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### **IT in Rural Areas**

## **Bridging the Rural Digital Divide: A FAO/ WAICENT Initiative in Support of Developing Countries and Countries in Transition**

*by Stephen Rudgard and Anton Mangstl  
Library and Documentation Systems Division  
Food and Agriculture Organization of the UN (FAO)  
Rome, Italy*

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## SUMMARY

1. Many agree that knowledge is central to development, and that there are considerable resources of knowledge and information that could be made available to assist poor people deal more effectively with the root causes of their poverty. The new information and communications technologies (ICT), and increased priority and resources for information exchange, have the potential to improve the access to, and benefits from, this accumulated knowledge for the rural poor, as well as creating a more informed policy environment. However, a “digital divide” separates those most in need from the world’s information and knowledge resources. The “Programme for Bridging the Rural Digital Divide to reduce Food Insecurity and Poverty” makes the case for a new strategic Programme through which FAO would facilitate a global partnership to address the rural digital divide. The Programme would strengthen human and institutional capacities to harness information and knowledge more effectively for agricultural and rural development. The proposal responds to a real gap, not yet addressed in a cohesive way by the international development community. The rural digital divide is not only a problem of infrastructure and connectivity, but a multi-faceted problem of ineffective knowledge exchange and management of content, lack of human resources and institutional capacity, compounded by an acute scarcity of financial resources.

## I. BACKGROUND INFORMATION

2. Knowledge is central to development, and there are considerable resources of knowledge and information that could be more effectively exchanged in support of poor people struggling to deal with the root causes of their poverty. The new information and communications technologies (ICT) are already improving access to, and benefits from this accumulated knowledge. However, an information gap or “digital divide” separates those most in need, particularly the majority of the poor and hungry who live in rural areas, and the institutions who serve them, from the world’s information and knowledge resources. These people are being left out of global prosperity, and the gap is widening.

3. FAO has taken the initiative to prepare a new strategic Programme for “**Bridging the Rural Digital Divide**” to reduce food insecurity and poverty, through which the Organization would coordinate an international partnership to address this important development issue. The Programme would strengthen human and institutional capacities to harness information and knowledge more effectively for agricultural and rural development, filling a gap not yet addressed in a cohesive way by the international development community. The rural digital divide is not only concerned with improving infrastructure and connectivity, but is a multi-faceted problem of ineffective knowledge exchange and management of content, lack of human resources and institutional capacity, compounded, obviously by an acute scarcity of financial resources.

4. There are many definitions of the term “digital divide”. By FAO’s definition<sup>1</sup>, the term refers to “inequitable access to ICT both between wealthy and poor countries, and within all countries, between relatively privileged and underprivileged social groups.” A broader concept of the digital divide is espoused in the proposed scope for this Programme, which seeks to address several factors in the relationship between lack of appropriate information and economic deprivation and does not focus exclusively on the technologies themselves.

5. Unlike other communication media, the Internet is the first medium that allows every user to be a sender, receiver, narrowcaster and broadcaster. The Internet offers opportunities for two-way and horizontal communication and for opening up new, non-traditional communication

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<sup>1</sup> Sustainable Development Department

channels for rural communities and development organizations and can support bottom-up articulation of development needs and perceptions.<sup>2</sup>

6. The growth of these new technologies has exacerbated the already extreme differences between rich and poor countries (Table 1), and between rich and poor men and women in poorer countries. The digital divide is more alarming in the context of rural communities, which face further marginalization and widening information gaps as compared to communities in urban or periurban areas. From a technology standpoint, the weak link of the so-called “first mile” of connectivity for rural communities and households has been identified as a major barrier to adoption and assimilation of ICT. Also, unless due attention is given to gender when considering the opportunities and risks, these new technologies could very well exacerbate existing inequalities. These points underline the necessity for a specific approach as proposed here to address the **Rural Digital Divide**.

