

IMPACT ASSESSMENT OF MACRO LEVEL POLICIES ON ICTs

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1 Introduction

The correlation between information and poverty is well established. Access to information and knowledge has the potential to generate more resources and opportunities and thus improve poor people's livelihoods.

The tools that can enable societies to produce, access, adapt and apply greater amounts of information are the modern Information and Communications Technologies (ICTs), such as the World Wide Web, e-mail, telephones, fibre optics and satellites.

The importance of ICTs for sustainable development is widely accepted and included in the reports and mandates of most major donors and multinational organisations. The World Bank in its World Development Report 2002/03 states that:

'The flow of information and ideas, boosted by the internet, can enable developing countries to learn more rapidly from each other and from industrial countries. It can also facilitate the emergence of networks to monitor a wide array of development impacts'.

The UNDP in its 2001 Human Development Report emphasises the potential of ICTs for sustainable economic and social development. The UK White Paper on globalisation prioritises modern ICTs for countries wanting to become part of the 'Global Information Society'.

The 'G8 Digital Opportunity Taskforce' (DOT force) was formed in 2000 and produced a framework on how to ensure that all countries could participate and benefit from ICTs. A number of activities were identified by the Taskforce, requiring co-operation from a range of stakeholders. These activities included:

- Fostering enterprise and entrepreneurship for sustainable economic development
- Establishing and supporting universal participation in addressing new international policy and technical issues raised by ICTs
- Prioritising ICT in G8 and other development assistance policies and programmes and enhancing co-ordination of multilateral ICT initiatives.

In recent years there have been many initiatives at the project and micro level. A paper by Oliver Wakelin ([Information and Communication Technology](#))

looked at how the impact of ICTs on enterprise development projects could be measured.

Macro level policy is also fundamental for the sustainable uptake of ICTs in developing countries. Enterprises are particularly dependant on the external environment for information and knowledge services. This external environment specifically includes the policy, institutional and market environment. There are a number of different elements in these environments that can be assessed such as the policy and regulatory framework for ICTs, the condition of the ICT infrastructure, and the awareness and promotion of ICTs.

There is an argument that there should be more focus on macro level policy interventions rather than at the micro level as the impact will be greater and there will be a better return on investment.

2 Macro Level Policies, ICTS and Enterprises

It is generally accepted that ICTs are important to all types of enterprises, including micro, small and medium scale enterprises. Enterprises function on the basis of four tangible resources, namely money, people, materials and technology, and one intangible resource, information. Enterprises require information and knowledge about four main aspects of their operation: supply, demand, the operating environment and internal processes.

The successful adoption and effective use of ICTs is very dependant on the external environment and macro level policies.

Some policies will have a direct effect on the uptake and use of ICTs. Examples of these are business competition policy, privatisation of telecommunication industries, regulation of telecommunications, import duties on equipment and concessions/subsidies to encourage access in rural or poor areas; provision of telecom infrastructure in rural areas.

Other policies and strategies have a more indirect effect and ICTs are a cross cutting issue in their delivery and achievement. For instance a country's Poverty Reduction Strategy Paper could highlight education as a priority, for which access to educational materials and programmes could require or could benefit from ICTs.

2.1 Legal and Regulatory Policies

An enabling policy and an effective regulatory framework are crucial, both for the telecommunications and the value added market.

2.1.1 Telecommunications Privatisation

A liberalised and competitive telecommunications market can help facilitate lower prices and more efficient services. For instance in Peru, in 1992 before

privatisation, less than 40% of all phone calls were completed and only 33% digitised. After privatisation, by 2000, over 90% of all phone calls were completed. In Uganda, in the early nineties, people had to wait almost a year for a line, with a high connection charge. Uganda also had one of the lowest teledensities in the world. Since privatisation, the number of land telephone lines has increased tenfold.

