

### 3 Creating A Development Dynamic

The unique characteristics inherent in ICT and the evidence from both micro-level initiatives and national ICT approaches suggest that a development-focused ICT strategy that leverages the powerful synergies of ICT as an enabler of social and economic development can lead to the creation of a development dynamic. The lessons learned point to five important interrelated areas for strategic intervention: *policy, infrastructure, enterprise, human capacity, and content and applications* (these will be referred to as components of the dynamic).

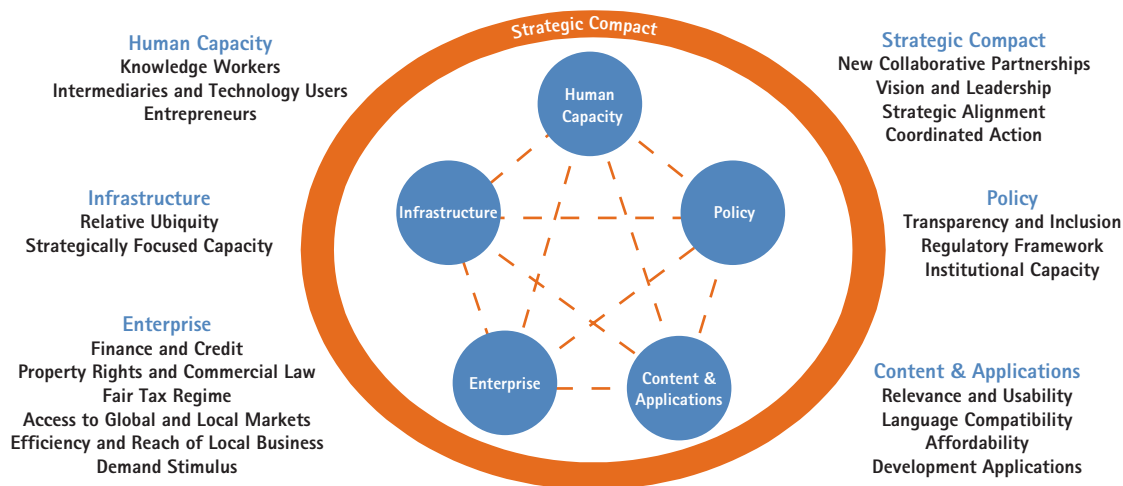
The development dynamic's distinctiveness arises from the fact that it draws on:

- ICT as an enabler to achieve selected development goals (and the integration of the ICT strategy into national development strategies);
- the unique characteristics of ICT (outlined in Section 2.1);<sup>44</sup> and
- the synergies and complementarities between the strategic components (which are mutually reinforcing).

Taken together, these factors suggest that an approach which addresses several components of the dynamic is likely to be more effective than one which focuses in just one area. However, the development dynamic framework does not call for an "all or nothing" approach, nor does it suggest that such a dynamic can only be ignited if action is taken in all five areas at once. While acting on any of the components of the dynamic can produce valuable results, interventions taken across several component areas can generate returns to scale much greater than those achieved by a concentrated focus in any single area. As critical mass and threshold levels are achieved, *feedback, multiplier*<sup>45</sup> and *network effects*<sup>46</sup> can ignite a virtuous cycle of sustainable development.

Consider the following example, which takes a change in infrastructure access as its starting point. Investments in ICT infrastructure can lead to improved access by reducing costs and extending coverage to additional areas. This can have a catalytic impact on enterprises and provide additional incentives for increased adoption of ICT. For

**Figure 3.1** Components of a Development Dynamic



<sup>44</sup> Principally, ICT is multi-purpose and cross-cutting, it can enhance productivity and lower costs, and is subject to declining marginal costs in production and replication.

<sup>45</sup> Multiplier effects refer to effects on other components occurring with no additional intervention. Feedback effects are positive effects which come back to an initiating component from another.

<sup>46</sup> This is the tendency for the value of membership in a network to grow exponentially as the number of members increase.

example, it can help SMEs improve their competitiveness and expand market access. This in turn can create a feedback effect as demand for additional and faster access will entice additional investments in ICT infrastructure. The increase in both infrastructure and SMEs can lead, through spillover effects, to an increased demand for skilled labor and knowledge workers. This increased demand for labor can then trigger additional investments in human capital. Such a combination of effects illustrates the connection between the different components that characterize the dynamic. To the extent that these interconnections are foreseen and addressed through complementary interventions, multiplier and feedback effects are realized and the emergence of bottlenecks is avoided.

While the above example just looks at the generic case of a change in the conditions under which infrastructure is provided, the initiating effect could have started from any of the components of the dynamic—a change in IT policy, legislation favorable to enterprise creation, or a demand stimulus for increased deployment of ICT. In South Africa, the government requirement that all public procurement be done with electronic tenders led to a series of dynamic interactions between policy, enterprise and human capability development. Similar results have been achieved through infrastructure roll-out policies centered on development goals. Estonia's Tiger Leap Program has demonstrated how ICT deployed to improve education can have positive impacts in other sectors.