**Table 1: ICT Indicators in Selected Countries-2001**

	Internet Users	PCs	Fixed telephone lines	Mobile phones		Internet Users	PCs	Fixed telephone lines	Mobile phones
<b>For every 100 inhabitants</b>					<b>For every 100 inhabitants</b>				
<b>Latin America</b>					<b>Asia &amp; the Pacific</b>				
Brazil	4,6	6,3	21,7	16,7	China	2,6	1,9	13,8	11,2
Guatemala	2,0	1,7	6,5	9,7	Rep.of Korea	51,1	25,1	47,6	60,8
Colombia	2,7	4,2	17,1	7,4	Indonesia	1,9	1,1	3,7	2,5
Mexico	3,5	6,9	13,5	20,1	India	0,1	0,6	3,4	0,6
Venezuela	5,3	5,3	11,2	26,4	Bangladesh	0,0	0,2	0,4	0,4
Costa Rica	9,3	17,0	23,0	7,6	<b>Sub-Saharan Africa</b>				
Nicaragua	1,0	1,0	3,1	3,0	South Africa	7,0	6,9	11,4	21,0
Peru	11,5	4,8	7,8	5,9	Kenya	1,6	0,6	1,0	1,6
Bolivia	1,4	2,0	6,0	8,7	Nigeria	0,0	0,7	0,4	0,3
<b>Caribbean</b>					Senegal	0,1	1,9	2,5	4,0
Rep. Dom.	2,1	N/A	10,8	12,4	Ghana	0,2	0,3	1,2	0,9
Jamaica	3,8	5,0	19,7	26,9	<b>North Africa and the Middle East</b>				
<b>Eastern Europe</b>					Egypt	0,9	1,6	10,3	4,3
Armenia	1,3	0,9	14,0	0,7	Morocco	1,3	1,3	3,9	15,7
Ukraine	1,2	1,8	21,2	4,4	Jordan	4,1	3,3	12,7	14,4
Czech Rep	13,6	12,1	37,4	65,9	Algeria	0,0	0,7	6,0	0,3
<b>Sample OECD</b>									
UK	40,0	36,6	57,8	78,3	Spain	18,3	16,8	43,1	65,5
US	49,9	62,3	52,0	44,4	Italy	27,6	19,5	47,1	83,9
Australia	37,2	51,7	66,5	57,8	Germany	36,4	33,6	63,5	68,3
France	26,4	33,7	57,4	60,5	Finland	43,0	42,4	54,8	77,8
Canada	43,5	39,0	65,6	32,0	Japan	45,5	34,9	59,7	57,2

*Source: ITU indicators, 2001. [http://www.itu.int/ITU-D/TIC/statistics]*

<sup>2</sup> Knowledge and Information for Food Security: The Role of Telecenters. L.V. Crowder. 1998. Seminar on Multipurpose Community Telecenters, Budapest.

## II. RATIONALE AND APPROACH

7. The international community recognizes the **Rural Digital Divide** as a complex challenge. Between countries and between different groups of people within countries, there is a wide disparity between those who have genuine access to ICT and are using it effectively, and those who do not. Many countries, especially in Central/Eastern Europe and the Caucasus, face tough challenges to extend connectivity into rural areas. However, they are facing many barriers such as having to learn how to use the various media effectively and how to find or disseminate relevant content effectively.

8. The rationale for this Programme is that the rural digital divide is not only concerned with technology infrastructure and connectivity, but rather is a multi-faceted problem of ineffective knowledge exchange and management of information content, as well as the lack of human resources, institutional capacity, and gender sensitivity. Even though the goal of bridging the rural divide transcends the technologies, the means to that end are coupled to the ICT. Too many proposed solutions are driven not by empirical evidence from studies of how people use the technologies, but by ICT developers and providers who are usually at a great distance from the locations and contexts in which their tools are to be used. Bridging the rural digital divide requires an understanding of how persons in different cultures learn to use and apply ICT, access to which is central to breaking down the divide. Uncritical acceptance of technology places a significant burden of learning, use, and access onto the users. Many will remain marginalized and viewed as “problems” due to linguistic barriers, gender, disability and literacy, or because they live in oral cultures. The question is how to make technology serve the needs of those persons. A crucial agent of change developed through this Programme would be the mobilization and harnessing of previously inaccessible knowledge and information in digital form, derived from or adapted to the local context. Innovative participatory approaches to knowledge exchange would be implemented by the Programme in several countries, and would provide access to appropriate content. These approaches should build on past experiences while also being innovative, using a mix of media based on traditional and new technologies. The Programme is a reflection of FAO’s continued commitment to ensuring wider access to knowledge and information in support of food security and the eradication of poverty.