Key indicators for impact assessments are:

- Increased teledensity, especially in rural areas
- Increased access to internet, especially in rural areas
- Rate of digitisation
- Increased ISPs operating
- Price affordable to majority of population (connection and usage)
- Masterplans for telecommunication expansion

2.1.2 Regulatory Framework

Effective regulation is needed both for telecommunications and for e-commerce.

For telecommunications there are clear international models and accepted approaches such as the World Trade Organisation agreement on telecommunications.

E-commerce has still not taken off in the majority of enterprises in Africa, Asia and Latin America, and there are large loopholes in the legal provisions in those countries that do have e-commerce (UNIDO, 2000). The regulatory requirements are also wide-ranging and technically problematic. They need to cover:

- Electronic standardisation
- Security of data and payment
- Intellectual property rights and patents.

Recent research by the University of Natal in South Africa showed that e-commerce could have significant effects on small wooden furniture producers (SWFPs), in terms of allowing them to expand their customer base; enter new product markets; function more efficiently and monitor quality control. They predicted that e-commerce would greatly increase their export potential by opening up markets, reducing transaction costs and lowering barriers to market entry. There could also be gains to smaller firms in terms of improved access to information, more networks and other supply chains and thus associated economies of scale.

However alongside this, the research emphasised the policy challenge to 'create an enabling and nurturing environment' and that Government policy should ensure that the benefits go to the producers and not a group of electronic middlemen.

Key indicators for impact assessments in regulatory policy are:

- Clear guidelines and communication laws in country with regard to licences, costing, interconnection agreements, frequency and band allocation
- Clear Intellectual property rights laws
- A banking system that can support e-commerce
- Increased number of firms dealing in e-commerce
- Increased number of foreign firms dealing with domestic firms (potentially leading to increased foreign direct investment)

2.1.3 National ICT Strategies

It is only very recently that a number of Governments in the South (such as in Tanzania, Peru and Vietnam) have started to recognise the strategic importance of ICTs in national development, and have started to develop National ICT Strategy and Policy papers. These strategies have tended to focus on the extending ICT penetration in health, education and enterprise (e-commerce).

The development of IT strategies has tended to be the result of the privatisation and liberalisation of the telecommunications industry, as this can provide an opportunity to review the sector as a whole and assess the impact ICTs can have on the country's development aims and priorities. It can also force the private sector into providing lower profit services

Such national strategies are potentially important in encouraging co-ordination among different programmes and policies, and in bringing together a range of stakeholders from different sectors and areas. However the strategies in Vietnam, Tanzania and Peru have only just been implemented so it is not yet possible to assess the impact that they have actually had.

Key indicators for impact assessments for National IT Strategies could be:

- Countries implement an IT Strategy
- Clear Government position on ICTs
- National IT Strategies designed and implemented by cross sector of Government
- Increased access to internet in schools
- Increased use of internet by health departments
- Increased use of internet by businesses
- Increased number of enterprises using e-commerce.

2.2 Market Policies

2.2.1 Competition Policy

Although lack of income is one of the reasons why developing countries lag behind in terms of ICT development, economic policy also plays an important role. Developing countries whose policies promote economic growth and private sector competition have a much higher rate of telephone services.

World Bank Analysis (2001) has shown that countries with progressive economic and sectoral policies have narrowed the digital divide.

Key indicators for impact assessments in Competition Policy are:

- High private sector involvement in telecom sector
- Active private sector in ICT industry
- Increased private enterprises offering software and hardware services
- Increased private sector with websites and portals.

2.2.2 Foreign Investment

Policies to encourage foreign investment from developed countries in developing countries are one way to encourage technological transfer and thus narrow the 'digital divide'.

Foreign ownership can potentially lead to improved productivity, access to new markets and access to investment capital in the enterprises that receive the foreign investment, although there is less evidence to show that it benefits the economy as a whole.

Foreign investment can also be an effective way for enterprises in the South to gain access to new technologies and knowledge. This is not just technical knowledge transfer and access to new technologies (such as machinery and equipment) but also access to generic knowledge such as improved management skills or internet training.

