



## Policy brief: Using ICTs for resilience

***“The ultimate objective of integrating ICTs in resilience projects must be to improve the economic standing of smallholder farmers and enable them to lift themselves out of poverty.” (Theo Cosmora – SocialEco Ltd – UK)***

Information and Communication Technologies (ICTs) have the capacity to address different problems or sectors – a massive advantage in the area of resilience, which requires an integrated approach. For ICTs to realize their full potential in promoting resilience, cross-sector partnerships and collaboration should be strengthened, and national governments should take steps to coordinate ICTs interventions among different ministries.

During the World Summit on the Information Society (WSIS) Forum 2016, the Action Lines facilitators came to similar conclusions when exploring ways to achieve the 2030 Sustainable Development Goals. Collaboration is key, with exchange and mutual support among WSIS Action Lines, such as e-agriculture, e-health, e-environment and e-commerce.<sup>1</sup>

Many examples prove how valuable ICTs are for resilience, but an overall strategic framework is lacking, and this will be critical for the design and evaluation of interventions.

To move forward, there is a need for broad cross-sector partnerships and coalitions. These can bundle several ICTs functionalities onto the same platform and use human-centered design of projects and ICTs tools, as well as better monitoring, evaluation and learning.

At policy level, greater awareness, education and training in the features and benefits of ICT4Ag are all crucial prerequisites. There is also a need to embrace business development, while promoting social economies and social business.



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<sup>1</sup> ITU, 2016, WSIS Forum 2016 Outcome Document, Geneva, Switzerland

## Introduction

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In collaboration with the Food and Agriculture Organization of the United Nations (FAO), the e-Agriculture Community of Practice organized its 26<sup>th</sup> e-Agriculture forum **ICTs for resilience** from 28 November to 13 December 2016.

The mandate for the e-Agriculture Action Line was extended in the WSIS+10 Vision. Building on work to date, it encouraged the use of ICTs to reinforce the resilience of communities faced with disasters and environmental change.<sup>2</sup>

FAO promotes the use of ICTs to reinforce the resilience of states, communities and individuals. Many successful FAO experiences of using ICTs for resilience have already been documented. These include eLocust (a detection and early warning tool for desert locusts), SWALIM (FAO Somalia project on land and water information management), OpenForis (a free open source solution for environmental monitoring), EMA-i (a mobile application for timely animal disease reporting) and EMPRES-i (a global animal disease information system). The online forum aimed to capitalize on these experiences, sharing knowledge and working towards overall recommendations.

### About FAO

The Food and Agriculture Organization of the United Nations (FAO) is the UN agency facilitating the WSIS e-Agriculture Action Line. [www.fao.org](http://www.fao.org)

### About e-Agriculture

The e-Agriculture community of practice looks at how ICTs can improve agriculture and contribute to rural development. [www.e-agriculture.org](http://www.e-agriculture.org)

## What is resilience and how can ICTs help build it ?

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FAO defines resilience as **“the ability of people and communities to prevent the impacts from disasters and crises as well as to anticipate, absorb, and recover from them in a timely, efficient and sustainable manner.”** This includes protecting, restoring and improving livelihood systems in the face of threats that impact agriculture, nutrition, food security and food safety.

In more general terms, resilience can be seen as the ability to recover from short-term shocks, as well as adaptation and transformation to longer-term trends. Resilience also

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<sup>2</sup> Point “e” of WSIS+10 Vision for WSIS Beyond 2015: “C7 ICT applications: benefits in all aspects of life: e-Agriculture”, aims to “promote the use of ICTs to reinforce resilience capacity of states, communities and individuals to mitigate and adapts to natural and manmade disasters, food chain challenges, socio-economic and other crises, conflicts and trans-boundary threats, diseases, and environmental damages”