### The Stakeholders in Bridging the Rural Digital Divide

9. Three broadly defined groups of Programme stakeholders within Member States have been envisaged. These are as follows:

- **Rural communities and households** - need to exchange and exploit information and knowledge more effectively using ICT to improve livelihoods and reduce vulnerability, which requires a mixture of awareness-raising and capacity-building based on a strongly people-focused and participatory approach. The interests of rural households extend into many sectors, and agriculturally-related information and communication will take its place in the general schema.
- **Rural service providers in the public and private sectors providing agricultural, financial, and communications<sup>3</sup> services** - need to enhance their use of digital information resources and knowledge systems as well as the new ICT themselves, which requires training and skills acquisition, and new mechanisms for interaction such as e-commerce and electronic communities of practice etc. Organizations and services at sub-national and local levels have to focus on addressing the broad range of livelihood opportunities of poor people, by improving information exchange amongst the various players involved in rural development and by catering to the needs of all the people they serve.

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<sup>3</sup> Rural communication networks, community radio broadcasters, and community telecentres.

- **Policy-makers and their advisers** – need an enabling information and communication policy environment for accurate assessments and development of pro-poor government policy, such as Poverty Reduction and Food Security Strategies.

10. The Programme would also depend on the intellectual and physical resources of the regional and international members of the development community, as well as those elements of the private sector involved with addressing food security and the information society. Many public and private organizations and individuals would be involved in the Programme, from financing institutions through to providers of technologies, technical information content and services. Two key success indicators for the Programme would be the effective mobilization in digital form of global public goods related to rural development and food security, and the development of effective partnerships between public and private sectors to add value to that information in the local context.

### III. RECOGNIZING THE CHALLENGES

11. FAO has identified the following critical issues for improving the impact of information and communication, particularly for poor people in rural areas:

- Locally-adapted content and context – how to ensure that useful information is repackaged and mobilized in the right format, so that it meets the different information needs and preferences of a variety of groups, so that it can be stored, retrieved, and exchanged with ease, and taking into account issues of ownership and copyright.
- Building on existing systems – how to capitalize on, rather than replace and lose the value of existing indigenous and usually highly trusted information and communication systems.
- Realistic approaches to technologies to support information and communication – how to build sustainable systems that enhance existing systems, are expandable and extendable, and exploit multiple and diverse communication tools and the full range of existing media.
- Building capacity – how to strengthen the capacity of institutions and people involved in information provision to provide the right information in the right formats, as well as building the capacities of information users to access and appropriate a wider range of information and ICT.
- Access and empowerment – how to ensure that relevant information actually reaches and empowers poor people, especially women, and is not captured by wealthier or more powerful sections of the community.
- Strengthening partnerships – how to build the new horizontal and vertical inter-organizational, inter-departmental and inter-sectoral partnerships that are necessary to ensure that information is available to all stakeholders.
- Information costs, value and financial sustainability – how to value and finance the establishment of appropriate information infrastructure and the provision of appropriate information content, particularly in remote rural areas.

### IV. INTERVENTIONS TO ADDRESS THE “RURAL DIGITAL DIVIDE”

12. A wide variety of strategies and activities would be formulated and implemented, ranging from new public policies, infrastructure development, through to community-based, user-focused projects. The innovative elements of this Programme are the emphasis on the rural environment, and the focus on information itself and mechanisms for accessing and exchanging it, in addition to ICT and infrastructure. In implementing this Programme, a case-specific approach would be adopted to design and develop feasible, results-oriented interventions that are nationally or locally led, but which would be aimed at learning lessons for the wider benefit of others. However, the

application of some basic common standards are needed to ensure that experiences can be exchanged.

13. The following broad domains of intervention are proposed:

### **A. CONTENT MOBILIZATION**

Enabling all FAO Members to mobilize, access and use the vast resources of information and knowledge in agriculture, forestry, fisheries and related fields, that are available in countries and the international community including FAO:

- development of operational frameworks comprising guidelines, methodologies and tools, to assist countries and communities to mobilize agricultural and other rural information in digital form;
- enhancement of mechanisms for sharing digital information between countries and amongst sub-national groups of stakeholders;
- improvements to the structure, format, and style of FAO's own information resources, such as FAOSTAT and GIEWS<sup>4</sup>, for increased usefulness for Members, and development of efficient mechanisms to derive their feedback.

