarantee the adequate management of quality and sustainability in community tourism projects by Ecuador's indigenous communities. To foster these complementary economic options, FEPTCE uses a system of connectivity, promotion and marketing to provide a more efficient service through an on-line reservation system.

The project led to increased ICT skills both at the level of the project and of beneficiaries. In addition, an informative and visually attractive web site has been produced holding descriptions of destinations for community tourism.

## Recommendation 3:

# Use ICT to transform governance processes, economic and social structures

People rarely change their opinions and behaviour on the basis of information alone. On the contrary, they often depend on conversations with their peers, reflections on the social norms, and examples from others. ICT tools are powerful instruments to support these multifaceted processes. Individuals and organisations working to influence existing structures harness ICT to influence opinions, collaborate with others, and recruit people to their cause.

### Creating a food security strategy in Ecuador with the help of ICT

The Acción Ecológica project in Ecuador aims at documenting and raising awareness on how natural resources are managed, serving as a watchdog on a variety of environmental issues, from biodiversity and conservation, to the consequences of various extractive technologies and free trade. ICT is used to strengthen the dissemination of information and increase awareness about the importance of the enormous environmental challenges in Ecuador, by creating training courses on how to mobilise and empower small-scale farmers, hosting online discussion forums, and facilitating an elearning platform. Furthermore, Information and Communication Technology helped to develop food security strategies for small and medium scale farmers to help them decide on the sustainable use of natural resources.

Javier Leon, Coordinator of the ICT Project: *“We consider that ICT tools are very important for our efforts to inform about the impacts of such an activity in the country. The tools mean we can reach people much more quickly and effectively”.*





## Recommendation 4: Connect smallholder farmers

Smallholder farmers are key actors who will contribute to feeding the planet and managing natural resources because of their authentic connection to the land that they farm. In order to make the transition to a greener economy, smallholder farmers (particularly women and youth) should be given the assistance they need to become more productive, innovative and responsive to changing markets and social and environmental conditions. Appropriate ICT support should be used to make relevant knowledge available to this thus far underserved group in order to improve their agricultural practices and innovation systems.

Specifically, Information and Communication Technology should be used to increase productivity and storage management, strengthen agricultural marketing (local and regional), broaden smallholders' access to financial services, include smallholders in commercial supply chains, improve food safety and traceability, support sustainable local ecological and organic production systems, increase the capacity of farmers and farmers' organisations, facilitate agricultural risk management to counter the consequences of climate change.

### A rural women's information network in Burkina Faso

A community radio station and an internet connection are installed at Pag-La-Yiri women's association in the information-deprived area of Zabré, in the southeast of Burkina Faso. It is the first radio in the region, informing the population about agriculture, health and culture in seven local languages. Email helps to exchange information quickly, the radio to distribute it to a wide audience. Health awareness since then has grown and farmers are better informed on market prices. The main objective is to broadcast information to boost the development of the region. The information broadcasted by the radio varies from announcements on local events and visits from health workers, to market price information, health issues and news from outside the region. As a result, farmers have been able to increase their produce and to sell at better prices, health sensitisation workers receive more credits and health awareness has grown.



## Recommendation 5: Honour local roots by promoting participatory approaches

ICT programmes should be developed and implemented on a demand-driven basis by involving local stakeholders at different stages to ensure maximum local ownership of the tools and services from the start. This has proven to be essential for long term sustainability of changed practices and new organisational forms. How could this recommendation be fulfilled? Through participatory multi-stakeholder dialogue to generate annotated ideas for prototypes of ICT applications relevant to local needs, capacity building, co-creation and implementation of ICT-based solutions including user feedback and iterative improvement and integration and embedding of these solutions at organizational and sector level.

### Market and production information for Ghanaian farmers

The internet, video and mobile phones are used to spread market and production information to 15,000 mainly women farmers in the Volta region in Ghana. This information helps them earn more money from their produce. Videos produced by the local Ghanaian Women and Development Project train farmers how best to grow and manage key crops. This results in better quality and higher yields. Using mobile phones, farmers request and receive current market price information via the Esoko.com platform, telling them where they can best sell and for how much. The project also provides training in marketing and ICT skills. As a result, farmers applied improved crop production methods and the capacity of farmers to use mobile phones for market info was established. Last but not least, the communication within Wadep and the staff capacity to produce agricultural info videos, were improved.



