Capacity Building FOR MANAGEMENT OF Intellectual Property Rights

BY MART LEESTI AND TOM PENGELLY

There is a broad range of experience to share among developing countries concerning strategies and structures for the management of intellectual property rights (IPR). Based on a background paper for the Commission on Intellectual Property Rights (CIPR), this article captures the state of the art and offers guidelines for future improvements. It draws on several case studies in developing countries, available literature, and interviews with representatives from relevant international organizations, as well as developing country IPR managers. The authors are Mart Leesti, a consultant on intellectual property administration, who was the first Chief Executive Officer of the Canadian Intellectual Property Office; and Tom Pengelly, who was a Policy Analyst with CIPR, and has worked in four developing regions for the UK Department for International Development and other agencies.

DESIGNING IPR REGIMES IN POOR COUNTRIES: POINTS OF DEPARTURE

There are five fundamentals to consider in the design of intellectual property regimes in developing countries.

1. Balancing incentives for IPR holders with access for users

IPRs exist to strike a balance between the needs of society to encourage innovation and commercialization of new technologies, products, artistic and literary works, and to promote the use of those items. Empirical evidence, while inconclusive, suggests that stronger IPR regimes can generate both benefits and costs for poor countries. On the benefits side, stronger IPR regimes can lead to greater trade and inflows of foreign direct investment (FDI), as well as more transfers of technology, which in turn increases produc-

tivity performance. On the costs side, IPRs can reduce social welfare by restricting access to protected technologies and knowledge, and by raising prices for items essential to poor people's livelihoods like medicines, agricultural inputs and educational materials.

The implication of this for designing IPR policies, legislation and institutions is that poor countries require quite sophisticated technical expertise and decision-making processes in order to formulate policies and laws that carefully balance public policy objectives and stakeholder interests in the context of economic and technological development. As a recent article put it:

> *"Normally, society opposes monopolies because they create artificial scarcity and raise prices for consumers. Intellectual property, on the other hand, creates monopolies to encourage new products. The trick is to get the best possible bargain by restricting new rights to products that are valuable and cannot be obtained by other means. Careful legislators do this by imposing threshold requirements (such as novelty and creativity) that dole out rights as sparingly as possible." (Maurer et al, 2001)*

Moreover, the level of sophistication required is increasing as the realms of intellectual property protection expand following technological or political change. For example, it is not a simple task for a government minister responsible for intellectual property in an LDC to decide whether his country should, say, develop a new system for protecting its traditional knowledge or extend copyright laws to protect electronic databases.

2. Low levels of domestic intellectual property creation

A second point of departure is that poor countries can devote few resources to innovation and that they generate very low levels of (industrial) intellectual property that could be protected by the formal system of patents, trademarks etc. (Poor countries may generate other kinds of knowledge, but these are outside the formal IPR system and harder to measure.) While there are of course huge differences between the innovation capabilities and the volume of IPR applications in countries like Taiwan, South Africa and Eritrea, table 1 shows that almost 90 per cent of patents granted in 2000 in the US (the world's biggest single market) originated from the USA, Europe and Japan. Poor countries are essentially users, not producers, of innovation. As table 2 shows, their IPR regimes will essentially protect knowledge assets produced in the industrialized countries for some time to come.

3. Capturing benefits from IPRs through holistic institutional frameworks

Developing countries need more than just the minimum institutional capacities required to provide a reasonably smooth system for administration and enforce-

TABLE 1: GRANTS OF US PATENTS BY COUNTRY OF ORIGIN, 2000

Country	Total US Patents grants (Number)	Total US Patents grants (%)
USA	96,920	55.07%
Japan	32,922	18.71%
European Union	27,190	15.45%
Other Developed Countries[a]	6,695	3.80%
Taiwan	5,806	3.30%
South Korea	3,472	1.97%
Israel	836	0.48%
China	711	0.40%
Eastern Europe[b]	355	0.20%
Singapore	242	0.14%
India	131	0.07%
South Africa	124	0.07%
Brazil	113	0.06%
Mexico	100	0.06%
Other Developing Countries[c]	365	0.21%
Least Developed Countries[d]	1	0.0006%
Total All Countries	**175,983**	**100.00%**

Source: USPTO Information Products Division.

[a] Australia (859), Canada (3923), Gibraltar (1), Iceland (18), Liechtenstein (19), Monaco (15), New Zealand (136), Norway (266), Switzerland (1458).

[b] Belarus (3), Bulgaria (1), Croatia (6), Cyprus (1), Czech Republic (41), Czechoslovakia (10), Estonia (4), Hungary (38), Latvia (1), Lithuania (2), Malta (2), Poland (13), Romania (4), Russian Federation (185), Slovakia (4), Slovenia (18), U.S.S.R. (1), Ukraine (17), Yugoslavia (4).

[c] Arab Emirates (2), Argentina (63), Aruba (2), Azerbaijan (1), Bahamas (14), Bahrain (1), Bermuda (2), Bolivia (2), Cayman Islands (8), Chile (16), Colombia (11), Costa Rica (8), Cuba (3), Dominica (1), Dominican Republic (5), Egypt (8), Guatemala (2), Honduras (1), Indonesia (14), Jamaica (2), Kazakhstan (4), Kenya (3), Kuwait (8), Kyrgyz Republic (1), Lebanon (4), Malaysia (47), Morocco (2), Namibia (1), Netherlands Antilles (2), Nigeria (2), Pakistan (5), Palau (1), Panama (2), Peru (3), Philippines (12), Qatar (1), Saint Kitts and Nevis (1), Saudi Arabia (19), Sri Lanka (5), Syria (4), Thailand (30), Turkey (6), Turks and Caicos (1), Uruguay (1), Uzbekistan (2), Venezuela (32).

[d] Guinea (1). However, information from the UK Patent Office suggests this is an error and the patent application (for a seed-separating device) originated from Papua New Guinea, a developing country. If correct, this would mean that none of the 175,983 US patents granted in 2000 originated from an LDC.

ment of IPRs. Rather, they require a wider institutional framework which provides three capacities:

- (a) to regulate IPRs and ensure open, contestable markets for goods and services essential to

TABLE 2: PATENT APPLICATIONS AND GRANTS IN SELECTED LEAST DEVELOPED COUNTRIES, 1998

Country	Applications			Grants		
	Residents	Non-Residents	Total	Residents	Non-Residents	Total
Bangladesh	32	184	216	14	126	140
Gambia*	5	60267	60272	1	17	18
Lesotho*	6	67485	67491	0	36	36
Malawi*	7	67753	67760	0	80	80
Sudan*	6	67713	67719	0	64	64
Uganda*	7	67603	67610	0	66	66
Zambia*	7	86	93	1	19	20

Source: WIPO website (note: data only available for a small minority of WIPO LDC member states, hence the small sample).