### **B. CAPACITY-BUILDING, HUMAN AND INSTITUTIONAL RESOURCES DEVELOPMENT**

Focusing on improving access to and the application of ICT in agricultural and rural development:

- development of training materials and programmes to support capacity-building and human resources development in agricultural information management and rural communication systems for knowledge and information exchange;
- development and validation of approaches to strengthening institutions to make effective use of ICT in combination with other media, especially in adaptation and appropriation of locally-relevant solutions;
- assistance to development of e-learning in support of knowledge exchange between institutions, organizations, and individuals active in agricultural and rural development;
- partnerships between agricultural training establishments in developing and developed countries for curriculum development in the area of information exchange and communication.

### **C. IMPROVING THE EFFECTIVENESS OF FAO'S OWN OPERATIONAL PROGRAMME IN THE FIELD**

Integrating information and communication processes within FAO's national and regional food insecurity and poverty reduction programmes, such as the Special Programme for Food Security, in Farmer Field Schools and in other interventions that directly involve poor rural people as primary beneficiaries:

- assistance in the appropriate use of ICT for information exchange and communication between and within agricultural service providers (governmental, NGO and private sector), networks of farmers groups, and policy makers;

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<sup>4</sup> Global Information and Early Warning System

- assistance with development of options for the provision of information services, including tailoring information for specific users (e.g. women and marginalized groups) and for a variety of agricultural sectors and markets;
- development and introduction of tools and methodologies to allow researchers and extension services to undertake simulations of production systems under a variety of conditions.

## V. PROPOSED PROGRAMME

### Programme Goal

14. To assist Low-Income Food Deficit Countries (LIFDCs) as well as other developing and transition countries to bridge the rural digital divide in support of improved food security and reduced poverty through the effective use of knowledge and information.

### Programme Outputs

15. The Programme would primarily focus on three key outputs - cornerstones of the strategic role of information and communication in reducing hunger and fighting poverty. These are:

- **information content** in digital format relevant to agricultural and rural development and food security developed, mobilized and exchanged by governments, rural service providers, and communities. Relative to this output, the fundamental framework of principles for mobilizing the global knowledge base in digital form would be developed to ensure accessibility and retrievability. These principles will be based on the WAICENT framework;
- the developing and strengthening of innovative **mechanisms and processes** for information exchange among rural policy makers, service providers, communities and households. Normative guidelines and tools for information and communication would be formulated, tested and disseminated to address the range of demands and capabilities of different rural stakeholders, based on active partnerships and collaborative lesson learning;
- the empowerment of **networks**. Information exchange and communication amongst formal and informal associations of stakeholders would be made more effective by the application of normative tools and processes.

### Programme Activities

16. The Programme would comprise a series of interrelated national, regional and international interventions. The Programme would be developed in phases, with the first phase due to last four years and provide a learning platform for a wider scale approach in the second phase. Activities would be initiated in a measured sequence over the first two years so that programme management resources are not overstretched. The approach and outputs would be carefully monitored and evaluated during the first phase.

### National Components

17. This element of the Programme would comprise a series of national and sub-national interventions. Countries would be selected based upon a set of objective criteria through a consultative process involving partners in the Programme. National components may also involve inputs from international partners to facilitate project implementation. Wherever possible, activities in this element of the Programme would be developed in close coordination with existing projects and initiatives of FAO and other organizations working in food security and agricultural development. Strong linkage to existing operational infrastructures would be a key factor in achieving the Programme outputs effectively, leading to enhancement of institutions and processes with complementary information and communication components. The national and local sustainability of the Programme's interventions would be crucial to the successful achievement of the goal, and careful consideration would be given to revenue generation at local



level to attract and retain the interest of entrepreneurs in a way that complements government resources.

18. Interventions under the national component would be formulated in relation to the priority areas identified in the Anti-Hunger Programme, drawing on FAO's wealth of experience in its field programme. Some illustrative examples are provided below.