Other impacts of foreign investment could be:

- Knock on effects where domestic enterprises see the results in the foreign owned enterprises and copy or reverse engineer the process
- Vertical linkages between the foreign owned enterprise and other domestic enterprises that supply or buy from them
- Quicker assimilation of the latest technology by the domestic firms.

2.2.3 Taxes, Duties

The impact of duties and taxes can seriously hinder small enterprises from benefiting from ICT development. In Uganda the Government eradicated duties on computers and other ICT equipment. This led to a significant increase in the number of PCs - although mainly in the urban areas.

2.2.4 Rural Access, Subsidies and Concessions

In most developing countries the majority of the population live in rural areas and this is where access to ICTs is the lowest. Government policies to increase rural access are therefore important. One way Governments can target access in poor, rural areas is to encourage and promote private investments in ICTs through subsidies. The subject of subsidies and whether they really improve access of the poor to services is a debate currently going on with regard to water, electricity and telecomms services in particular.

The World Bank (2001) conducted research that showed that increasing telecommunication coverage improves local enterprises and the incomes of poor households. This is through income for telecom service providers; reduced costs for households who use this service and increased incomes from better market information. For example, in India the state telecommunications company provides metered telephones to micro entrepreneurs who charge cash for the calls, and are billed monthly by the telephone service. They receive a discount of 25% as a commission for their services.

However while there is evidence to show that ICTs can benefit the poor, access programmes can be undermined by corruption, expensive administration and the benefits going to the richer households. However there are also examples where Government policy can promote access cost effectively through the appropriate use of economic incentives. In India, Bangladesh and Senegal telecom access has rapidly increased through micro credit to small entrepreneurs whose revenues have covered incremental service costs. In Peru the Government created the Fund for Investments in Telecommunications (FITEL) to promote private investment of telecommunication companies in rural areas by subsidising their activities. The objective of the fund is to provide universal access to telephone services for rural Peru and also to promote social and economic development by trying to narrow the digital divide in these regions through appropriate access to the internet and by the development of local networks. To date almost 5000 rural cities have been targeted, which have over 4 million people within telephone coverage. Around 9,000 rural telephones have been installed.

Key indicators for impact assessments are:

- Increased teledensity in rural areas
- Increased access to internet in rural areas
- Rate of digitisation in rural areas
- Increased ISPs operating in rural areas
- Price affordable to majority of rural population (connection and usage)
- Increased funds targeted especially at rural areas
- Increased micro finance and micro credit for rural population to access ICT service provision

2.3 Infrastructure

Poor infrastructure hinders information flows - a fact borne out by the statistic that 75% of the world's phones are in 8 of the richer nations. ICTs are essential to the infrastructure of small and larger enterprises.

The legal and regulatory policy should provide the framework and favourable market conditions to allow the private sector to provide communication services, but a physical infrastructure is also needed. This includes upgrading systems; installing new telephone systems; faster links such as fibre optics and increased mobile phone coverage away from urban centres. This

infrastructure needs to be reliable, accessible and affordable. Indicators to monitor the success of Government policy include:

- Internet access in urban and rural centres
- Mobile telephone infrastructure in urban and rural areas
- Prices for access and accessibility for the poor
- Rural connectivity
- Masterplans for upgrading telecommunication network

Alongside the telecommunications infrastructure is the need for electricity and transport infrastructure. Enterprises need ICTs to be reliable and power interruptions or poor roads to transport the equipment will not encourage the development of ICTs.

2.4 Human Capacity

The development and encouragement of human resources is essential for the sustainable uptake and development of ICTs. At the Government and policy level there needs to be a long term objective for the development of IT skills and expertise through the education systems. This should be at all levels - primary, secondary, university and adult education.