## Recommendation 6: Link action and experience to policy

In order to facilitate the transition from unsustainable practices and policies to government policies that enable the transition to a green economy, local ICT-for Greener Economy initiatives should be brought together in national networks to share experiences, build on each others knowledge, stimulate local research and influence related policies. These networks raise awareness about the potential and the benefits that sustainable practices can bring and are essential to influence policy and development processes. ICT supported networks have an even broader outreach in terms of participants, information, and knowledge exchange potential and influence.

### Ghana Information Network for Knowledge Sharing (GINKS)

In December 2002 GINKS (Ghana Information Network for Knowledge Sharing) was established by a group of 15 individuals to create this platform in Ghana. GINKS was officially launched a year later with the aim to create a platform for institutions and individuals to dialogue and share experiences in ICT4D and to support the potential of ICT tools for socio-economic development.

The main objectives are to acquire new ideas, designs and perspectives through interaction and making use of new ways of relating with each other such as the e-mail, internet, and other new electronic communication innovations as well as to promote linkage building among each other and other actors of civil society. This will ensure that like-minded groups and institutions around a shared development agenda are brought together and facilitated to engage in more systematic communication, sharing of information, experiences and ideas towards the common goal of poverty alleviation and lastly, influence public policy through setting up shared platforms for policy analysis and advocacy on issues affecting the information “have nots”.



## Recommendation 7: Secure optimal technical usage

We recommend that ICT solutions are chosen in type and quantity to secure optimal technical usage during their technical life-time, and to fit the requirements of a particular application or programme. We recommend that technological solutions are tailored to support particular uses, where and when required, rather than making technology available en masse. Combining different Information and Communication Technologies, can provide solutions for reaching out to wider networks of poor users. Information from computer-based databases can be more widely diffused by using other Information and Communication Technologies such as mobile phones or community radio. Technology combinations illustrate that mobile telephony, radio, PCs and the Internet can act as complementary solutions, rather than competing solutions, for the supply of valuable information and communications.

### ECAMIC (Ghana)

The Eastern Corridor Agro-Market Information Centre (ECAMIC) project already uses a broad range of information and communication technologies (ICTs) to promote market access and equity for farming communities in the Eastern Corridor of the Northern Region of Ghana. The project utilises both 'high-end' and 'low-end' ICT resources: from Internet, websites and mobile phones to community notice boards (chalkboards) and public-address systems. Consequently, the project reaches a number of rural communities through a deployment method that itself resolves to use appropriate technologies. In other words: a technology that can work with the needs and capabilities of its target users.

Through this project, farm-families are given a certain level of control of the decision-making process, particularly regarding the sale of their produce, farmers are now able to demonstrate their knowledge and awareness of current market trends to traders at the major market centres and the people in the community – even the ones not directly targeted by the project – have all come to acknowledge the positive difference that having speedy access to reliable market price information is making to their lives.

Nathan, Maize farmer, Salaga: *“On my mobile, I can now see the current price of maize. This way, I am able to get a better price when I sell it.”*



## Recommendation 8: Limit energy usage

Another technical dimension of using ICT for Greener Economies is linked to the availability of energy to supply the ICT infrastructure. Preference should be given to energy-efficient technological devices and solutions, and energy-efficient computing should be promoted to avoid further increasing energy demand in countries where energy production is not aligned with demand.

For off-grid areas or areas with erratic power supply, the effective use of ICT is often dependant on a reliable decentralised energy source to ensure energy independence. Such energy solutions required to power ICT use should be based on renewable energy sources, e.g. solar power. R&D investments need to ensure that appropriate solar energy systems become affordable and widely available to fill the production gap, especially in remote areas where centralised energy systems (grids) are not expected to expand in the short term.

### Mobile solar chargers for farmers in Ghana

Farmers of over 40 farmers cooperatives in Ghana's northern region are using solar energy to charge their mobile phones. This saves them costs and valuable time. Farmers use their mobile phones to look up crop price information so they see how much their crops are worth and when they can best sell it. However, they often do not have any way of charging their phones when they are in the field. They often have to walk for 1.5 hours to the nearest town and have to pay a shop to have their phones charged. The solar chargers offer a quick solution and also their use is cost-free. In 2009, there had already been a successful small scale test with the solar chargers.