The complementarity between components of the "development dynamic" has substantial policy implications for national strategies focused on ICT as an enabler of development goals. Each of the five components has specific sub-components that allow policy makers and stakeholders to adopt and adapt them to reflect local priorities and conditions. This provides for a flexible policy tool that can be used in different contexts without tying countries to specific development paths.

## 3.1 Components of the Development Dynamic

The following section addresses, in more detail, each of the five dynamic components, or areas for action.

### 3.1.1 Infrastructure

Addressing infrastructure in the context of a strategy deploying ICT *as an enabler* to enhance the *achievement of development goals* would involve the adoption of the following broad principles, adapted for the particular national context:

**Strategically Focused Capacity.** The strategy should focus on developing strategically focused network infrastructure capacity for key sectors to take advantage of leading edge technologies. To take advantage of *global positioning* possibilities, such focused capacity should also include a reasonable level of global connectivity.

**Relative Ubiquity.** Unlike policies focused on export expansion or only on global positioning, the above should be complemented by interventions to promote ubiquitous access through universal access funds and support of community networks and public access points.

Until recently, the financial situation of a country's public telecommunications company defined its ability to build and maintain core network infrastructure, as well as to provide universal access. However, with privatization, liberalization and policies aimed at increasing competition in the sector, there is a greater involvement of the private sector in infrastructure provision.<sup>47</sup>

Ubiquity and the move toward universal access<sup>48</sup> is becoming more and more feasible due to rapidly declining costs for networking and telecommunication technologies. These declining costs allow developing countries to leapfrog

<sup>47</sup> See, for example, the Brazil and Estonia case studies. In the latter, a partnership between the national public telecommunications companies and two Nordic telecommunications giants—*Telia* and *Sonera*—led to a rapid increase of telecommunications access and global connectivity.

<sup>48</sup> This varies by country: in Singapore, it is a nation-wide information infrastructure that interconnects computers in nearly every home, school and workplace; in India, in the short term, it means at least one phone in every village.

ahead through the use of cutting-edge technologies. In Botswana, for example, the information network is composed of an all-digital microwave and fiber-optic system with digital exchanges at the main centers. The involvement of the private sector has hastened the adoption of these technologies, particularly in the case of wireless and mobile.

Thus, the framework associated with the development dynamic suggests a move away from either a "build it and they will come" infrastructure policy or one that does not see ICT infrastructure as a development priority. Instead it focuses on the complementarities and synergies between the five strategic areas for action, and on coordinating the work of multiple actors. Infrastructure is rolled out as part of an overall program that includes simultaneous actions in other areas. These could include: the introduction of a supportive regulatory framework, partnerships with NGOs, private enterprise and non-profit community initiatives to expand ICT access and services, support for SMEs and strengthening demand as a beneficial side effect of addressing development imperatives through a public infrastructure strategy (for example, through schoolnets or e-government).<sup>49</sup>

Such initiatives can also help to enhance the financial sustainability of the infrastructure created. Human capacity and skill development would not appear as a bottleneck limiting effective deployment and use of infrastructure. An overall strategy which focuses on strengthening human capacity will result in much more effective spending on infrastructure because insufficient skills will not create a bottleneck to its effective deployment and use.

### 3.1.2 Human Capacity

Basic literacy is of crucial importance for development and, as such, is one of the development imperatives adopted by the UN Millennium Summit. However, for the purposes of adopting a strategy that deploys ICT as an enabler, it is not an absolute requirement that a country begin with a high literacy rate. In order to deploy ICT for development, it is important for countries to develop a critical mass of knowledge workers, technology users, and motivated entrepreneurs.

**Knowledge Workers.** Countries should focus on educating and retaining a core of professionals with the technical capabilities to provide and maintain ICT infrastructure and related ICT services, and to adapt new technologies for local requirements. Both tertiary education and corporate training are important components of ICT skill development.<sup>50</sup> Progress in these areas requires an increase in the number of tertiary institutions, the promotion of relevant educational curricula, and the creation of new educational facilities with specific emphasis on ICT skill development. Skill development and retraining of the existing workforce is key. Policies encouraging businesses to allocate resources to employee development and training, as is happening in South Africa, can be an important mechanism for achieving this outcome.

**Intermediaries and Technology Users.** Also important for achieving development goals and sustainable growth are the institutions to link the technology to those who would benefit from its use. A number of different actors, including the national and global private sector,<sup>51</sup> as well as community networks (particularly for the development of ICT intermediaries and users) have been involved in skill development and the creation of ICT awareness. However, it is not just the creation of skills that is important, but also the

<sup>49</sup> See South Africa's SAITIS strategy and Estonia's wiring of the entire country to facilitate widespread use of ICT applications in education (Tiger Leap program), health, banking, transportation, public administration and e-government.

