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Enabling poor countries to share knowledge

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Growth: Benefiting form Globalization

Enabling Poor Countries to Share Knowledge

Summary

Many poor countries have insufficient access to advanced knowledge due to an insufficiently trained local labor force, deficient infrastructure, governance problems, and an inability to pay for patented knowledge.

What are the most promising channels whereby poor countries can be enabled to tap the pool of global knowledge? What is the role of offshoring and outsourcing, foreign direct investment, migration, education and training in poor countries, and foreign aid? What international policies and business strategies are required to improve the balance between easier access to advanced knowledge and strong incentives to create new knowledge?



Proposed Solutions

Expert Opinion

Successfully tapping the pool of global knowledge requires the ability of the domestic economy to make use of superior knowledge, which in turn requires a sufficiently educated domestic labor force. Public policy in poor countries should lay a focus upon raising literacy with a special emphasis on computer literacy in order to prevent a digital divide between and within countries. This approach could well be supported by foreign aid, which might address its programs on human capital development in general and raising school attendance in particular. It could further be supported by an international strategic partnership to bridge the digital divide and establish open and inclusive knowledge societies. The idea is to promote and support free and open software models acting through the collaboration of a range of stakeholders, including various companies in the ICT industries.

An improved integration of poor countries into the global knowledge economy also calls for a facilitated access to patented technical knowledge. Presumably, the present approach of strengthening intellectual property rights via the TRIPs-agreement under the regime of the World Trade Organization is misguided because it does not facilitate, but hamper the participation of poor countries in the knowledge economy. Alternatives to the present system of patent protection should also consider innovative systems of stimulating and rewarding innovators. A promising approach into this direction are the so-called Advance Market



Commitments (AMCs), which are designed as a new approach to public health funding of vaccines for developing countries.

Under the AMC system, donors commit money to guarantee the price of vaccines once they have been developed, thus creating the potential for a viable future market. Decisions about which diseases to target, criteria for effectiveness, price and long-term availability are made in advance by an independent advisory group. The donor commitments provide vaccine makers with the incentive they need to invest the considerable sums required to conduct research, train staff and build manufacturing facilities. On the other hand, vaccine makers no longer exhibit exclusive intellectual property rights which would entitle them to prosecute imitators. The basic idea behind this system is to maintain the financial incentives for innovators without granting exclusive patent rights which would exclude poor countries from adopting the new technology. In principle, such a system could be extended beyond the area of vaccines and even beyond the health care system to any key technology which seems essential for integrating poor countries into the knowledge economy. The necessary financial funds for rewarding the innovators could be raised by national foreign aid as well as by international institutions such as the UNCTAD or even by private charity as in the case of the present AMC system.

Strategy Perspectives

Universal Access to Knowledge as a Global Public Good

Abdul Waheed Khan

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“There is at the present time a search for alternatives to the current development paradigm, and the role of knowledge in development is critical for the formulation of new approaches” (UNCATD, The Least Developed Countries Report, 2007).

The shape of the modern world has been credited to advancements in science and technology. I-C-Ts have facilitated, at a tremendous pace, the generation, preservation, dissemination, exchange and utilization of knowledge. Knowledge has always been crucial to human development. Since the dawn of humankind, the creation and application of new knowledge, in every sphere of human activities, have contributed to the evolution of societies and economic welfare of people. Knowledge of how to do things, how to communicate and how to work with other people has always been regarded as the most precious ‘wealth’ that humans possess.

As analyzed in the UNESCO World Report *Towards Knowledge Societies*, the poorest are further separated from sources of information when policy-makers fail to have an inclusive approach to development. The result is worse for the poor. They are already at the bottom of the development ladder, scavenging for bits of knowledge. Now this knowledge moves at lightening speed across phone lines and cables bypassing them on its way to the computer screens of those who can afford to access information.

Universal access to knowledge must then remain the pillar supporting the transition toward knowledge societies. Whatever the extent and nature of public domain information and knowledge, it is paramount to ensure that content is really accessible to all, without discrimination. This is seldom the case. Yet, the public domain is a major contributor to the development of human capital and creativity in knowledge societies.



Knowledge has several noteworthy features – it's transferrable. Once it is in the public domain, anyone can use it freely; it only has real value if it is shared by all, and knowledge begets innovation.