## Constraints and success factors in the use of ICTs for resilience

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Over the years, many constraints and success factors regarding content, capacity development, gender and diversity, access and participation, partnerships, technologies, and economic, social and environmental sustainability have been identified by ICTs for development practitioners.<sup>3</sup> Regarding the use of ICTs for resilience these same general constraints and success factors equally apply. During the forum, participants identified the following constraints and success factors:

### Constraints

- **Soft constraints – human/institutional:** lack of awareness, education and training throughout the value chain, fear of theft of material, lack of trust, enabling environment (security issues, invasion of privacy, etc.).
- **Hard constraints – technology/finance:** poor internet connectivity, lack of mobile phones, ecosystems of mobile money cash-in/cash-out agents and mobile money accepting merchants, lack of mobile devices for agri-extension agents, difficult or hazardous environments to work in, war and insecurity, accessibility, affordability.
- **Complexity of agricultural processes:** long production cycles require many inputs and much information, which continue to be out of reach for most stakeholders.

The importance of soft constraints has recently emerged as vital. Soft constraints are less likely to be addressed by the private sector and therefore there is a great potential for the development and humanitarian sector to intervene with initiatives that promote awareness, education and training. Since the onset of ICTs for agriculture about a decade ago hard constraints such as poor infrastructure, accessibility and affordability have steadily decreased as the global, regional and local private sector has increasingly pursued opportunity at the base of the economic pyramid in rural areas.

### General success factors:<sup>4</sup>

- **Close collaboration with rural extension services:** This is crucial when introducing ICTs, to ensure that actions benefit farmers.
- **Direct exchanges between developers and beneficiaries:** ICTs developers need to understand the needs of the beneficiaries for whom the ICTs solution is developed.
- **Capacity development of all people involved:** The introduction of ICTs at the individual, community or institutional level requires awareness-raising, education and ongoing training of all people and organizations involved.

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<sup>3</sup> FAO, 2015, e-agriculture 10 year Review Report: Implementation of the World Summit on the Information Society (WSIS) Action Line C7 ICT Applications: e-agriculture, by Kristin Kolshus, Antonella Pastore, Sophie Treinen and Alice Van der Elstraeten, Rome, Italy

<sup>4</sup>The general success factors identified during the forum are closely related to the principles for digital development. See: [www.digitalprinciples.org](http://www.digitalprinciples.org)

- **Human centric design:** The technology in itself neither creates nor solves any human problems. It is how we use the technology that matters.
- **Innovation:** Innovations and their pilots must have a long-term vision, with back-up to build a business model.
- **Effective knowledge management:** This is crucial to ensure that information held in databases, universities, by researchers or others is available to all who need it.
- **Increased coordination mechanisms:** Initiatives must be implemented within the framework of cross-sector partnerships with private sector, civil society, government and other actors.

#### Resilience specific success factors:

- **Benchmarking the resilience of beneficiaries and the contribution of ICTs:** This can test assumptions and highlight issues that may have been overlooked. The assessment results can be used to produce a prioritization plan for use of ICTs.
- **Resilient ICTs and infrastructure:** It is crucial that proper infrastructure is put in place to ensure that ICTs can themselves resist in the event of disaster.

## Better integration of ICTs in resilience projects or programmes

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#### Resilience needs broad cross-sector partnerships and other coalitions

Agriculture is the most predominant rural sector for livelihoods, income and employment. As such, ICT4Ag can be leveraged to impact other aspects of resilience, such as health, education, utilities etc., driving a more global development processes.

*“As a community we are running out of excuses – there is so much knowledge and expertise to address any challenge in ICT implementation. Do we have the courage to work in broad coalitions to ensure even wider success?”*  
*(Sinead Quealy – Virtualnet – Ireland)*

#### Bundling ICTs functionalities

Bundling ICTs functionalities – such as digital finance, marketing, surveillance, supply management and agricultural extension – onto the same platform is essential to achieve economies of scale and enhance the benefits they bring to farmers. The next step will be to add on specific functionalities related to health, education etc. to agricultural platforms.