<sup>50</sup> See Estonia, Costa Rica and India case studies.

<sup>51</sup> While countries such as Estonia and Costa Rica have focused on adapting higher education curricula, India has seen the proliferation of vocational learning institutions and commercial software training companies (such as NIIT and Aptech) create 2000 institutes and produce over 70,000 trainees per annum. In Ghana and South Africa, telecommunication companies have established centers that train ICT network and application specialists.

development of incentives<sup>52</sup> to reduce “brain drain.”<sup>53</sup> In South Africa, for instance, the 15–20 percent per annum exodus of skilled technical workers has hindered ICT deployment and the growth of the ICT sector. This process may be reversed if proper measures are taken by policymakers to improve market and social conditions through a development dynamic.

**Motivated Entrepreneurs.** The development dynamic is also accelerated by the creation of a critical mass of motivated entrepreneurs, people with business expertise to leverage new opportunities.<sup>54</sup> This is a function not just of entrepreneurial skills and financing, but also of a supportive policy environment and opportunities for development. In South Africa, for example, the transition to universal democracy in 1994 has led to a proactive approach by the government to the development of local entrepreneurs and managers. Its Black Economic Empowerment program creates incentives for black businesses. Currently, the number of black entrepreneurs and managers is growing, although beginning from a very low base.

### 3.1.3 Policy

The overall policy environment, the degree of transparency and inclusion, and, more specifically, the regulatory environment, can all have a major impact on the development dynamic.<sup>55</sup> In addition, key policies in each of the areas of

strategic action—human capacity, infrastructure, enterprise—as well as policies supportive of fair competition and property rights, are important to harnessing the potential of ICT to achieve development goals.

**Transparency and Inclusion.** Transparent and inclusive government processes are useful for both the expansion of ICT, and also an area that the use of ICT can facilitate. For example, the Internet can be used to ensure access to legislation, taxation codes and government services, and thereby facilitate consumer and citizen input into governance processes.

**Regulatory Framework.** If the regulatory framework is not sufficiently adaptable, it can slow the development of competition in the sector and expansion of ICT use and enterprise growth. There is evidence to indicate that deregulation has had a positive influence on the development of infrastructure<sup>56</sup> in almost all the developing countries where it has been attempted. The benefits of competitive privatization come not only in the form of improved infrastructure, but also through increased foreign investment: in Brazil, for every dollar raised through privatization, an additional US\$2.42 are attracted through FDI.<sup>57, 58</sup>

Liberalization and creation of a competitive environment in ISP markets, in many instances, resulted in rapid market expansion.<sup>59</sup> At the same time, regulatory actions that

---

<sup>52</sup> The Fifth Framework Programme on Research Technology and Development, which grants up to Euro 15 billion in funding, has helped to stop the outflow of talented people from Eastern Europe, strengthening links between industry and research and between Eastern European and EU researchers (Reconnecting Europe, Accenture, 2000). The South African government has created a Human Development Fund to address the “brain drain” problem, especially in ICT areas.

<sup>53</sup> It is estimated that more than 50 percent of tertiary education students from developing countries that study abroad never return.

<sup>54</sup> It was recently estimated that there is an unfulfilled demand in Central and Eastern European Countries of at least 10,000 senior executives and 100,000 middle managers. However, company training is improving this situation (Reconnecting Europe, Accenture, 2000).

<sup>55</sup> See, for example, *The New Global Economy and Developing Countries: Making Openness Work*, Dani Rodrik, Policy Essay 24.

<sup>56</sup> Evidence from a set of Latin American countries points to the fact that open markets in the region saw basic line rollout growth that was approximately three times as fast as that of countries with state monopolies, and twice as fast as that of countries with private monopolies (ICT and Poverty, World Bank, 2000).

<sup>57</sup> Privatization of telecommunications in Peru resulted in a fixed-line increase of 165 percent in 5 years, a doubling of employment in the sector, and improved access among the poorest households—from zero to 20 percent.

<sup>58</sup> Cross country studies of Internet penetration show a negative correlation between diffusion of the Internet and the monopolization of the telecommunications industry (Hargittai, 1999).

<sup>59</sup> Liberalization of the ISP market in Egypt has driven its rapid expansion. There are over 60 ISPs offering a range of services including dedicated, dial-up, pre-paid and premium services (ITU, *Internet Country Case Studies*, Egypt, 2000). Similarly, Brazil's managed deregulation of the ISP market resulted in the emergence of a large number of providers (World Bank, *ICT and Poverty*, 2000).

restricted competition significantly inhibited the growth of Internet services.<sup>60</sup>

Liberalization can also have side effects on developing country government budgets. Many developing countries depend upon interconnection and telecommunication charges to finance social welfare expenditures. Reductions in government collections resulting from liberalization may lead to a need for transitional mechanisms so that social programs are not adversely impacted.