Knowledge-sharing

Knowledge-sharing should be at the heart of knowledge societies. It cannot be thought of in terms of distribution. Knowledge-sharing cannot be reduced to the appointment of knowledge or to a parceling out of skills, whereby each person is able to take possession of a field of specialization or expertise. The advance of knowledge requires the collaboration of all.

In societies where knowledge moves freely, as if it were networked, possibilities for exchange and sharing are multiplied. This is an environment conducive to universal accessibility.

In emerging knowledge societies, this spirit of sharing should go hand in hand with other values such as openness and curiosity. New forms of networking that have emerged, in particular on the Internet, that lend themselves to exchange, interaction and sharing, are horizontal and not hierarchical. We may therefore legitimately hope that in knowledge societies, each person's capacities for knowledge will be developed not just through competition but in a spirit of collaboration for the common good – a perfect example: *Open Source* software.

Such a spirit of sharing and collaboration may seem a far cry from the real conditions of corporate competition in the markets of a global knowledge-based economy. However, the emergence of network societies and the consequent lowering of transaction costs encourage new forms of productive organization involving exchange and collaboration within a single sharing community. The possibility of such architecture of knowledge production highlights the propensity of knowledge societies to favor very free models of cooperative organization. It is the architecture itself of the networks that creates the conditions for the collective monitoring of the sharing process.

The decision to participate in knowledge-sharing requires that certain conditions are met. One of the most essential being that those participating in the sharing community believe in the veracity of the shared information and not feel they are "losing control". Knowledge-sharing emerges at a critical time. Knowledge in the public domain is shrinking, but the very nature of knowledge-sharing and its proven benefits should create a balance between the protection of intellectual property rights and the promotion of knowledge and information in the public domain.

Knowledge for Development

The major determinants of development have been changing over the past decades. The shift is taking place from manufacturing to services and from capital resources to knowledge resources. Increasingly, knowledge is considered to be the key to escape both poverty and marginalization.

The global economy is becoming increasingly dependent upon the ability to efficiently produce, disseminate and use knowledge. Today, the competitiveness of a country depends on its knowledge acquisition capacity. Conversely, lack of application of knowledge and technical know-how accentuates the process of marginalization and economic deprivation.

Thus emerges a major development challenge, equally if not more serious than the challenges described earlier. We refer to it as the "knowledge divide". The extent to which the knowledge gap is narrowed and to which we are able to create societies that are truly Knowledge Societies, will determine the pace of development



This gap goes beyond the rifts in mere access to I-C-Ts. It refers to the gaps that exist in what I call the four building blocks of Knowledge societies, namely: Knowledge creation, knowledge preservation, knowledge-sharing and knowledge utilization.

Knowledge Creation

The science and technology sector is more than the architect of knowledge-sharing, as we are coming to know it today; it is an essential part of knowledge creation.

Indeed, as part of the knowledge gap, we witness today a clear divide in scientific knowledge creation. This notion of a scientific divide is not determined solely by economic disparities. Differing political conceptions of the economic and social role of science also play a role. The risk of a scientific divide arises when leading policy-makers fail to regard science as a priority economic and human investment. From this standpoint, an indicator such as research and development spending as a percentage of national Gross Domestic Product (GDP) gives a fairly accurate idea of disparities.

This indicator, in a sense, describes the degree of the national research effort and the capacity of each country to invest financial and human resources in scientific and technological activities.

The fact that science and technology are a source of development and expansion, make it all the more impossible to disregard the continuing or widening of such a gap. If nothing is done to close it, the anticipated benefits of Knowledge Societies could well prove advantageous to only a small number of countries or communities.

The divide between North and South in science education, scientific research, technology, agriculture, health care and information technology is part cause and part effect of a development divide.

What we see presently is remarkable growth in a small number of emerging Asian economies, led by China, which is challenging the leadership of North America, Europe and Japan in research and development (R&D), according to the 2005 UNESCO Science Report (UNESCO Science Report, 2005. Paris: UNESCO 2005.). The report says that “the most remarkable trend is to be found in Asia, where gross expenditure on R&D has grown from a world share of 27.9% in 1997 to 31.5% in 2002”. This dynamism is largely driven by China where, in 2002, there were more researchers than in Japan, 810,000 and 646,500 respectively. There is growing recognition that south-south cooperation in knowledge creation and sharing could contribute significantly to the development of poor countries.