Key indicators for impact assessments are:

- Increased number of schools and university with internet access
- Increased number of courses in ICTs at all levels
- Increased number of distance learning students
- Certificates and standards for ICT courses
- Increased number of students from urban and rural areas

2.5 Awareness and Promotion

UNIDO has highlighted the need for national 'e-leadership', in terms of Government actions and policies, in order to promote the use and application of ICTs.

In Peru the Ministry of Industry has developed a web based portal with information on suppliers, financial institutions, suppliers of technical assistance and other institutions that support SMEs. However information about the number of people accessing the site and using the information is not available so is difficult to assess its impact.

There is also a need to raise awareness within Government about the importance of ICTs. A proactive Government will promote ICTs through legislation and other means. For instance there is a Minister of Information and Communication in Bangladesh, Yemen, India and Malawi.

Key indicators for impact assessments are:

- Co-ordination between ministries and donors
- Minister of Information and Communication appointed
- Government is proactive by supplying online government information

- Government provides information on enterprise development such as suppliers, financial institutions, etc
- Knowledge transferred from national to district level officials

2.6 National Development Policies

The use of ICTs in achieving the Millennium Development Goals, Government PRSPs and National Sectoral objectives in Education, Health and Water can have a considerable impact.

ICTs enable information to be quickly and cheaply replicated for distribution country wide through Government Ministries, NGOs and the private sector. They also enable feedback and strengthen civil society as people are informed on policies and their rights.

Key indicators for impact assessments are:

- ICT is part of the cross cutting themes in a country's PRSP
- ICT is part of the cross cutting themes in sector plans

3 Stakeholders

The previous section discussed the policies that can impact on the development and use of ICTs in developing countries.

The development and implementation of these policies calls for a wide range of stakeholders to advise Governments.

ICTs can enable more people to have access to information about Government policies and so strengthen civil society.

A stage further than just informing about policies is to use ICTs to create a forum for discussion and debate about the particular policies and laws, with a view to modifying them. ICTs can assist such a forum and were used in the recent PRSP process that a number of Governments have completed.

Involving local people fully in ICT projects is also critical for their success. The Baatchit project in Tikawali village, 40 kms from New Delhi in India, described below offers a good example of this.

Box 1

In Tikawali villagers faced the problems shared by hundreds of other Indian villages i.e. access to water, electricity and better livelihoods. Numerous attempts to improve conditions had failed and given rise to a general feeling of fatalism among the villagers. Today however the village has a new lease of life. "All roads in Tikawali lead to the Baatchit (chit-chat) Centre where one and all gather not just for local news and information but also for entertainment, exchange of ideas and business advice".

Before the advent of TV and radio, rural Indian communities depended extensively on the Chaupal, a central meeting place, as the primary means of

information exchange, business talks, socialisation and entertainment. However the proliferation of TV and radio gradually resulted in social disintegration as villagers began to spend more time at home using these tools as surrogates for the Chaupal. Also TV and radio programming was largely urban-orientated, whether entertainment or news and did not help in sustaining livelihoods. Worse, as people spent less time together, social bonds began to deteriorate, leading to a wide scale socio-economic breakdown in the rural sector.

In developing the Baatchit Centre, project workers learned that economic development of the village is critical for a rural ICT project's success. And any development project with any chance of sustainability has to develop through organic means that are grounded in local realities. There must be a vision within the community towards the village's economic development. Therefore villagers must learn the basic economics related to their village and actively participate in the development process.

The project workers discovered the importance of involving villagers at every step of the process. To take a small example, project workers learned that, although they had graphics experts on their development team, the icons they chose so carefully did not convey what they had hoped to the villagers. A "water drop" looked like oil to them and they thought a tubewell would be more appropriate. The magnifying glass, meant to signify Search, looked like a badminton racket.

The Baatchit project seeks to empower and enfranchise villagers through a set of social, economic and IT strategies. It has a centre with computer room and TV hall. As well as laptops there is a video camera that villagers use to create their own video content in the form of news, informationals, entertainment and advertisements. The TV hall has a 34" TV that plays the videos created. The centre is used as a discussion and learning ground. The community software system is functioning as a means of collecting information about people and providing a window for villagers to understand their village in a different light. They are finding out about schemes that are available and are beginning to take advantage of them. Through the video messaging module users can share their ideas with others without being able to read or write.