**Institutional Capacity.** For an ICT as enabler strategy and synergies among the components to be achieved, a basic level of institutional capacity is required. For example, the benefits of a good regulatory framework can be undercut if regulators lack the training, resources, or motivation to implement it.

Even though policy formulation is typically the responsibility of national governments, other stakeholders assist through the sharing of good practices and expertise. Increasingly, the development of institutional capacity and related expertise can be facilitated by leveraging external policy support—for example, regulator-to-regulator programs, virtual policy centers and foreign expertise.

### 3.1.4 Enterprise

Given the important role played by the private sector in developing ICT infrastructure, creating jobs, and fueling growth (highlighted in Section 2.2.3), supportive conditions and prospects for endogenous and sustainable wealth creation are central to the working of the dynamic. The following appear to be critical factors for enterprise development:

**Finance and Credit.** Access to credit and financing is fundamental for the smooth functioning of the development dynamic. One of the major reasons for the lack of dynamic enterprise in developing countries is the shortage of affordable credit and investment to support new enterprises. This is often the result of adverse macroeconomic policies (including those aimed at bringing in foreign capital flows or preventing their outflow) and a lack of appropriate financing channels and mechanisms suited to developing market conditions. The development of the two key financial sectors—banking (including micro-finance) and venture capital—is crucial.

The banking sector is critical to channeling resources across geographic zones and economic sectors. It is also ICT-intensive and provides niche opportunities for local enterprises—Brazil is a case in point. As financial institutions proliferate deeper into the different areas of the country, they also help to expand opportunities for under-served communities and businesses.<sup>61</sup> At the same time, ICT can help to make financial services more cost-effective and affordable for poor communities and small enterprises.<sup>62</sup>

Although the venture capital sector is a key engine of enterprise growth in developed countries, this is not yet the case in most developing countries and transitional economies. Many factors account for this—in Hungary, for example, the lack of patent regulations can be held as partially responsible for the shortage of venture capital.<sup>63</sup> Business incubators and accelerators can play a crucial role in this regard.

**Property Rights and Commercial Law.** The establishment of a favorable business environment can increase foreign direct investment and trade. Although historically many developing countries appeared to benefit from reverse

<sup>60</sup> Restriction of the number of licenses for IAPs (Internet Access Providers serving ISPs), to three and the imposition of a fee of US\$100,000 per license created a barrier to competitive Internet services in Tanzania ([www.idrc.ca](http://www.idrc.ca)).

<sup>61</sup> Reforms introduced in 1995 in Costa Rica liberalized the state monopoly in checking and savings accounts. Private commercial banks are now able to compete with state-owned banks for demand deposits upon fulfillment of several requirements, one of which is opening four branches in rural areas ([www.inforesint.com/profile/crinvest.htm](http://www.inforesint.com/profile/crinvest.htm)).

<sup>62</sup> For example, Standard Bank of South Africa successfully operates a fast growing program (AutoBank E) that serves 2.5 million low-income customers using ATM and smart cards ([www.btimes.co.za/99/1024/comp/comp09.htm](http://www.btimes.co.za/99/1024/comp/comp09.htm)).

<sup>63</sup> See Accenture, 2000, Reconnecting Europe.

engineering and lax enforcement of intellectual property rights, in the long run the development of knowledge-intensive industries is unlikely to take place without appropriate property and commercial laws. These regimes should incorporate generally accepted principles of fairness, speed and dependability of execution, effective enforcement,<sup>64</sup> and compliance with international norms regarding intellectual property rights protection.<sup>65</sup>

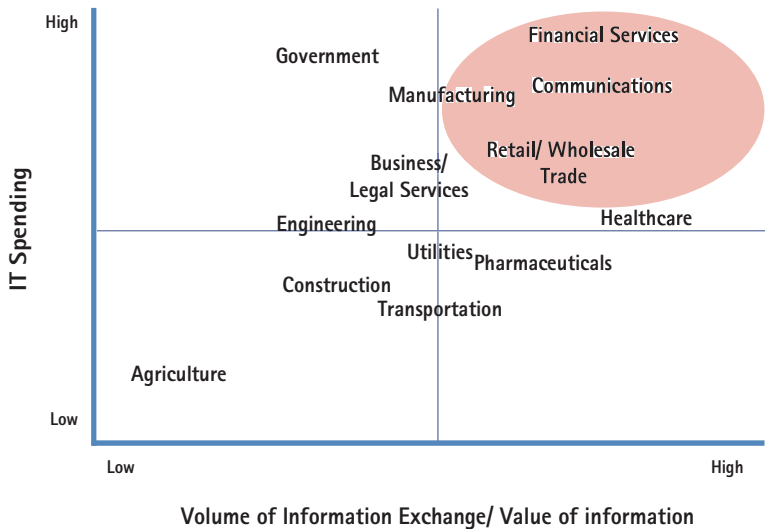
**Fair Tax Regime.** Policymakers need to ensure that the tax regime is non-distorting and does not act as a disincentive to investment and entrepreneurial efforts.