*“The ICT4Ag community is nicely positioned (given the overarching importance of agriculture in rural areas) to play a leadership role in pulling in other sectors as we go forward. To best integrate ICTs in resilience programmes we should consider casting a wider net to include other non-agriculture sectors that are also important to the lives of farmers.” (Lee H. Babcock – LHB Associates – USA)*

### **Human-centered design of projects and ICT tools**

Every actor along the value chain, from farmers through to consumers and government, has a set of requirements which ICTs solutions and tools must address. So a fully collaborative and relationship-based approach is required.

### **Monitoring, evaluation and learning**

Often, resilience programmes overlook proper monitoring, evaluation and learning mechanisms in the rush for implementation. A framework for resilience will be crucial to ensure correct monitoring, evaluation and learning of the activities put in place. The choice of what to scale up and scale out could, for example, be made by evaluation of ICTs captured in an open access repository.

### **Reduce poverty with inclusive economies**

The ultimate goal of ICTs for resilience projects and programmes is to improve the economic standing of smallholder farmers. It is therefore important to link initiatives with the creation of more inclusive economies. This may be done by integrating smallholder farmers into the value chain, or by integrating consumers in the development of smallholder farms. Reducing inequalities will also be an opportunity for businesses, as it will create a new demographic of customers.

Santosh Ostwal (Ossian Agro Automation Pvt Ltd – India) shared his insights based on the development and introduction of remote controlled irrigation. He set out a few important steps that any ICT based resilience project should take into account:

1. A particular ICT application cannot be standardized for all segments of users.
2. Set up consultations with a particular segment before introducing an ICT application, so it corresponds to their needs.
3. Pilot the introduction of the ICT.
4. Build up a scalable, sustainable and profitable business model.
5. Ensure active involvement of three partners: private sector as the technology enabler, government and civil society organizations as catalysts, and the rural population for the actual use, along with operations and maintenance.
6. Promote social entrepreneurship rather than conventional business models.

## Policy recommendations for using ICTs for resilience

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### **ICTs for agriculture awareness and education**

ICT4Dev and ICT4Ag have yet to be fully embraced by decision-makers. There is little awareness of this specific area of agriculture, and very little education or training on the topic. There is a need for governments, NGOs, international organizations and civil society to invest in the creation and delivery of ICT4Dev and ICT4Ag training curricula and human capacity development. The promotion of awareness and education should be institutionalized among all actors of the value chain.

### **Embrace business and business development**

There is a need for decision-makers to embrace business, and the potential of cross-sector partnerships that include large private enterprises. It is however important that governments maintain control of the objectives and clearly set out transparent codes of practice.

There is no one-size fits all solution. Each ICT deployment, and each farmer, community, region or country is different, with specific needs. This makes it safer to deal with large enterprise as the possibility of a single monopoly is reduced, due to the diversity of users.

### **Social economies and social business**

ICTs can be a double-edged sword. They can usher in greater efficiency and economic success, but this can entail loss of jobs and social upheaval. Long-term visions and policies need to encourage social economies and social business and ensure that ICT efficiencies do not inflate existing inequalities.

### **Importance of knowledge management**

Good knowledge management should be integrated at institutional and individual level, as well as in the framework of use of ICTs for resilience. This will enable appropriate learning of lessons, sharing of successes and failures and ensure that the most effective initiatives can move beyond the stage of small isolated projects, related only to agriculture.

## Resources

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The full overview of the contributions to the e-Agriculture forum is available here: [www.e-agriculture.org/forums/forum-archive](http://www.e-agriculture.org/forums/forum-archive)

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- Gwenaelle Dauphin, Animal Health Officer, FAO, Italy
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- Richard Heeks, Director, Centre for Development Informatics, UK
- Walter de Oliveira, Senior Programme Coordinator, FAO, Mozambique
- Santosh Ostwal, CEO and Founder, Ossian Agro Automation Pvt Ltd, India
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