## Recommendation 9: Improve affordability of ICTs in rural areas

Another major challenge is the affordability of Information and Communication Technologies. We should not underestimate that affordability is key to allowing ICT to be a motor for change. In order for poor people to benefit from greater access to ICT tools and services, these services have to be affordable and in many situations this is not the case. The contribution of Information and Communication Technologies to poverty reduction lies in their power to enable poor men and women to build “livelihood assets” or more secure employment opportunities. The affordability of, for example, cheap mobile phones has improved the uptake dramatically, including in regions where many of the world’s poor live and work. This has translated into new micro-enterprises in different sectors, new services and new ways to market produce and other goods. But in many cases the tools and services are still too expensive for the world’s poor. Using ICT, can become more affordable for organisations in remote areas by generating workable and sustainable shared connectivity models, for example. This allows for infrastructure investments, internet service costs, and maintenance costs to be shared among multiple actors, thereby significantly reducing the cost per organisation.

### Shared satellite connectivity as an option for the community in Bolivia

The shared connectivity model has shown to provide a community access model that can be sustainable from an organisational, technical, financial and ownership perspective. Non-governmental ACLO (Accion Loyala) started experimenting with VSAT connections ranging from download 128 and upload 32 kbps and in most cases download 512 and upload 128 kbps with costs ranging from 350 to 450 USD per month. Other interested users in the community were connected by Wireless Wifi links so costs could be shared with local governments, other NGOs and grass-root organisations in the community.



## Recommendation 10: Tackle e-Waste

Developing countries are expected to triple their e-Waste production over the next 5 years: this calls for a real solution to tackle the growing e-waste problem. Integrated e-Waste management solutions need to be created to enable controlled and appropriate dismantling processes without the toxic impact on health and environment associated with improper handling. The recycling of e-Waste needs to be organised in a manner that is respectful of the role that the informal sector already plays, thereby contributing to income-generating opportunities. However, innovative and appropriate integrated e-Waste management systems need to be supported so that e-Waste can be processed in a more humane and environmentally friendly way. Dismantling and recycling computers should be promoted and supported in the countries where these devices are used. This creates a win-win situation by developing local businesses and solving the e-Waste problems. E-waste that cannot be treated locally should be exported to specialised plants. Some positive experiences already exist and should be scaled up.

### Action to prevent e-waste in Uganda

Processing electronic waste, or 'e-waste' in developing countries can be very dangerous. Electronic equipment contains lead and other contaminants that can cause health and environmental problems. That's why IICD and Close The Gap ensure the decommissioned computers are dismantled as much as possible. Parts that cannot be dismantled will be shipped to recycling plants. This process is guided by Computers For Schools Kenya which specialises in deploying refurbished computers.



# Annex 1

## IICD's understanding of ICT for Development (ICT4D)

What is ICT for development (ICT4D)? When we talk about the use of ICTs for development we are referring to the appropriate and sustainable use of information, communication and supporting technologies, both modern (PC, internet, mobile phone) and traditional (radio, television), to support the development objectives of people and organisations. All three components of the term 'information and communication technology' add value to the development process.

### Information

Access to information enables people to make informed decisions which are beneficial for both their private and professional lives. Information that is readily available needs to be based on local needs and should be accessible in ways that people can understand. Where not available, information needs to be developed; preferably by the target group itself. But to change behaviour and develop people needs more than information. Information is not enough.

### Communication

Communication enables people to share their views and ideas, enter into discussions, join forces, and co-create solutions, thereby enabling them to address their own individual problems. New forms of communication (such as multimedia, internet and mobile telephony) build on, rather than replace, traditional means of communication (such as meetings, newspapers, radio, television and fixed telephony). Communication allows people to form their own opinion, take informed decisions and change their lives for the better.

### Technology

Technology helps us to gather, access and disseminate information more quickly. It also enables people to communicate faster, more efficiently and involve more people in the process. Technologies that support information gathering, storage, dissemination and communication include a wide range of offline and online applications including databases, Web applications and social-networking tools.

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