* Member of the PCT (Zambia only acceded to the PCT in 2001, and this explains the low level of applications in 1998). Although the total numbers of applications in the PCT member countries shown appear very large, only a very much smaller number of these enter into the "national phase" where action is required by national offices involving the grant of a substantive patent in the country concerned.

poor people's livelihoods (through instruments such as competition policy and compulsory licensing, for example);

- (b) to support development of national innovation capabilities by maximizing access to technologies and knowledge assets protected by IPRs (through subsidized patent information services and support to upgrade technology transfer capabilities in universities, for example);
- (c) to strengthen research and education institutions and conduct public awareness campaigns.

India illustrates efforts to develop a holistic approach which includes investing substantial sums in modernizing the national IPR administration agencies, establishment of five university chairs on intellectual property in various regions of the country, and creating a National Innovation Foundation aimed at encouraging innovations to solve local problems and building a national register of innovations and outstanding traditional knowledge.

4. IPRs as private rights

A fourth point of departure is that intellectual property rights are private rights, as articulated in the preamble to the Agreement on Trade-related Intellectual Property (TRIPS) under the World Trade Organization. Thus, IPR regimes should lean heavily towards resolving disputes over intellectual

TABLE 3: THE 49 LDCS AND THEIR MEMBERSHIP OF SELECTED INTERNATIONAL IPR TREATIES

Country	WIPO	Regional agreements	Paris	Berne	Madrid	Hague	UPOV	PCT
WTO members (TRIPS by 1 January 2006)								
Angola	Yes	No	No	No	No	No	No	No
Bangladesh	Yes	No	Yes	Yes	No	No	No	No
Benin	Yes	OAPI	Yes	Yes	No	Yes	No	Yes
Burkina Faso	Yes	OAPI	Yes	Yes	No	No	No	Yes
Burundi	Yes	No	Yes	No	No	No	No	No
Central African Rep	Yes	OAPI	Yes	Yes	No	No	No	Yes
Chad	Yes	OAPI	Yes	Yes	No	No	No	Yes
Congo (DR)	Yes	OAPI	Yes	Yes	No	No	No	No
Djibouti	No	No	No	No	No	No	No	No
Gambia	Yes	ARIPO	Yes	Yes	No	No	No	Yes
Guinea	Yes	OAPI	Yes	Yes	No	No	No	Yes
Guinea-Bissau	Yes	OAPI	Yes	Yes	No	No	No	Yes
Haiti	Yes	No	Yes	Yes	No	No	No	No
Lesotho	Yes	ARIPO	Yes	Yes	Yes	No	No	Yes
Madagascar	Yes	No	Yes	Yes	No	No	No	Yes
Malawi	Yes	ARIPO	Yes	Yes	No	No	No	Yes
Maldives	No	No	No	No	No	No	No	No
Mali	Yes	OAPI	Yes	Yes	No	No	No	Yes
Mauritania	Yes	OAPI	Yes	Yes	No	No	No	Yes
Mozambique	Yes	ARIPO	Yes	No	Yes	No	No	Yes
Myanmar	Yes	No	No	No	No	No	No	No
Niger	Yes	OAPI	Yes	Yes	No	No	No	Yes
Rwanda	Yes	No	Yes	No	No	No	No	No
Senegal	Yes	OAPI	Yes	Yes	No	Yes	No	Yes
Sierra Leone	Yes	ARIPO	Yes	No	Yes	No	No	Yes
Solomon Islands	No	No	No	No	No	No	No	No
Tanzania	Yes	ARIPO	Yes	Yes	No	No	No	Yes
Togo	Yes	OAPI	Yes	Yes	No	No	No	Yes
Uganda	Yes	ARIPO	Yes	No	No	No	No	Yes
Zambia	Yes	ARIPO	Yes	No	Yes	No	No	Yes
Non-WTO members								
Afghanistan	No	No	No	No	No	No	No	No
Bhutan*	Yes	No	Yes	No	Yes	No	No	No
Cambodia*	Yes	No	Yes	No	No	No	No	No
Cape Verde*	Yes	No	No	Yes	No	No	No	No
Comoros	No	No	No	No	No	No	No	No
Equatorial Guinea	Yes	No	No	Yes	No	No	No	Yes
Eritrea	Yes	No	No	No	No	No	No	No
Ethiopia	Yes	No	No	No	No	No	No	No
Kiribati	No	No	No	No	No	No	No	No
Laos*	Yes	No	Yes	No	No	No	No	No

TABLE 3: *continued*

Country	WIPO	Regional agreements	Paris	Berne	Madrid	Hague	UPOV	PCT
Liberia	Yes	No	Yes	Yes	Yes	No	No	Yes
Nepal*	Yes	No	Yes	No	No	No	No	No
Samoa*	Yes	No	No	No	No	No	No	No
Sao Tome & Principe	Yes	No	Yes	No	No	No	No	No
Somalia	Yes	ARIPO	No	No	No	No	No	No
Sudan*	Yes	ARIPO	Yes	Yes	Yes	No	No	Yes
Tuvalu	No	No	No	No	No	No	No	No
Vanuatu*	No	No	No	No	No	No	No	No
Yemen*	Yes	No	No	No	No	No	No	No
Total memberships (all LDCs)	**41/49 (84%)**	**22/49 (45%)**	**32/49 (65%)**	**23/49 (47%)**	**7/49 (14%)**	**2/49 (4%)**	**0/49 (0%)**	**23/49 (47%)**

Source: WTO website, WIPO website

* In process of accession to WTO.

property assets between parties under civil law, and so reduce the enforcement burden on the state to the minimum. In practical terms, this means an intellectual property infrastructure which has the capacity to grant IPRs with a high presumption of validity, keep accurate and readily accessible registries and records, and correct defects in IPR titles through administrative rather than judicial means where possible. It also highlights the need for rights holders (particularly large corporations) and their collective management organizations to cooperate proactively with enforcement agencies in poor countries, which typically may be under-resourced for their total duties under the criminal system. Equally, rights holders will need access to effective legal professional services to assist them in managing their IPRs.