- Strengthening capacity for knowledge generation and dissemination: e.g. the IPFSAH - Internet Portal on Food Safety and Animal Health - aims to help the implementation of the recommendations of the Pan-European Conference on Food Safety and Quality by communication systems to strengthen food safety and build consumer confidence;
- Improvements in agricultural production in poor rural communities: e.g. the development of information and communication for development for rural livelihoods; a joint FAO-DFID<sup>5</sup>-WB initiative for Armenia;
- Developing and conserving natural resources: e.g. sustainable forestry projects in central and eastern Europe - assisting the member countries in developing and implementing effective forest policies and institutional arrangements at the national and international level;
- Expanding rural infrastructure and market access: e.g. FDIN - the Farm Data Information Network addresses the need for increased planning capacity and information exchange needed to support adjustment to market-oriented agriculture and enhanced income opportunities and food security for family farms.

#### Regional Component

19. This component of the Programme would aim at strengthening information exchange and communication using ICT amongst existing regional economic groupings and networks for improved cooperation in policy development and institutional capacity-building in information management and communication. Areas of intervention would be determined in consultation with Programme partners, and the five priority themes of the Anti-Hunger Programme will form the framework for the regional interventions, as with the national component. FAO is involved in a wide range of activities in this area, which can provide case studies and act as pilots. Wherever possible, the regional interventions would also be designed to fit within the scope of, and add value to, the Regional Food Security Strategies being developed by FAO and its Members, as well as existing thematic networks in particular subject areas. Interventions are being developed in collaboration with development partners such as the World Bank, the European Union and DFID in order to enhance the effectiveness of this component.

## **VI. ORGANIZATION AND MANAGEMENT**

20. FAO is well placed to lead an initiative on bridging the rural digital divide, based on the emphasis of the Plan of Action of the World Food Summit (WFS) on the critical role of information in achieving food security. The Organization's Strategic Framework focuses on a commitment to "improving decision-making through the provision of information and assessments and fostering of knowledge management for food and agriculture" (Strategy Element E). FAO's specialization on agricultural and rural issues related to the digital divide would mean that cooperation would need to be further developed with other development partners such as ITU<sup>6</sup>, UNDP<sup>7</sup>, UNESCO<sup>8</sup>, the European Commission, and the World Bank. In addition, FAO has also taken the lead in drawing attention to these important issues through the Consultation on Agricultural Information Management (COAIM), which is an intergovernmental dialogue on

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<sup>5</sup> Department for International Development, United Kingdom

<sup>6</sup> International Telecommunication Union

<sup>7</sup> United Nations Development Programme

<sup>8</sup> United Nations Educational, Scientific and Cultural Organization

policy issues related to agricultural information and communication. FAO also holds expert consultations on many aspects of information and communication to develop and agree on technical guidelines, norms and methodologies that can be adopted by FAO Members.

21. The greatest need for an integrated approach is at the national level, where the human resources and institutions involved must work together both for capacity-building and in follow-up policy development and implementation. The international institutions and mechanisms used to coordinate and support the initiative should mobilize technical capacity to design and implement the components, carry out monitoring and evaluation of the results, and formulate follow-up actions building on the lessons learned and addressing emerging needs.

### **Resource Mobilization**

22. Although information and communication are a relatively new line of activity for numerous development partners, many bilateral aid agencies from OECD countries<sup>9</sup> have significant commitments in this area and multilateral agencies<sup>10</sup> have been supporting investment projects with information/communication components for some time. The private sector has also become involved through charitable trusts and foundations as well as direct investment. Policy statements from international funding institutions and bilateral agencies indicate that the amount of development assistance available to developing countries for ICT-related work is set to increase in the short term.

23. FAO's strategy for mobilizing resources for Bridging the Rural Digital Divide would have two elements that are consistent with the Organization's overall approach to its work. FAO would (a) provide certain resources from its Regular Programme, including allocation of some funding through the Technical Cooperation Programme to assist a few countries to initiate pilot projects on a small scale, and (b) mobilize trust funds to use the experience gained from pilot projects to lever additional resources for the expansion of activities to address the constraints to the rural digital divide on a wider scale.

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<sup>9</sup> e.g. USAID, CIDA, DFID, DGIS (Directorate-General for International Cooperation, the Netherlands), and SIDA

<sup>10</sup> e.g. World Bank, International Fund for Agricultural Development, African Development Bank, Asian Development Bank, InterAmerican Development Bank, and OPEC Fund