Knowledge Preservation

There are two aspects of knowledge preservation that are important factors to sustaining this crucial building block of knowledge societies, namely: the preservation of indigenous knowledge and the preservation of digital knowledge.

Indigenous knowledge is crucial to the lives of local communities, being a core element in their food security, health, education, and natural resources management. Avoiding the spread of forest fires, preventing the transmission of a virus or optimizing agricultural production while respecting the environment – these life-sustaining actions are, for example, informed by local knowledge. Consequently, it is essential to engage in the preservation of these kinds of knowledge. There are, however, many obstacles to overcome as most of these knowledge systems are intangible.

The exploitation of this intangible knowledge is one way to preserve it. Over the past decades, biotechnology and pharmaceutical and health care industries have developed a growing interest in the traditional knowledge held by local and indigenous communities. This



knowledge is increasingly integrated into the creation process and industrial production of medicine, chemical products and fertilizers. It is, however, important that knowledge is not only preserved but also protected. Very often, traditional and indigenous knowledge is not sufficiently acknowledged and protected by conventional intellectual property legislation and owners of indigenous knowledge receive nothing from the economic gain foreign companies make with this local knowledge.

With the advent of ICTS new possibilities to preserve information have arisen. Although digital copies cannot replace original paper documents, digitization does provide an opportunity to make information available for wider use without damaging the original masters.

Knowledge Diffusion

While the creation of Gutenberg's printing press in 1455 marked an important development in the advancement of knowledge dissemination, rapid developments throughout the last century have led to breathtaking possibilities of providing information to an ever larger public. Radio, television, and above all the fast-growing use of the World Wide Web has revolutionized the way information is disseminated. While it took radio 38 years to reach an audience of 50 million people, television achieved this in 13 years and the Internet in only 4 years. It is evident that we live in a world in which knowledge moves fast and it is important to ensure that knowledge does not pass by a large part of the world's inhabitants but that the knowledge revolution truly is a rising tide that lifts all boats.

Education and Training

The dissemination of knowledge and its inherent potentials for development very much depend on educational structures. Various studies (See, e.g., Education for all: The quality imperative; EFA Global Monitoring Report, 2005. Paris: UNESCO, 2004) converge in saying that the quality of human resources is directly related to individual earnings, productivity, and economic growth. A more educated society may translate into higher rates of innovation, higher overall productivity, and faster introduction of technology. A good education enables individuals to make informed choices on matters important to their health, nutrition, and welfare. Education is the foundation for access to the benefits of the information revolution that is opening up new views on the world.

While recognizing the important role of education in development and the emerging knowledge societies, it is evident that the world faces major educational challenges.

First and foremost is access to education. Today, as many as 880 million people are illiterate. The dramatic figure of only 668 millions people enrolled in primary schools shows that the right to education, included in the *Human Rights Declaration* <<http://www.un.org/Overview/rights.html>>, is far from being fulfilled. School enrolment will have to increase by up to 10% in many countries in order to meet the goal of Education for All.

There needs to be increased public investment to provide access to quality education for all. For now, governments are by far the largest funding bodies in education. The public expenditure on education varies between 2-6% of the gross national product in most countries. In spite of commitment, many governments will not be able to invest much more as there are other areas such as health and the environment which are also in need of major investment. Conflict is another drain on treasuries, making peace a key factor in providing opportunities not only for development but also for education. It is essential that governments shift their priorities.



The recent revolution in ICTs provides new opportunities for learning and has produced a variety of ICT-based models of learning. The new technologies can improve educational quality; they can increase access to basic learning for everyone and have the capacity to reach disadvantaged populations. ICTs can furthermore improve educational management; it provides opportunities to establish a stable lifelong learning system and enhances diverse and collective learning processes. Through ICTs a shift in the learning process could take place from teaching to self-directed learning, from a one-time event to lifelong learning.

It appears that also the Internet and Web technologies offer a remarkable medium for a new learning framework that is destined to dominate education in the twenty-first century. Learning has generally been accomplished through a classical model involving direct instruction. The classical learning model is restricted by limitations of both time and physical space.