5. Compliance with international obligations

In common with other areas of public policy such as the environment or trade, the design of national intellectual property regimes is in part determined by international rules and standards to which the country has committed itself. There are international treaties — and they are constantly being added to — for almost every form of intellectual property rights, such as the Paris Convention (industrial property), the Berne Convention (copyright), the Patent Cooperation Treaty (patents), and so on. Over time, and partly as a consequence of their colonial history, a majority of developing countries, including even the least developed, have become members of one or more of these treaties — a gradual process, as the Paris and Berne Conventions originate from the end of the 19th century. Table 3 shows

the membership of the 49 LDCs in some of the main international treaties on intellectual property rights. At the time of writing, about 100 developing countries and 30 LDCs are party to the WTO TRIPS Agreement, while more are moving to join WTO and thus also TRIPS in due course (WTO website).

INSTITUTIONAL CHALLENGES IN DEVELOPING COUNTRIES

Two issues of particular importance have systemic impacts across the operation of all aspects of the national institutional infrastructure.

First, developing countries typically do not have sufficient intellectual property expertise in their national academic or educational institutions. Perhaps partly as a result, they have few, if any, local legal professionals specialized in intellectual property disciplines. For example, in Jamaica, not a single trained Patent Agent is practicing in the legal community. Professional education and training in intellectual property subjects is not available anywhere in the entire Caribbean region.

Second, although the situation is improving, there still tends to be low awareness in poor countries about the intellectual property regime (its operation, costs, and benefits) among key stakeholder groups, such as the business sector, the scientific community and public officials, and about intellectual property rights *per se* among the general population (e.g. that buying counterfeit music cassettes is illegal).

Policy and legislation development

Policy/lawmakers in most developing countries have a formidable forward agenda in intellectual property reform. Implementation of the TRIPS Agreement has required and will require changes in industrial property and copyright legislation, including wholesale new legislation in some instances. In addition to TRIPS, countries not already members of international treaties like Paris, Berne, Madrid, PCT, Hague, UPOV, etc., may choose to join, and this will require further legislative change.

Beyond compliance with international obligations, almost all developing countries are facing choices about adopting other intellectual property reforms, such as protection of traditional knowledge; regulation of access to national biological resources and benefits sharing under the Convention on Biological Diversity; and legislation to modernize IPR administration (e.g. creating a semi-autonomous agency). Policy/lawmakers may also have to consider wider reforms to related domestic regulations, such as science and technology policy and antitrust legislation. According to the WTO website, only about 50 developing countries and transition economies have so far adopted specific competition laws (although certain countries may deal with IPR-related restrictive business practices within existing intellectual property legislation).

To address these challenges effectively, developing countries require sophisti-

cated technical and analytical capabilities; a coordinated approach to policy-making across government; and a process that facilitates participation by different stakeholder groups in the private sector, academia and civil society. To what extent do developing countries, especially the poorest, have the institutional capacity to meet these requirements?

Responsibility for intellectual property policy in most developing countries, particularly LDCs, falls to ministries with lead responsibility for international trade and/or foreign affairs. Perhaps as a result, such countries typically do not have substantive policy documents dealing with intellectual property issues. Instead, government policy is a compound of existing legislation, membership of international treaties, and statements by government officials.

Development of legislation and regulations is generally delegated to departments or agencies responsible for IPR administration. Developing country WTO members have completed much of the legislative reforms required for implementing the TRIPS Agreement and did this within the transition period ending 1 January 2000. However, there is less information on such reforms by least developed countries, which have leeway for implementing the TRIPS agreement during a transition period ending 1 January 2006. Most countries' progress in making reforms and preparing new legislation relied considerably on technical assistance from bilateral donors like USAID and international organizations; a main source was WIPO, which helped at least 134 developing countries between 1996 and 2000 (WIPO, 2001a).

Looking to the wider reform agenda, few developing countries have so far drafted legislation to regulate access to biological resources and benefits sharing under the Convention on Biological Diversity (CBD), and even fewer have done so for protecting traditional knowledge (Peru, Guatemala and Panama, for example). While many developing countries are preparing CBD-related laws, only 13 have substantially completed legislation to date: Bolivia, Brazil, Cameroon, Columbia, Costa Rica, Ecuador, Malaysia, Mexico, Nicaragua, Peru, the Philippines, the Republic of Korea and Venezuela (personal communication, Kerry ten Kate, UK Royal Botanic Gardens, Feb. 2002).

Awareness in poor countries about the intellectual property regime still tends to be low among key stakeholders such as the business sector, the scientific community and public officials.

Some developing countries have set up interministerial committees to coordinate policy advice. Key participants

are the ministries of industry, commerce, science, environment (bio-diversity-related issues) and education or culture (for copyright and related rights). A good example of joined-up policymaking on intellectual property and public health is Kenya's Industrial Property Act 2001, with provisions on parallel importing and compulsory licensing designed to allow import of generic anti-HIV drugs. Such committees have been formed only relatively recently (e.g. for implementation of the TRIPS Agreement) and may not yet be fully effective.

An ideal participatory process for intellectual property policymaking might involve preparation of a discussion paper on a particular subject (e.g. protection of traditional knowledge) by local academics, perhaps in collaboration with international experts; its circulation to interested parties; public meetings or workshops of various stakeholders; preparation of draft legislation or a policy paper by the lead government department; and public consultation and review in legal journals or newspapers. Eventually legislation would be given to Ministers for approval and to nationally elected representatives for enactment. The new legislation might then evolve further in practice through judicial interpretation.

The evidence suggests, however, that this may be one of the weakest areas of the intellectual property system. At one end of the spectrum, India had an extensive system of broad public consultation, which included public workshops on controversial topics, such as protection of bio-diversity and traditional knowledge and use of compulsory licensing), and drew on high level expertise in the academic, business and legal communities. Even some civil society groups have intellectual property policy research and advocacy programmes, such as the CUTS Centre for International Trade, Economics & Environment in Jaipur. At the other end of the spectrum, one sub-Saharan African developing country reportedly passed new copyright legislation after a mainly technical drafting process and minimal public consultation or debate, even relative to other law reforms in the past. All available evidence is that countries devised very few mechanisms for participation of poorest groups in policymaking for intellectual property reform.