**Access to Relevant Global and Local Markets.** Reducing a country's barriers on inward and outward trade flows is an important prerequisite to securing the full benefits of glob-

al positioning and gaining access to ICT at affordable prices.<sup>66</sup> ICT, in turn, can play a useful role in making shipping and trade-related rules and regulations transparent in order to facilitate more efficient trade.<sup>67</sup>

**Increasing Efficiency and Reach of Local Business.** The examples given in Section 2.2.3 suggest that it is crucial that ICT be used to improve the efficiency and reach of local businesses to make the entire local economy more productive, globally competitive, and better connected to local and global markets. This requires that businesses can use both newer trading platforms (such as business-to-business exchanges) and, where appropriate, more traditional business software supporting efficient logistics, good accounting practices and high levels of customer service. Local businesses need to acquire a strong awareness and

**Figure 3.2** The Value of Information and ICT Spending in the US by Economic Sector



Source: Accenture analysis.

<sup>64</sup> Enforcement of copyright legislation in Thailand resulted in a reduction in illegal sales from 33 percent of total sales to 13 percent, and in the United Arab Emirates from 33 percent to 18 percent.

<sup>65</sup> In Central and Eastern Europe, lack of intellectual property protection has discouraged foreign investment in high-value activities. Patent laws in these countries often are not strong enough to protect new products.

<sup>66</sup> The elimination of almost all trade barriers in Estonia has been a key factor in the country's economic growth performance. See [www.ecountry.com](http://www.ecountry.com) and Accenture, 2000, Reconnecting Europe.

<sup>67</sup> The Singaporean Government worked with a consortium of companies to develop software to speed customs and port operations (Kraemer et al., 1990; Wong, 1997).

understanding of the business opportunities these technologies make available. Artificial obstacles to the purchase and use of such software should be removed and steps taken to attract appropriate inward investment from providers of world-class software. It is important that providers take care to price appropriately for local market-places. Foreign direct investment specifically targeted at assisting local suppliers is critical.

**Demand Stimulus.** The different sectors of the economy differ in their demand for ICT infrastructure and services. High value-adding sectors tend to rely heavily on ICT. In developed countries, demand for ICT products and services comes predominantly from the financial services sector, manufacturing, government,<sup>68</sup> the telecommunications industry, and the retail/ wholesale sector (see Figure 3.2).

In many developing countries, the government is one of the major consumers of ICT products and services. Governments can therefore lead by way of example in the use of ICT and can also implement best organizational practices—some involving the use of ICT—to ensure that public funds are spent in the most optimal way.<sup>69</sup> Procurement of services by the government via ICT channels can generate a strong demand for ICT services. For example, in South Africa, the government currently spends US\$1-2 billion a year on information technology systems for public use.

Governments can also encourage ICT deployment by enterprises to make them more competitive and efficient. The

Chinese government, for example, believes the Internet can help to reform inefficient state-owned enterprises (SOEs) and is encouraging SOEs to adopt e-commerce. The "Enterprise On-line" initiative aims to put seven million Chinese businesses, including many SOEs, on the Internet by the end of 2002.<sup>70</sup>

### 3.1.5 Content and Applications

**Relevance and Usability.** ICT's capability to achieve development goals will not be effectively leveraged without content that is *responsive to user needs* and local conditions, in a language that is commonly understood, and with technical specifications that are sensitive to the actual use and working environment of users.<sup>71</sup> Partnerships between community networks and the private sector are key in this area, as are consultation mechanisms that facilitate bottom-up approaches and inclusiveness.

**Language Compatibility.** In many developing countries, problems also arise because standard fonts for local languages are unavailable.<sup>72</sup> External partners (public, private and citizens in diaspora) can play a key role in this area.<sup>73</sup>

**Affordability.** Unaffordable access is probably the single most important reason for low use of ICT in developing countries. National ICT strategies can facilitate mechanisms for subsidized use and can support reform measures that would lead to the reduction of costs and access charges.

---

<sup>68</sup> In the US, federal government demand stimulus was critical to the growth of the Internet and the development of related ICT infrastructure, the market for IT services and appropriate human capacity.

<sup>69</sup> The Hungarian government, which accounts for 30-33 percent of the total demand for ICT services in that country, centralizes procurement in order to leverage its buying power and to ensure transparency and efficient use of public funds ([www.itfriend.mit.gov.in](http://www.itfriend.mit.gov.in)).