The Web, however, is a dynamic, world-wide forum in which to teach courses. Course materials can be easily updated. Course text, examples and exercises can be interactive with the results of inputs appearing instantaneously and hyperlinks to other web-sites reinforcing a student's interest and thirst for knowledge. The Web-based learning model is essentially free from limitations of space and time while it reaches students around the world with great ease, given technical considerations.

Good Governance and Development

All countries, especially the poorest, need to implement policies that encourage innovation, access, and the development of advanced skills to nurture creativity in a highly competitive, innovation-driven environment. For developing countries it means putting into action reforms that emphasize openness to new ideas, new products and new investment, especially in ICTs with the overall goal of understanding and adapting global technologies for local needs. In those countries new legal and market arrangements need to overcome government or private monopolies in telecommunications to foster competition and further incentives for innovation and investment in research and development. But these changes are not enough if not accompanied by expanding human skills. Technological change dramatically raises the premium every country should place on investing in the education and training of its people. Innovative educational systems such as open and distance learning could help poor countries enhance access to quality education to larger segments of their population.

Poverty and information gaps can be reduced in developing countries, but this means concrete measures toward guaranteeing rule of law, accountability, participation, transparency, and enjoyment of human and civil rights. Given the particular context of developing countries, good governance mechanisms must include poverty reduction indicators on corruption, gender equality, marginalized groups, access to education and ICTs, and food security. Moreover, good governance policies must be aimed at enhancing indigenous capacity for development, creating stable socioeconomic foundations for long term, sustained and sustainable endogenous development. Development of free, independent and pluralistic media can contribute significantly to good governance.

Foreign Aid

Foreign aid is one of the original tools for the promotion of development, but it is not without its critics, especially in the area of sustainable development. While the role of Foreign Aid remains of crucial importance, especially in cases of natural or human disasters and immediate relief, long-term foreign assistance needs to be evaluated against a history of failed interventions that overwhelm the instances of positive outcomes.



In the construction of viable Knowledge Societies, foreign aid needs to emancipate from the classical terms of aid conditionality that tend to focus on agendas that are of interest to donors rather than to recipients. These might include adopting reforms aiming toward opening the national markets to foreign competition, trade liberalization, and privatization of national industries, which can undermine a sense of well-being if not adapted to the national context.

There needs to be a shift from “conditionality” to “selectivity”, rewarding countries that have performed well in using funds providing them with strong incentives. Development policies and programs funded by foreign aid – from bilateral agreements or through international financial institutions – to be successful have to be owned by the country and adapted to its situation, needs and priorities (Stiglitz, J. (2002), *Globalization and its Discontents*, pp.49–50). As stated by President Benjamin Mkapa of Tanzania: “Development cannot be imposed, it can only be facilitated”. Indeed country ownership has become a basic principle of the Millennium Development Goals (MDGs). Best practices in foreign aid indicate that donors must be responsive to partner countries’ priorities for aid financed projects. Donors must ensure that aid complements and strengthens a country’s own strategy rather than undermining it by parallel donor-run administration.

Within the UN system, joint development efforts in a given country are coordinated among different agencies, funds and programmes and negotiated with the government – what is commonly referred to as the drive to “Deliver as One”. These joint programmes vigorously stress the principle of government ownership and leadership as well as the preponderance of national priorities and objectives and a strong focus on strengthening national capacities.

Another important aspect of aid for development in the knowledge economy and critical to enabling poor countries to share knowledge is the international intellectual property rights regime. Bilateral or multilateral free trade agreements including provisions on intellectual property rights protection must also include exceptions that enable certain uses of protected knowledge. These might include the flexible use of scientific research by universities and other educational institutions, libraries, individual users with non-commercial purposes, which is often referred to as “fair use”. In any case, open access to knowledge is of utmost importance in the knowledge-based global economy and must be a public policy priority and treated as an element of foreign aid and international cooperation.

The TRIPs agreement provides ‘flexibilities’ in the issuance of licenses, allowing, for instance, the production of generic medicines, which can sell for a fraction of the cost of brand name medicines. Countries must make full use of these flexibilities, according to their needs, which can make a big difference in the well-being of their citizens. At the global level, a limitation of patents and trademarks for products declared to be in the public interest (like vaccines) and secure access to technologies of over-riding national importance must be assured, especially for least developed countries.