Few developing countries have legislated to regulate access to biological resources and benefits sharing under the Convention on Biological Diversity (CBD), and even fewer have done so for protecting traditional knowledge.

Finally, recent experience from developing countries that have initiated programmes to modernize intellectual property laws and institutions suggests a lack of

continuity from the development of policy and legislation to its implementation through regulations and organizational procedures in the relevant agencies.

Participation in international rule making and standard setting

International rule making and standard setting on a very broad range of intellectual property subjects takes place predominantly in WIPO and WTO. A large majority of developing countries are members or becoming members of both organisations. Of the 49 LDCs shown in table 3, 30 are members of WTO, with 9 more in the process of accession; 41 are members of WIPO. Five LDCs (Afghanistan, Comoros, Kiribati, Tuvalu and Vanuatu) are not currently members of either WTO or WIPO. For any country, effective participation requires permanent representation in Geneva, appropriately staffed expert delegations able to attend WTO/WIPO meetings, adequate technical support for policy analysis within the lead government departments, and functional mechanisms for policy coordination and discussion in the capital.

Effective permanent representation in Geneva is important for ensuring good information flows back to the capital; participation in informal consultations (like the WTO Green Room meetings) as part of the negotiating process; alliance building with like-minded countries; eligibility for Chairmanship of WTO meetings; and better access to services and assistance available from WTO and WIPO Secretariats. A recent study (Weekes et al, 2001) found that 36 developing countries, members or becoming members of WTO, have no permanent representation in Geneva, essentially because of financial constraints. Twenty LDCs are currently without permanent representation in Geneva.

In their permanent Geneva missions, WTO developing country members have an average of 3.6 staff, compared to 6.7 persons for developed country members, and the estimated minimum requirement is 4 to 5 staff (Michalopoulos, 2001). But this conceals the fact that the average staff per mission is 8+ for ASEAN countries and 5.5 staff for Latin American countries, India and Egypt. Thus the average size of the small poorer country missions is significantly below the overall developing country average of 3.6 staff.

In some developing countries, intellectual property officials may help to develop national positions on various issues and then serve on the national delegation to WIPO, WTO, or regional meetings such as ARIPO. In many poor countries, financial resources are lacking for such travel, notwithstanding the assistance available from WIPO. For example, Jamaica has only been able to send representatives from the capital to three WIPO Governing Body meetings since 1995 due to financial constraints. One sub-Saharan African government was reportedly largely unaware of the draft TRIPS Agreement until a national seminar organized by the WTO Secretariat in

1993. Even when poor countries are represented by officials from the capital in WIPO meetings, this is limited to personnel with mainly technical knowledge of IPR administration, as opposed to a knowledge of intellectual property as a tool of regulatory and economic policy, and they may lack experience in representing national interests in international fora. Even India, with considerable depth of intellectual property expertise and institutional capacity, had difficulty coordinating national policymaking with international rule making in the TRIPS negotiations of the WTO Uruguay Round (Sen, 2001).

In summary, some developing countries, including many of the poorest, are currently little more than spectators in WTO and WIPO, if they are present at all. Other developing countries, perhaps 30-35 in total, including Brazil, Egypt, India and some LDCs like Bangladesh, are reasonably competent participants at WTO and WIPO and, for various reasons, are able to influence their rule-making processes.

Administration

Part II of the TRIPS Agreement sets out minimum standards for the acquisition and maintenance of patents, trademarks, copyright and other forms of IPRs in WTO member countries (numbering 144 as of November 2002). Article 62 of the Agreement requires that national procedures permit the granting or registration of the right within a reasonable period of time. Beyond this general framework, administration of IPRs calls for institutional capacity in terms of organization and management, staffing and human resources, operating procedures, and automation models.

The administration of IPRs involves receiving applications for patents, trademarks, industrial designs, utility models, integrated circuits and plant varieties, their formal examination, granting or registration of the IPRs, publication, and processing of possible oppositions. As IPRs expire after specified periods of time, further steps are required to renew them and document the decision. While all the procedures require properly trained staff and modern automated information systems, by far the most challenging aspect is the examination of patent applications. Some patent applications run to thousands of pages of technical data, in a wide array of technology fields, and substantive examination involves both professional/technical competence and access to sophisticated international patent information computer databases. Such institutional capacity requirements are way beyond the reach of most IPR administration agencies in the developing world (though China, for example, has world class patent examination capabilities). Developing countries can and often do instead opt for a patent registration regime or join a system of regional or international cooperation.

The level of public administration required for copyright and related rights is minimal (Sherwood, 1996). Copyright

can be set when a work is created or expressed, without such formalities as examining for prior art or assessing for inventive step. Some developing countries (e.g. India and Vietnam) have adopted voluntary copyright registration systems, and a larger number of developing countries (e.g. India, Jamaica, Zimbabwe, Kenya, Tanzania, Trinidad and Tobago) have created collective management societies, which represent the rights of artists, authors and performers, and collect royalties from licensing copyrighted works held in their inventories.

While views differ on the merits of establishing collective management societies in developing countries, it would seem imperative that the full costs of establishment and operation of such agencies be borne by copyright holders, the direct beneficiaries, and not become a burden on the scarce public finances available in most poor countries.

The volume of IPR registrations in developing countries vary very widely. For example, in 1998 China handled over 82,000 patent applications and granted 4,700+, while Jamaica received 60 applications and granted 16. These big differences between countries, and even between years, arise because very few applications made under international cooperation treaties enter the national phase where substantive registration takes place; because the country is a member of a regional organization which handles IPR administration, such as ARIPO, OAPI or GCCPO; or because different national laws and regulations are more or less attractive for IPR applicants.

Developing countries have a number of common institutional formats for IPR administration. A 1996 WIPO study (Institute for Economic Research, 1996) surveyed 96 developing countries and found that over two-thirds performed administration of industrial property by a department within a ministry of industry and trade, or a ministry of justice. In 10 countries an independent government agency was responsible. Regarding copyright, a third of the countries performed this by a department in a ministry of education or culture, and by an independent copyright agency in 15 cases. Interestingly, in another third of the developing countries sampled, there was no special unit within the government with responsibility for copyright administration.

A number of developing countries (e.g. Jamaica and Tanzania) have recently established (or are establishing) a single, semi-autonomous intellectual property institution to administer industrial property and copyright. Also notable is the establishment of units for administration of plant variety protection or plant breeders' rights — for example, the Plant Breeders Registration unit in the parastatal Kenya Plant Health Inspectorate Service established in 1997.