<sup>70</sup> The Internet provides various low-cost IT solutions for enterprises in developing countries. Travel companies in Namibia, for instance, have started to use Web marketing. Many online tourism solutions support reservation and confirmation processes through email for developing countries ([www.bellanet.org](http://www.bellanet.org)).

<sup>71</sup> For example, Arabization is currently considered to be a critical factor in developing information systems for countries in the Gulf region. There is also an unsatisfied demand for Arabic language educational materials in electronic format (<http://www.unesco.org/>).

<sup>72</sup> In Russia, Internet use increased exponentially with the introduction of cyrillic character sets. There was rapid growth in local content with the result that 60 percent of all Internet traffic is now within the country.

<sup>73</sup> For examples and cases of support for multilingual publishing on the web, see <http://www.heise.de/tp/english/inhalt/co/5199/1.html>. India's Centre for Development of Advanced Computing also recently launched a multilingual webware scheme called the iLEAP-ISP scheme. A multilingual word processor with Internet and email support in Indian languages is made available free to all Internet subscribers through their respective ISPs. Also in India, the Tamil Nadu government launched a US\$1.25 million Tamil local language initiative to promote online content and has given its backing to keyboard standardization drives for Tamil. See [http://www.icimod.org.sg/focus/ict/ict\\_bang/online3.htm](http://www.icimod.org.sg/focus/ict/ict_bang/online3.htm).

**Development Applications.** In addition, there is a need to build applications that are focused on achieving development goals. These range from those that enhance e-government and e-governance processes, to those that apply ICT to specific development goals, including health, education, empowerment, environmental sustainability and support of employment and enterprise creation.

## 3.2 Strategic Compacts

The emerging evidence from the various ICT for development strategies presented in Section 2 strongly suggests that, in order to reap the benefits of ICT for development, it is necessary to involve the full range of actors in the public and private sector in a process that is inclusive, open and participatory. In the case of an ICT as enabler strategy with a development focus, the relative success of Estonia and South Africa, for example, is positively correlated to the integration of multiple stakeholders and sector partnerships into the design process.

The key element here is the involvement of all sectors and stakeholders—not only in the design of strategies, but also, and perhaps more importantly, in their implementation—in such a way that each has specific roles and responsibilities. Strategic partnerships are required to aggregate the capabilities and resources to address the pervasive market failures in developing countries and to create win-win situations for the various sectors and stakeholders involved. Neither the government nor the private sector alone can achieve this objective—each is dependent on the cooperation of others to accomplish its goals.

A new form of collaboration and coordinated action between public, private, civil society and international organizations is needed—a strategic compact. There is an urgent need to build upon, and go beyond, existing partnerships to redefine roles and responsibilities at the global, national, and local level.

The required characteristics of these new strategic compacts are:

**Vision and Leadership.** This includes grasping the potential for ICT to link national economies to the new global network to accelerate the achievement of broad development goals, as well as the leadership to promote broad partnerships at the global, national and local levels to support bottom-up initiatives. Heads of government should provide the necessary leadership to confront existing barriers and promote innovative solutions. National and international private industry should work closely together to adopt, adapt and develop technologies to meet the unique needs and challenges of the less fortunate. Civil society should be a critical player and help assure that ICT is used in a way that targets and addresses specific development goals and priorities. As is highlighted by Estonia's experience, a strong vision which can be used to build consensus on national priorities and secure the commitment of all players involved is vital to the success of national ICT initiatives.

**Strategic Alignment.** A strategic compact can provide the space and pressure to address resistance, create ownership and devise incentives for change. A multi-stakeholder taskforce can thus work to align the goals, incentives, roles and responsibilities of diverse stakeholders and provide win-win opportunities. Without this sort of alignment, partnerships will not be sustainable and results will fall short of expectations for all involved.

**Coordinated Action.** Close coordination serves not only to prevent duplication of efforts, but also to achieve positive synergies. Cross-fertilization of ideas, multiple uses of ICT infrastructure and facilities, and a redirection of available resources to crucial and under-funded areas are examples of the gains to be realized from forming a strategic compact.

**New Collaborative Partnerships.** The successful design and implementation of a strategy focused on ICT as an enabler of development requires the formation of national compacts involving all stakeholders. South Africa's ICT taskforces and councils—and Tanzania's innovative eSecretariat which supports the work of the national eThink Tank—demonstrate the effectiveness of addressing ICT for development in a participatory and inclusive fashion. At the international level, both the G8 Digital Opportunity Task

Force (Dot Force) and the UN ICT Task Force have made substantial contributions to furthering the understanding of ICT's role in the development process. Through sharing best practices, promoting dialogue, highlighting success stories, and building consensus on the new agenda, national and international strategic compacts are crucial ingredients to help countries harness the benefits of ICT as a development enabler.