Ten young people have found jobs, a group of women have set up a sewing centre, twenty shopkeepers are meeting regularly to plan a village market, groups are beginning to self-organise to deal with problems, the community wants to create a longer news show, the video team has attracted advertising... just some of the project results. Discussions now centre around what the village might look like in ten years and what things people would need to do to achieve that level.

Source: www.iicd.org/stories/

4. Conclusions and Recommendations

There are a number of macro level policies that do have an impact on the sustainable development and uptake of ICTs by enterprises. However fewer studies have been done on the macro level impact than on the micro level project impact.

The following table lists the macro level policies and possible impact indicators that they could be assessed against.

Macro Level Policy	Impact Indicators
Legal and Regulatory Policies	
Telecommunication Privatisation	<ul style="list-style-type: none"> • Increased teledensity, especially in rural areas • Increased access to internet, especially in rural areas • Rate of digitisation • Increased ISPs operating • Price affordable to majority of population (connection and usage) • Masterplans on telecommunication expansion
Regulatory Framework	<ul style="list-style-type: none"> • Clear guidelines and communication laws in country with regard to licences, costing, interconnection agreements, frequency and band allocation • Clear intellectual property rights laws • A banking system that can support e-commerce • Increased number of firms dealing in e-commerce • Increased number of foreign firms dealing with domestic firms
National ICT Strategy	<ul style="list-style-type: none"> • Countries implement an IT Strategy • Clear Government position on ICTs • National IT Strategies designed and implemented by cross sector of Government • Increased access to internet in schools

	<ul style="list-style-type: none"> • Increased use of internet by health departments • Increased use of internet by businesses • Increased number of enterprises using e-commerce
Market Policies	
Competition Policy	<ul style="list-style-type: none"> • High private sector involvement in telecom sector • Active private sector in ICT industry • Increased private enterprises offering software and hardware services • Increased private sector with websites and portals
Foreign Investment	<p>For foreign owned firms:</p> <ul style="list-style-type: none"> • Improved productivity • Access to new markets • Access to investment capital <p>Overall:</p> <ul style="list-style-type: none"> • Knock on effects where domestic enterprises see the results in the foreign owned enterprises and copy or reverse engineer the process • Vertical linkages between the foreign owned enterprise and other domestic enterprises that supply or buy from them • Quicker assimilation of the latest technology by the domestic firms
Rural Access	<ul style="list-style-type: none"> • Increased teledensity in rural areas • Increased access to internet in rural areas • Rate of digitisation in rural areas • Increased ISPs operating in rural areas • Price affordable to majority of rural population (connection and usage) • Increased funds targeted especially at rural areas • Increased micro finance and micro

	credit for rural population to access for ICT service provision
Infrastructure	
Infrastructure	<ul style="list-style-type: none"> • Internet access in urban and rural centres • Mobile telephone infrastructure in urban and rural areas • Prices for access and accessibility for poor • Rural connectivity • Masterplans for upgrading telecommunication network
Human Capacity	
Human Capacity	<ul style="list-style-type: none"> • Increased number of schools and university have internet access • Increased number of courses in ICTs at all levels • Increased number of distance learning students • Certificates and standards for ICT courses • Increased number of students from urban and rural areas
Awareness and Promotion	
Awareness and Promotion	<ul style="list-style-type: none"> • Co-ordination between ministries and donors • Minister of Information and Communication appointed • Government is proactive by supplying online government information • Government provides information on enterprise development such as suppliers, financial institutions, etc • Knowledge transferred from national to district level officials
National Development Policies	
National Development Policies	<ul style="list-style-type: none"> • ICT is part of the cross cutting themes in a country's PRSP • ICT is part of the cross cutting themes in sector plans

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