There are good arguments for establishing a single, semi-autonomous intellectual property administration office, under a suitable government ministry. Advantages include separation of regu-

latory and administrative functions; improved customer-orientation and services; a more business-oriented approach to cost-recovery and expenditure control; and better policy coordination across different areas of intellectual property. Country evidence shows that lack of financial autonomy contributes to difficulties in staff recruitment and automation investment, and that combining IPR administration with other functions (such as companies registration and small enterprise development services) in a single agency can lead to considerable cross-subsidization of the other functions from IPR user fees and to financial handicapping of the IPR functions.

The number of staff involved in IPR administration in developing countries varies enormously — from one untrained person in the Ministry of Trade and Industry in Eritrea, to over 800 staff across three different government agencies in India. To meet minimum administrative standards required by the TRIPS Agreement, a skeleton office handling very low volumes of IPR applications, such as an LDC like Eritrea, would need perhaps 10–15 professionals and a similar number of administrative/support staff. Agencies in Jamaica, Kenya, Tanzania, and Trinidad and Tobago have 51, 97, 20 and 23 posts respectively, while Vietnam has 236 industrial property staff and 22 copyright staff. Almost all the countries reviewed reported shortages of trained professional staff. An important constraint for recruitment/retention of staff is that public service salaries are invariably well behind those in the private sector.

Automated information systems are a key requirement for efficient administration of IPRs and an important indicator of institutional capacity. IPR administration requires some specialized software, and common software packages have been specifically designed for developing countries by agencies such as the EPO. As for computer hardware, stand-alone personal computers, with CD-ROM and printer units, are adequate for small, poor developing countries and LDCs. Even in a lot of larger developing countries, standard local-area networks linked to a central database will be able to satisfy the needs. Availability of information technology and the Internet also enables easy access to a wealth of information on intellectual property policy subjects, as well as the on-line databases and libraries of organisations like WIPO, WTO and UNCTAD. Yet, 154 intellectual property offices around the world currently lack Internet connectivity (WIPO, 2001b).

Enforcement and regulation of IPRs

IPRs are valuable only if they are well enforced, which implies that the legal system is integrally related to the intellectual property system in a holistic institutional framework. A rating of intellectual property regimes and their attractiveness to investors in 18 developing countries assigned 25 points out of a possible 100 (the largest single points

category) to factors such as judicial independence, prompt injunctions, competence of judges, delays experienced in legal proceedings, and the capacity of police and customs to act in IPR cases (Sherwood, 1997).

The International Chamber of Commerce (ICC) reports very high levels of IPRs infringement in developing countries. For example, the ICC website describes Thailand as the biggest source of pirated compact discs in Asia, capable of producing up to 60 million such products per year. The largest area of the IPR infringement in most poor countries is in copyright (e.g. counterfeiting of computer software and recorded music) and trademarks. For many developing countries, particularly the poorest, the detailed minimum requirements to enforce IPRs which are set out in the TRIPS Agreement (Articles 41- 61) present considerable challenges for policing and judicial systems, civil and criminal procedures and customs authorities. Some developing countries, such as Thailand and Panama, have established specialized courts to hear IPR-related cases as a means of improving their national enforcement capacities, though such a measure is not formally required by the TRIPS Agreement. A more attractive approach for other developing countries is to establish or strengthen a commercial court, as Jamaica did in 2001, to hear IPR-related cases.

The "private" nature of IPRs suggests the importance of resolving disputes between parties out of court or under civil law. Indeed, as state enforcement is resource-intensive, there is a strong case for poor countries' legislation to emphasize enforcement through a civil rather than a criminal justice system, reducing the enforcement burden on the government. Particularly in Asian countries like Vietnam, out-of-court settlement of IPR disagreements has a long tradition and may be the preferred route. Of course, in the case of wilful piracy and counterfeiting on a large scale, state enforcement agencies would still be required to intervene. To the extent that they exist in developing countries, collective management organizations may play an important role in enforcement of IPRs, particularly for copyright infringements.

There are very high levels of IPRs infringement in developing countries, mostly in trademarks and copyright violation by counterfeiting computer software and recorded music.

There are also institutional issues for developing countries in effective regulation of IPRs, particularly regarding matters of special public interest, such as compulsory licensing of pharmaceutical IPRs and preventing and controlling

anti-competitive practice by IPR holders (e.g. by restrictive contractual licensing). These complex matters present a significant challenge for policymakers, administrators and enforcement agencies:

> *"In most developing countries, mechanisms aiming at controlling restrictive business practices or the misuse of intellectual property rights are weak or nonexistent. Similarly, developing countries are generally unprepared or unable to neutralize the impact that price increases resulting from the establishment or reinforcement of intellectual property rights may have on access to protected products, particularly by the low-income population."(Correa, 1999)*

Costs and revenues

The establishment and operation of the intellectual property infrastructure in developing countries involves a range of one-time and recurrent costs. Some may be incurred only by the IPR administration agency, while others — or some portion of them — may also be incurred by enforcement agencies (police, judiciary and customs). A good example is the costs of running dedicated anti-counterfeiting police units (e.g. Malaysia) or specialised IPR courts (e.g. Thailand).

The costs will be far higher in developing countries that operate a national IPR administration agency performing substantive patent examination compared to those countries using a registration system. Costs will also be higher for developing countries that develop patent information systems for use by local companies and universities; conduct public education campaigns; establish voluntary copyright registration schemes; and strengthen their permanent representation in Geneva to cover the intellectual property dossiers in WIPO, WTO and UNCTAD. There are very good reasons for supporting such activities in developing countries, but they are not of course required under the TRIPS Agreement.

UNCTAD (1996) reported some estimates of the institutional costs of compliance with the TRIPS Agreement in developing countries. In Chile, additional fixed costs to upgrade the intellectual property infrastructure were estimated at US$718,000, with annual recurrent costs increasing to US$837,000. In Egypt, the fixed costs were estimated at US$800,000, with additional annual training costs of around US$1 million. Bangladesh anticipates one-time costs of only US$250,000 (drafting legislation) and US$1.1 million in annual costs for judicial work, equipment and enforcement costs, exclusive of training. In 2001, the World Bank estimated that a comprehensive upgrade of the IPR regime in poor countries, including training, could require capital expenditure of US$1.5 to 2 million per country, although evidence from a 1999 survey of relevant World Bank projects suggested these costs could be far higher. India, for example, has committed around US$19 million just to modernize its Patent Office over a five-year period.