### 3.3 A Framework for Action

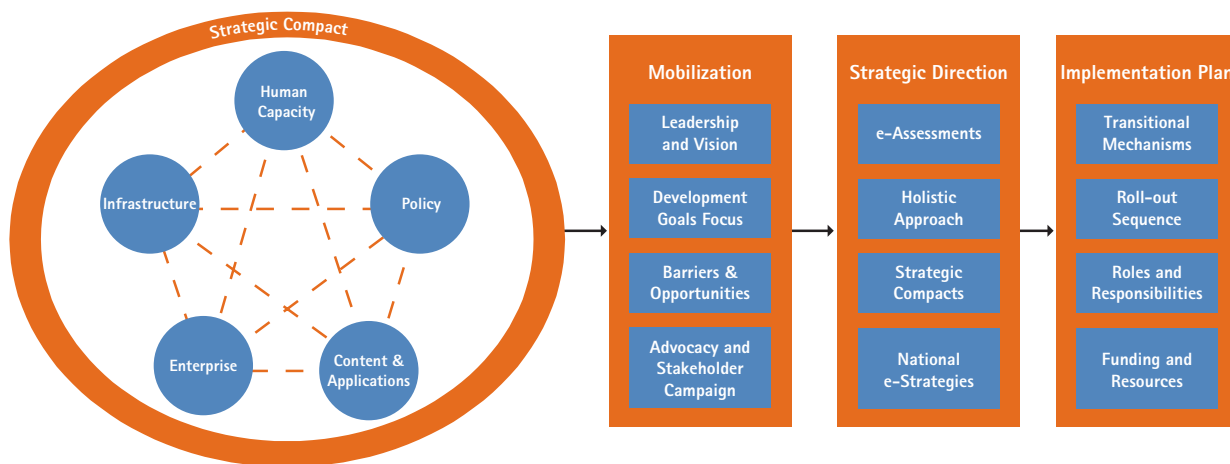
As developing countries face the new opportunities and challenges of the global network economy, there is increasing debate about how ICT can more effectively enable socioeconomic development. Although several countries have in fact created national ICT task forces and developed national ICT strategies (as seen in Section 2.3), the lack of comprehensive frameworks to illustrate how to use and deploy ICT development leaves nations struggling to identify effective strategies; sometimes even pursuing detrimental and costly approaches. The development dynamic suggested by the case studies and the inherent characteristics of ICT, and presented here by the DOI, is a framework that can assist countries in the effective and prompt design and implementation of ICT interventions.

Strategies for the use of ICT are not universal. Countries face different circumstances, priorities and financial means,

and should therefore adopt different strategies accordingly. The framework offered by the DOI can be of help in determining a strategy regardless of what goals have been established, since coordinated action along the five areas identified in the framework is always likely to yield more effective results. However, the evidence and analysis presented suggest that a strategy that focuses its ICT interventions towards the achievement of development goals is more likely to achieve marked socioeconomic development. An ICT as development enabler strategy would have the following characteristics:

- 1. Adoption of a holistic and multi-dimensional approach.** To strengthen synergies between the components of the development dynamic, leverage spillover effects, and directly address development imperatives, it is useful to undertake aligned interventions in a number of strategic areas.
- 2. Coordinated actions, strong partnerships and local implementation.** The ICT as enabler focus, by its nature, involves actions taken by a number of different stakeholders. Enhancing the enabling impact of ICT—creating a development dynamic—will require not only a greater focus on the interplay of complementary components, but also coordinated action among diverse stakeholders and an inclusive policy to benefit from the synergies created by harmonizing bottom-up approaches. That is to say, the

**Figure 3.3** Translating Framework into Action



process by which the approach is arrived at and coordination undertaken is equally important for success. The process needs to address potential barriers and resistance, put in place transitional mechanisms to address trade-offs and create positive incentives for change that leverage the creative potential of the different actors, allowing them to work on the basis of both established as well as new roles and responsibilities. This process will vary from country to country as each attempts to translate the strategic framework into action leading to tangible results on the ground (see Figure 3.3).

**3. Global, national and local linkages.** The development dynamic framework also acknowledges that the global network economy creates new opportunities for nations and communities. National ICT strategies can no longer be pursued in isolation but must be positioned within the global context, while simultaneously addressing the needs and opportunities emerging from the local context. Just as the value of a network expands with each additional member, the opportunities provided by the global network economy and society increase as nations and communities across the globe participate more fully.