Foreign Direct Investment

Openness to foreign direct investment (FDI) goes hand in hand with an open trading regime, and it provides benefits for the acquisition of knowledge. Because multinational investors are global leaders in innovation, their activities in developing countries can be transformative. Valuable knowledge spillovers can occur through their training of local staff and through contacts with domestic suppliers and subcontractors.

Technological catch-up for developing countries requires access to the international knowledge pool and the ability to learn, master and adapt foreign technologies and thereby benefit from international technology diffusion. In developing countries the arrival of transnational corporations leads to technological upgrading of domestic firms through tech-



nological spillovers via imitation, competition, labor mobility and exports. These spillover effects have the potential to increase the productivity of local firms.

South Korea offers an outstanding example of technology catch-up due to foreign investment and good public policy. The Government liberalized foreign direct investment and foreign licensing, put more pressure on domestic firms to increase competitiveness through gradual trade liberalization and revised intellectual property laws to pre-empt imitative product development. The Government also established an effective technology transfer centre and technical information centers, which became increasingly popular with users. Measures to promote the development of capital goods producers were also taken (quantitative restrictions, import licensing and domestic content requirements) and this induced local producers to develop technological capabilities to meet the increasing demand for capital goods. Technology extension services were also important for the diffusion of best practices, particularly to small and medium-sized enterprises (UNCTAD, Least Developed Countries Report, 2007).

Migration and Knowledge Transfer

International markets and demand for information and communications technology personnel make top scientists and other professionals globally mobile. Although a developing country may have invested heavily in creating an educated labor force, many highly educated people migrate abroad to seek working opportunities that correspond to their level of training (UNDP (2001) The Human Development Report: *Making new technologies work for human development* states that “100,000 Indian professionals a year are expected to take visas issued by the United States – an estimated resource loss for India of \$2 billion.”). We can look at this migration as a brain drain for developing countries but also as a brain gain: it generates a diaspora that can provide valuable networks of finance, business contacts and skill transfer for the home country.

Conclusions: Changing Ways of Thinking Development

To face the challenges of the Knowledge Economy means first and foremost changing our classic perspective of Economic Development from a less empiric and dogmatic process to education in the broad and comprehensive sense that covers knowledge, institutions, and culture.

This important mindset shift becomes crucial when we analyse how to close the development gap between countries. The challenge then turns to bridging the knowledge divide between the more developed and the less developed countries. To do this, local tacit knowledge plays a fundamental role.

The idea of tacit knowledge is particularly important. It is based on the fact that knowledge is formed gradually, over time, through repetition, and recurrent interaction. It is situated in systems of ongoing practices and routines, and is a product of social, cultural, economic and political conditions. While codified knowledge is partly transferable and universal, tacit knowledge is embedded in social and cultural practices. Understanding the subtleties of tacit and local knowledge as well as the dynamics of knowledge sharing is of utmost importance. Knowledge is a social learning process, which is situated in social institutions; hence it is socially and culturally embedded, and context-specific.

The established theories of technology transfer, with appropriate policies to promote technological progress, need to include a specific understanding of local tacit knowledge, and aim at stimulating creativity, entrepreneurship, and innovation. Such shift in development can be maximized through openness to trade and foreign investment, coupled with investment in education. Ultimately openness in a knowledge economy requires the revisit of



the appropriate competition laws and intellectual property regimes, designed to stimulate the key engines driving growth, knowledge and creativity.

Proposals for Increasing Information Access

Keith E. Maskus

Associate Dean for Social Science, University of Colorado at Boulder

These comments are based on the papers I wrote that are in the virtual library for this session, especially "Information as a Global Public Good".

The summary statement for this session is correct in identifying a lack of technical skills and human capital as a basic impediment to information flows. Even if knowledge and technical information are widely available on global markets or within public sources, they are useful only to the extent they can be absorbed and implemented into local production and provision of public services. And since much of that information may be available electronically, a focus on both education and computer skills seems appropriate for developing countries. However, an education-based solution is both indirect and vague; everyone discusses its importance but the linkages to increase information acquisition may be lengthy and poorly understood. Would access be better improved through private or public channels, or a mix?