In most developing countries, IPR administration agencies charge various service fees. In some larger developing countries, such fee revenues are significant and far exceed the operating expenditures of national IPR administration agencies. In Chile, for example, fee revenues from industrial property rights administration amounted to $6 million in 1995, compared to recurrent expenditure of $1 million in the same period (UNCTAD, 1996).

The key question for the poorer developing countries is to what extent are they able to recover from rights holders the full costs of a modern intellectual property infrastructure? It seems hardly desirable that developing countries should have to take resources from overstretched health and education budgets to subsidize the administration of IPRs, where the overwhelming majority of rights owners will be from industrialized countries. Instead, as the World Bank (2002) notes, "in many poor countries, devoting more resources to the protection of tangible property rights, such as land, could benefit poor people more directly than the protection of intellectual property."

Some poorer countries risk processing very low volumes of IPRs for some time to come. Part of the answer for them obviously lies in rationalizing expenditure on IPR administration through automation and regional or international cooperation. Over time, in some countries such an approach may also help to generate higher volumes of IPR applications and grants for which fees can be charged. A second part of the answer is technical and financial assistance from donors, which is mainly available only for one-time investment costs, rather than recurrent costs.

The remaining option for developing countries is to stage their capital investment programmes (to the extent possible) and ensure that IPR service fees are set at a level where the full costs are recovered. This points to the need for rigorous financial management and accounting systems in IPR administration agencies. A number of developed and developing countries have adopted a tiered system of charges, where reduced fees could be charged to, for example, nonprofit organisations, individuals and small commercial organizations, such as those where the number of employees or level of turnover falls below specified thresholds. This seems a very sensible cost-recovery policy for poor countries to adopt, as it should provide a means of developing the national intellectual property infrastructure and delivering improved services for users, without placing additional burdens on the public finances.

Regional and international cooperation

Given the exponential growth in the volume and complexity of industrial property rights applications worldwide, regional and/or international cooperation in IPR administration, even for

developed countries, is now essential. This would help to ensure high validity of rights, reduce costs and increase efficiency in national IPR administration. For patents in particular, most countries rely to a greater or lesser extent on the work of the EPO and the patent offices of the United States and Japan, which together probably do substantive examination for around 95 per cent of all applications worldwide. The EPO has over 5,000 professional patent examiners specializing in different fields and technologies — significantly more resources for patent administration than national offices around the world

In light of the growing volume and complexity of industrial property rights applications worldwide, regional and/or international cooperation in IPR administration, even for developed countries, is now essential.

It is therefore vitally important that developing countries, particularly the poorest, design their national IPR regimes and institutions to take full advantage of the regional and international cooperation systems available, particularly for determining that patent and trademark applications meet established standards and criteria for protection. A number of alternatives for regional and international cooperation are on offer and are being used by developing countries.

The first option is membership in the Patent Cooperation Treaty (PCT) and Madrid systems. Under PCT, technical search and examination are performed by ten authorities (the EPO and the national patent offices of the United States, Japan, Australia, Austria, Spain, Sweden, Republic of Korea, China and the Russian Federation). This not only allows national patent offices to minimize search, examination and publication tasks; it also allows domestic companies and inventors to obtain high-quality, international patent protection in all PCT member countries at relatively low cost; residents of developing countries get a 75 per cent reduction in all PCT fees. At the time of writing, 115 countries were members of the PCT, with developing countries in the majority, including 23 of the 49 LDCs (WIPO website). Membership of the Madrid system produces similar advantages in trademark administration. At the time of writing, membership of the Madrid system is 70, including only 7 LDCs.

The second option is to delegate or contract out some tasks of IPR administration (essentially patent administration) to another national patent office or to EPO or WIPO. EPO offers an extension system for patents to a number of smaller countries in Eastern Europe and a similar vali-

dation system for patents to developing countries, although currently no country is using it. Under the EPO's validation system, patent applicants can designate the developing countries that opt to join as well as the EPO member countries; the initial fee for this additional designation would be retained by the EPO for its expenses, but subsequent annual renewal fees (up to 20 years) would be transmitted to the developing country concerned. Developing countries can also impose conditions on the granting of rights under the validation system, in line with their own national legislation (e.g. they could exclude patents for pharmaceuticals).

WIPO's Patent Information Services (WPIS) assist developing countries in search and examination of patent applications. From the start of the program in 1975 until July 2001, almost 15,000 search requests were processed free of charge from over 90 developing countries and 14 intergovernmental organizations and countries in transition. The searches are free to those requesting them. For search requests from ARIPO, examination is also carried out.

The third option is membership of a regional industrial property system, where these exist. There are currently four such regional industrial property organizations in the developing world:

- In Eastern Europe and Central Asia, the Eurasian Patent Office has 9 member states, including low-income countries like the Kyrgyz Republic, Tajikistan, Azerbaijan and Armenia.
- In the Arab region, the Gulf Co-operation Council Patent Office (GCCPO) includes 6 member countries (but not Yemen, the only LDC in the region).
- In Africa, there are two regional industrial property organizations: Organisation Africaine de la Propriété Intellectuelle (OAPI), with 16 member states, and African Regional Industrial Property Organisation (ARIPO), with 15. Both play a significant role in the intellectual property administration of a large number of the poorest countries in the world, and both also provide activities related to training, harmonization and patent information dissemination.

There are currently no regional industrial property administration organizations in Latin America, the Caribbean, Pacific, South Asia, or South East Asia. However, the six countries of the Andean Pact have developed common intellectual property legislation, though this is still administered individually by national governments. And there are also ongoing efforts to deepen regional cooperation in the Caribbean for collective management of copyright, and in southeast Asia for a common filing system for trademarks. A majority of the LDCs (27 of 49) are currently not members of regional intellectual property organisations, although 12 of these are within the African region, and so could potentially join OAPI or

ARIPO, and Yemen could potentially join the GCCPO.