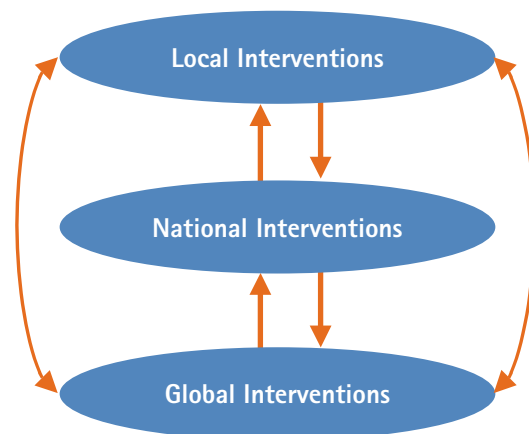
There are important linkages between the national and local contexts as well. At the national level, developing country governments have a crucial role to play in creating the enabling environment for achieving virtuous cycles

of sustainable development. National level policies can help or hinder ICT initiatives for development, with important consequences for the scalability and sustainability of local initiatives. And local initiatives can help create the critical mass that is needed for threshold levels, scale effects and networks effects to be realized at the national level. The local can also be integrated with the global, bypassing the national and allowing for bottom-up approaches (see Figure 3.4).

To summarize, implementing a framework for action involves bringing new ideas to the table, creating processes to build consensus about national priorities and addressing barriers in the different areas through some combination of advocacy, consultation, incentives, reforms, transitional mechanisms and the formation of strategic compacts.

The framework creates the foundation for diagnosing what needs to be addressed by national ICT strategies, policies and partnerships, based on an assessment of the level of preparedness (readiness) relative to the desired goals. It provides a tool to devise the strategies necessary for the creation of an enabling environment to achieve development goals and to outline measures for the type and levels of investment required to address gaps in infrastructure, policy, enterprise, human capacity and content and applications.

**Figure 3.4** Global, National and Local Linkages



## 4 Conclusions

Two of the most powerful forces in the world today are the spread of ICT and the global effort to achieve more widespread social and economic development. It has long been suggested by some that these forces are in opposition: the development agenda aims to help developing countries make great strides forward and to close the gap between rich and poor countries, while ICT, according to this line of thought, reinforces the advantages of the developed countries and perpetuates the disadvantages of the less developed.

This study has found that this need not be the case. It is far from inevitable that ICT will have a negative impact on developing economies; in fact, with the right policies and practical actions, ICT can be a powerful enabler of development.

This is not mere theory—it is already starting to happen in practice. Section 2.2 of this study highlights a range of ICT initiatives, directly targeted at specific development goals, where ICT is producing tangible benefits for different communities. Across the developing world, ICT is helping women and men improve their lives, take advantage of new opportunities and realize their full potential. From the provision of low cost healthcare services to skill-building through long-distance education, from unearthing the entrepreneurial skills of Bangladeshi women to empowering development workers in Southern Africa with information and communication tools, ICT is undoubtedly making a difference in developing communities.

Initiatives that are properly conceived and implemented can have an impact that extends beyond the individual communities they are designed to serve. Model initiatives can be scaled nationally or even regionally, contributing to the critical mass and the threshold levels needed to ignite a virtuous cycle of development. In such circumstances, the increasing use and pervasive impact of ICT can substantially enhance the ability of developing countries to address the full range of development goals.

Of course, ICT is just one of the many resources that must be deployed as part of an overall development strategy.

But the analysis in Section 2.3 of this study suggests that those countries that have employed ICT as an enabler of development goals, rather than just to position their economies in the global market, increase exports or build national capacity—can indeed achieve higher levels of development. In contrast, those countries that have had a single-minded focus on economic growth, and as such failed to integrate development imperatives into their national ICT visions, have ended up with narrowly defined ICT initiatives that do not fully address development goals.

Drawing on the analysis in this study, the DOI has developed a framework to assist policymakers and stakeholders in choosing strategically aligned ICT initiatives that can be implemented to achieve a "development dynamic." Well-targeted ICT interventions in five key interrelated areas can play a crucial role in igniting and sustaining this development dynamic by creating the necessary conditions to achieve critical mass and to reach the thresholds required for significant multiplier effects and increasing returns to scale.

The framework also emphasizes the importance of a new "strategic compact" for development, one that aligns government, civil society and business strategy and creates powerful linkages among organizations and communities across global, regional, national and local levels.

The need for a common framework and a shared vision in the effort to harness ICT for development does not mean that there is just one way of using ICT to achieve development objectives. Countries and communities are experimenting with very different initiatives and approaches, that take account of diverse conditions and resources, with great effect. Similarly, the holistic approach put forward does not imply that action must necessarily be taken in all five areas at once or that only large-scale efforts will do. Rather, it offers a strategic framework with which to design and prioritize development initiatives with a view to maximizing their long-term impact.

No matter what priorities a particular country chooses to adopt, all can benefit from greater coordination and broad

---

inclusion of all stakeholders in the creation and implementation of an ICT strategy for development. The development dynamic framework aims to help in this effort. It provides a focused yet flexible basis on which ICT can be used to achieve real change for people living in developing economies—even those that have yet to reap the benefits of the ICT revolution. It is not too late for all countries and communities to take advantage of digital opportunities, but it will take strong leadership, vision and a commitment by all stakeholders to work together, now, to achieve this goal.