My first observation is that, to gain from information access, many developing countries need to invest not only in skills but also in transparent investment and business climates, efficient infrastructure, labor and capital markets, and appropriate regulatory mechanisms. In the last category I would include transparent and enforced intellectual property regimes, which could be take advantage of well understood limitations on excessive proprietary rights. The claim that TRIPS-level IPRs are inappropriate and damaging to welfare are at least debatable and at best misleading. Evidence exists that transparent and enforceable patent rights can significantly improve prospects for market-mediated technology transfer through trade, FDI and licensing. That is because IPRs improve mechanisms for establishing contracts and dealing with imperfections in markets for trading technologies. However, IPRs alone are hardly sufficient, countries need to consider investments in technology support and acquisition policies as well.

These issues become more complex in critical areas of public goods provision, particularly as regards public health, food security and environmental protection. In these areas a system of private exclusive rights may well damage development prospects and a mix of private incentives, limitations on those incentives, and public provision will work better.

Of particular importance are issues of provision when the good or service bears characteristics of a global public good. Knowledge and information do have such characteristics, in that they are non-rival, but are partially excludable. Complex policy calculations are required to understand the appropriate mix of international public and private incentives for effective (if not optimal or efficient) provision. A set of proposals for this purpose that I have advanced elsewhere include:

- Establish an additional fee on international trademark and patent applications for the purpose of financial and technical assistance to improve enforcement of IPRs and technology policies in developing countries.
- Negotiate significant expansion of temporary visa allocations, through the GATS system, for migration of technical and managerial personnel from developing countries.
- Expand the role of the World Health Organization as a location for globally provided assistance funds to encourage development of new drugs for diseases of poor countries. It could be a clearinghouse for best practices information as regards Advanced Market



Commitments and the management of IPRs in public-private drug and vaccine development initiatives.

- Work towards establishing international pools of knowledge in key areas of global public goods (health, education, environment, food technologies) to which widespread access would be provided. Access charges should be differentiated according to development needs.
- Eventually negotiate, at the WTO, a multilateral treaty on access to basic science and technology.

Media Strategies to Enable Poor Countries to Share Knowledge

Marco Vollmar

Editor-in-chief of German/English Programs, Deutsche Welle Radio

The discussion about “how to enable poor countries to share knowledge” is one that cannot be separated from the role of media, and in particular of international media. But what are the global media strategies that can help to enable poor countries to share knowledge? From my point of view they should focus on: Information, Communication and Education. Let me explain this assumption taken the goals of Deutsche Welle as an example.

Dissemination of Information

Deutsche Welle is an innovative media enterprise that has been broadcasting for 55 years now. It provides a European perspective to audiences around the world and promotes intercultural dialogue. It offers globally accessible multimedia information in 30 languages. With a journalistic portfolio consisting of DW-RADIO, the multimedia Internet Portal DW-WORLD.DE and DW-TV, Deutsche Welle reaches more than 100 million people worldwide every week. Its multiplatform strategy ensures that the correct form of content delivery is used in each of the varying markets. For example, while it constantly works to expand its online services, it continues to offer special short-wave radio-programs in regions without modern digital technologies.

Communication

I'm convinced that the dissemination of information is only fruitful when it leads to communication and dialogue with listeners and viewers. Deutsche Welle receives well over half a million responses to its programming and online services every year. The broadcaster also strives to support global communication between Internet users and the general population. Online-Blogs, for example, are a perfect tool for promoting freedom of expression. The Deutsche Welle ‘BOBs’ (Best of Blogs) is the world's largest international blogging competition, drawing in more than 7,000 nominations per year. Judges look at blogs in 11 different languages, making the BOBs the world's only awards competition that offers a comprehensive overview of the global blogosphere.

Education and Training

I agree with Waheed Khan's statement that the dissemination of information should go hand in hand with education and training. I'm therefore proud that Deutsche Welle offers a number of educational products in addition to its classical information programs. The latest – ‘Learning By Ear’ – is a multilingual, interactive distance education program for young radio and Internet audiences in Sub-Saharan Africa. With radio dramas and infotainment programs, Deutsche Welle provides an entertaining way for adolescent listeners to



supplement their knowledge base and expand their horizons. Meanwhile, Deutsche Welle's international training institute – DW-Akademie – teaches skills to media professionals visiting Bonn and Berlin and delivers on-site training to partners in developing and transitional countries.