Looking at OAPI and ARIPO in more detail, there are some important differences:

- OAPI is a regional industrial property system of mainly French-speaking countries. It issues patent rights on behalf of, and in the name of, all of its member states (there is no system of country designations). OAPI member countries do not have national industrial property administration systems and their industrial property law is the OAPI system. OAPI is essentially a registering office for IPRs, with around 76 staff (25 of whom are professionals).
- ARIPO is a regional industrial property system of mainly English-speaking countries. It allows the filing of one application for trademarks, patents or designs with effect in all designated Member States. ARIPO member states, however, still have their own national industrial property legislation and administration systems. Membership of the protocols covering the different IPRs is optional (e.g. only 5 countries are currently members of the Banjul protocol on trademarks). ARIPO has 26 staff, 8 of whom are professionals, but has a small examination capacity with 3-4 highly professional examiners.

Largely as a result of these differences, OAPI handles more IPR applications than ARIPO (especially trademarks) because there is no national filing route for its member states. Consequently, OAPI is able to return a portion of revenues to its members (7.5 per cent of its total revenues of 3.8 million euros in 1999), whilst ARIPO is still partly dependent on financial contributions from member states. Both ARIPO and OAPI, however, continue to be long-term recipients of substantial technical assistance from donor agencies, including WIPO, EPO and France's Institut National de la Propriété Industrielle (INPI). OAPI received technical assistance to a total value of 830,000 euros in 1999 alone. Each organization has undertaken significant investment and training programmes in recent years.

Given the institutional challenges and constraints facing many poor countries, the advantages of regional and international cooperation are apparent. The role of regional organizations is principally in IPR administration, which still leaves to national institutions the functions of policymaking, participation in international rule-making, and enforcement of IPRs. Regional organizations, therefore, complement rather than wholly replace national intellectual property infrastructures.

TECHNICAL COOPERATION PROGRAMMES 1996-2001

Under Article 67 of the TRIPS Agreement, developed country WTO Members are formally obligated to provide techni-

cal and financial assistance to developing countries and to facilitate implementation of the TRIPS Agreement. Given the very low levels of IPR creation in poor countries, this assistance is unusual in that a significant share of the resultant direct benefits can be expected to go to foreign IPR holders who are mainly from the developed countries.

In very poor countries, especially LDCs, priority is rightly given to increasing ODA expenditures on basic health and education services for the poorest in order to meet the international development target of halving world poverty by 2015. Therefore, it is appropriate that the financing required for technical assistance aimed at modernizing IPR infrastructure in these countries should normally be raised from service user fees paid by IPR holders. In fact, organizations like WIPO, EPO and the patent offices of some developed countries already adopt this approach to a large extent. For example, out of WIPO total income of 530 million Swiss francs, about 85 per cent is from fee revenues. Additional financing for assistance to LDCs could be relatively easily and equitably generated from fees; if PCT fees alone had remained at the 1976-1977 level, instead of being substantially reduced, that fee income would have been about 60 per cent higher for 2002-2003 (WIPO, 2001b).

Major donors and types of activities

IPR-related technical assistance to developing countries is provided directly or by multilateral agency contributions by most developed countries, including the European Union and its member states, the United States, Japan, Australia, Canada, New Zealand, Norway, and Switzerland. The principal international organizations involved are WIPO, EPO, the World Bank, UNDP and UNCTAD. In staffing, the most significant donor organization are WIPO, with around 60 full-time professional staff working in its Development Cooperation division (including the WIPO Worldwide Academy), and EPO, with about 40 staff in its Directorate for International Technical Cooperation. UNDP and the World Bank, in contrast, have provided mainly financial resources, either directly to developing countries or via contributions to WIPO trust funds. UNCTAD advises some developing countries in accession to WTO on implementation of the TRIPS Agreement and undertakes research on intellectual prop-

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erty and development issues. For example, UNCTAD, in collaboration with the International Centre for Trade and Sustainable Development, is currently providing developing countries with policy guidance on implementation and upcoming reviews of the TRIPS Agreement, through a project financed by the UK Department for International Development. A number of other smaller organisations also provide technical assistance to developing countries or support research on IPR and development related issues.

Donor assistance falls into five broad categories: (a) general and specialized training, e.g. from the WIPO Worldwide Academy; (b) advice and assistance in preparing draft laws; (c) support for modernizing IPR administration offices (including automation) and collective management systems; (d) access to patent information services, including search and examination; (e) exchange of information among lawmakers and judges; and (f) promoting local innovation and creativity (Lehman, 2000b).

More recently, assistance for automation of IPR administration in developing countries and regional intellectual property organisations has become significant. The WIPO Net programme, with projected costs of over 97 million Swiss francs between 2000 and 2005, will provide on-line services such as secure electronic mail, secure exchange of intellectual property data, hosting of national IPR agency websites, and Internet connectivity to 154 intellectual property offices around the world (WIPO, 2001b).

World Bank assistance (e.g. in Brazil, Indonesia, Mexico) has sometimes approached upgrading of national IPR systems as one component of broader policy reform and capacity building aimed at stimulating R&D spending and improving industrial productivity and competitiveness. Such programmes are potential models for better integrating intellectual property reforms and related-capacity building within the broader national development plans and assistance strategies of poor countries.

Scale and coverage of technical assistance programmes

Despite scarce data on technical assistance expenditures across the developing world, some broad indications can be given of the scale and coverage of such programmes undertaken by some of the principal international organizations in recent years. For example, between 1996-2001, WIPO's budgeted expenditure on development cooperation is estimated at 174 million Swiss francs, rising from 45 million in 1996-1997 to 71 million in 2000-2001 (whether including trust funds or not). For the 2002-2003 biennium, that budget is approximately 100 million Swiss francs (including about 20 million from trust funds, but excluding expenditure on WIPO Net). Around 40 per cent of these expenditures are for staff.

For 1990 to 2005, the European Commission has committed over 30 million euros to programmes implemented by the

EPO across the developing world. About 4.5 million euros of this was for programmes in China, and 9.5 million euros was allocated to Eastern European countries. In addition, from its own resources, EPO committed almost 19 million euros between 1996 and 2001, excluding the cost of EPO staff.

Finally, the IPR components of three World Bank-funded programmes undertaken in the 1990s involved US$4 million in Brazil out of a US$160 million loan for a science and technology programme; US$14.7 million in Indonesia within an Infrastructure Development Project; and US$32.1 million in Mexico for improving IPR administration, automation and enforcement.

Effectiveness and impact

Clearly there have been considerable achievements in the last 5–10 years in modernizing intellectual property infrastructure and developing associated human resources in the developing world. Large numbers of people, from a variety of professional backgrounds, have received general and specialized training in intellectual property subjects. Equally, many developing countries have overhauled their intellectual property legislation, taken advantage of international cooperation mechanisms like the PCT and Madrid systems, and increasingly automated IPR administration to improve efficiency and service levels and process more applications for all forms of IPR.

Latin America and Eastern Europe have perhaps achieved the biggest impact, but institutional capacities have significantly developed in countries like China, Morocco, Vietnam, Trinidad, and India, as well as in the regional organizations. At the same time, many low-income countries, and particularly LDCs, still face considerable challenges in developing their intellectual property infrastructure. Also, important issues for the financing, design and delivery of technical cooperation to these countries need be addressed.

First, more finance needs to be brought on stream, raised primarily from IPR holders, for necessary institutional reforms and capacity building in poor countries, as many struggle to implement the TRIPS Agreement over the next few years. This will take time, and some LDCs may well need the extended transition period available to them under the TRIPS Agreement to modernize their IPR systems in a financially sustainable manner. As the World Bank recently said:

> *"While some assistance is on offer now, it is insufficient for the major job of reforming IPR administration. The current approach, whereby grants are made to such organizations as WIPO and UNCTAD for undertaking specific projects, is inadequate given various bureaucratic constraints." (World Bank, 2002)*

Second, design, delivery and coordination of intellectual property-related technical assistance to developing countries can also be improved. In Vietnam,

for example, 8 different donor agencies provided IPR-related assistance between 1996 and 2001). Countries receiving such assistance need better internal coordination to avoid duplication of efforts or, at worst, conflicting advice. More positively, there is much *ad hoc* cooperation between donors and some good instances of more formalized collaboration (e.g. the WIPO-WTO cooperation agreement). Donors should build on these successes.

Finally, to address these new challenges, donors and developing countries need to work together better. They should make better use of existing institutional mechanisms at national, regional and international levels for understanding the IP capacity-building needs of poor countries, sharing project information, and collaborating on sector reviews as a part of continuous elaboration of best practice. The donor community as a whole needs to place more emphasis on monitoring and evaluating the impact and results of IPR-related technical cooperation.

RECOMMENDATIONS

The following 14 recommendations address the issues and problems identified above:

1. Developing countries should establish a single institution for IPR administration, either as a semi-autonomous agency or government department operating on a trading account basis, under the supervision of a suitable government ministry. The institution should also provide policy and legal advice to the government on all IP matters, in conjunction with other concerned ministries and agencies; liaison with enforcement agencies and competition; expert representation in international organizations and rule-making; and coordination of IPR public awareness and consultation programmes.

2. Developing countries should ensure that their legislation and procedures emphasize, to the maximum possible extent, enforcement of IPRs through administrative action and through the civil rather than criminal justice system. Rights-holder organizations should be responsible for enforcement of copyright infringement, increase cooperation with the enforcement agencies, and agree with national governments on appropriate cost-recovery mechanisms for any large-scale anti-counterfeiting operations and public awareness campaigns by government agencies.

3. Developing countries should aim to recover the full costs of upgrading and maintaining the national intellectual property infrastructure through national IPR registration and administration charges. A tiered system of fees should be employed. IPR administration agencies should generally only offset one-time and recurrent expenditures with revenues from such charges, but a fixed percentage of revenue income should be returned to the government's consolidated fund each year as a contribution

towards IPR enforcement costs.

4. Developing countries should seek maximum possible benefits in cost reduction and administrative efficiency from existing regional and international cooperation mechanisms such as the PCT and Madrid systems. LDCs and small developing countries in particular should adopt a patent registration regime and make use of verification systems offered by international search and examination authorities such as the EPO. Countries in the African region, particularly the LDCs, should seriously consider becoming full member states of ARIPO or OAPI.

5. Like-minded countries and donors should redouble their support for high-level dialogue on new regional and international cooperation initiatives in IPR administration, training and statistical data collection involving developing countries.

6. Developing countries should encourage policy research and analysis on IP subjects in the national interest (e.g. protection of plant varieties; traditional knowledge and folklore; technology transfer, etc.) within academic organizations, policy think-tanks and other stakeholder organizations in civil society. To assist these efforts, a Preparatory Group of donors and developing countries should be formed to examine the feasibility of establishing a Foundation for Intellectual Property and Development Research, either as a new entity or under an existing nongovernmental organization based in Geneva.

7. Technical and financial assistance to IPR institutions in low-income countries should be through multi-year, broad-based programmes. It should support one-time expenditure, setting financial sustainability of the institution as a key objective from the outset.

8. To meet the special needs of LDCs, WIPO, EPO and developed countries should plan to commit US$100 million in technical and financial assistance specifically to LDCs over the next 5 years, raised though income from IPR service user-fees and fully incorporated within the Integrated Framework for Trade-related Technical Assistance to LDCs.

9. WIPO and EPO should be invited to join the Integrated Framework alongside the World Bank, UNDP, UNCTAD, WTO, and ITC. Developed countries should consider increasing the contribution of their national IPR offices. EPO, WIPO and developed country IPR offices should each contribute US$1.5 million to the Integrated Framework Trust Fund to enable consideration of IPR-related capacity building needs in those pilot country diagnostic studies.

10. To streamline donor coordination, UNDP, the World Bank and UNCTAD should cooperate with EPO, WIPO and developed country agencies in implementing intellectual-property related programmes under the Integrated Framework. To facilitate effective management between the agencies and national governments on the ground in LDCs, a portion of the WIPO and EPO

contributions to the Integrated Framework Trust Fund should be used to fund the provision of up to 6 Field Managers, based in selected UNDP or World Bank offices in Africa (4), Asia (1) and the Pacific (1).

11. WIPO should make funds available to cover the travel, accommodation and subsistence expenses of two representatives from all LDCs to participate in WTO TRIPS Council meetings and WIPO meetings. WIPO should contribute technical and financial aid to initiatives for developing countries without permanent representation in Geneva (e.g. AITEC).

12. To improve monitoring of technical cooperation under Article 67 of the TRIPS Agreement, developed countries and the relevant international organisations should include summary financial information and evaluation results in their annual submissions to the WTO TRIPS council.

13. WIPO should strengthen the monitoring and evaluation of its development cooperation programmes, including a rolling programme of external impact-evaluations, and consider ways of improving the strategic oversight exercised by WIPO's Permanent Committee on Development Cooperation.

14. The OECD Development Assistance Committee should develop Guidelines for Modernizing Intellectual Property Systems for Development, based on case studies on developing countries and regions.

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