1. Introduction

BAMBOO AS A PLANT

Bamboo belongs to the *Gramineae* family and has about 90 genera with over 1 200 species. Bamboo flowers rarely and in irregular cycles, which are not yet clearly understood. Thus taxonomists do not always agree on the identification of bamboo species and genera, but modern genetic analysis may shed new light on bamboo taxonomy.

Bamboo is naturally distributed in the tropical and subtropical belt between approximately 46° north and 47° south latitude, and is commonly found in Africa, Asia and Central and South America. Some species may also grow successfully in mild temperate zones in Europe and North America. Bamboo is an extremely diverse plant, which easily adapts to different climatic and soil conditions. Dwarf bamboo species grow to only a few centimeters (cm), while medium-sized bamboo species may reach a few metres (m) and giant bamboo species grow to about 30 m, with a diameter of up to 30 cm. Bamboo stems are generally hard and vigorous, and the plant can survive and recover after severe calamities, catastrophes and damage. Young bamboo shoots were the first sign of new plant life after the nuclear bombing of Hiroshima and Nagasaki.

Bamboo shoots and culms grow from the dense root rhizome system. There are two main categories of rhizomes: monopodial and sympodial. Monopodial rhizomes grow horizontally, often at a surprising rate, and thus their nickname of 'runners'. The rhizome buds develop either upward, generating a culm, or horizontally, with a new tract of the rhizomal net. Monopodial bamboos generate an open clump with culms distant from each other and can be invasive. They are usually found in temperate regions and include the genera *Phyllostachys* and *Pleioblastus*. Sympodial rhizomes are short and thick, and the culms above ground are close together in a compact clump, which expands evenly around its circumference. Their natural habitat is tropical regions and they are not invasive. The main genus is *Bambusa*.

BAMBOO AS A RESOURCE

Bamboo has received increasing attention over the last two decades for its economic and environmental values (Box 1). In Africa, Asia and Latin America, it is closely associated with indigenous culture and knowledge and is widely used for housing, forestry, agroforestry, agricultural activities and utensils. In countries undergoing economic development, traditional bamboo culture gradually disappears. However, industrial development of bamboo is offering a new opportunity to younger generations to retain and continue developing cultural traditions related to the cultivation, harvesting and use of bamboo.

The physical and environmental properties of bamboo make it an exceptional economic resource for a wide range of uses and for poverty reduction. It grows quickly and can be harvested annually without depletion and deterioration of the soil. Bamboo can grow on marginal land, not suitable for agriculture or forestry, or as an agroforestry crop. It has a relatively light weight, because the culms are hollow, and unlike wood can be easily harvested and transported without specialized equipment or vehicles. It splits easily for weaving and is thus easy to handle also for women. Bamboo is often cultivated outside the forest on farms, where it is more easily managed. Processing normally does not require highly skilled labour or special qualifications and can be started by rural poor communities at a minimal cost. For the same reason, it could offer income-earning opportunities to handicapped people.

Bamboo use and trade have been growing rapidly in recent years. Bamboo is becoming popular as an excellent substitute for wood in producing pulp, paper, board and charcoal. It is widely used in construction, either in its natural form or as a reconstituted material (laminated boards and panels). In addition, bamboo shoots have become a popular vegetable, with Asian cuisine spreading quickly around the globe.

BOX 1

INBAR and FAO activities related to bamboo

Recognition of the socio-economic benefits of bamboo and rattan led to the establishment in 1997 of the International Network for Bamboo and Rattan (INBAR), with the mission of improving the well-being of producers and users within the context of sustainable bamboo and rattan development. INBAR is an international organization, registered with the United Nations, and has its headquarters in Beijing, China. It currently has over 30 member countries, five regional offices and over 400 affiliates around the globe. The network connects governments, the private sector, non-profit organizations and individuals in over 50 countries. The recent work in bamboo concentrates on the Millennium Development Goals and includes the establishing of an International Bamboo and Rattan Trade Database, new standards and codes, production-to-consumption and policy studies and field projects in Africa, Asia and Latin America.

Bamboo is an integral part of forestry and a major non-wood forest product (NWFP). FAO recognizes the increasing role of bamboo in forestry and sustainable economic development, and regularly reports new information on bamboo and rattan in *NWFP-Digest-L*, its NWFP electronic digest, and in its biannual newsletter, *non-wood-news*. Over the years, articles and news items have presented bamboo from a country perspective or as a product, emphasizing its great versatility. Past issues of both *non-wood news* and the digest can be found on FAO's NWFP home page at www.fao.org/forestry/site/nwfp/en, together with more information on NWFPs in general.

In the 1990s, two large FAO/UNDP regional projects supported bamboo-related work in Asia: the Forestry Research Support Programme for Asia and the Pacific (FORSPA) and the Improved Productivity of Man-Made Forests through Application of Technological Advances in Tree Breeding and Propagation (FORTIP) project.

In Latin America, in 2004, FAO supported a Technical Cooperation Project in Colombia on industrial processing of bamboo (*Guadua angustifolia)*. The objectives of the project were to support intensive harvesting of *Guadua* and to improve the production chain through feasibility studies and establishment of an industrial processing plant for bamboo, with the participation of small-scale farmers.

FAO and INBAR have organized joint project activities and events on bamboo, such as a workshop on bamboo trade (2003), joint side events during International Union of Forest Research Organizations congresses (2000, 2005) and the World Forest Congress in Quebec (2003), in addition to the present study and a study on the role of bamboo in climate change, carbon sequestration and poverty alleviation under the Clean Development Mechanism of the Kyoto Protocol (to be published in 2007).

PREVIOUS STUDIES ON BAMBOO RESOURCES

A review of bamboo resource statistics shows that the information available is scarce, fragmented and contradictory and cannot be compared within or between regions. Previous studies have focused on three main areas: bamboo forest extent, utilization and trade, and species taxonomy. Taxonomic studies have received the most attention, whereas the first two areas, particularly bamboo extent, were rarely approached systematically and the results are mostly based on rough expert estimates. This can be attributed to the nature of bamboo, which often grows intermixed with other species as forest understorey or outside forests on farmland. Only a few countries, which are the most advanced in bamboo processing, include bamboo in their periodic national forest inventories. The remaining countries may rely on remote sensing (and the mentioned expert estimates). Bamboo products are also difficult to track and introduce into national statistics because they are often intermixed with other, usually wooden, commodities when traded, or they are traded locally without entering official statistics.

Table 1 presents findings from some previous studies. A few regional reports have attempted to summarize available bamboo resources data. They were used in the current study mainly for verification and validation. FAO's Global Forest Resources Assessments in 1980 and 1985 (FAO, 1981a, b, c and 1988) included some data on the extent of bamboo forests in Asia and Africa. Unfortunately, no information was available on the methodology used in the data collection and processing. The reports reflect a time in which bamboo industries were just emerging and interest in bamboo as a resource was still quite low. These reports essentially underestimated bamboo resources, as the present study will show.

TABLE 1

Extent of bamboo forest area as reported by previous inventories *(1 000 ha)*

Country	FRA 1980	FRA 1985	Kigomo 1988	FRA 2000
Bangladesh			213	23
Cambodia	380	380		34
China			3 300	4 211
India	1 440	1 420	9 570	
Japan			125	
Lao People's Democratic Republic	600	600		1 532
Malaysia			20	
Myanmar	632	617		3 251
Nepal	1	1		
Philippines			8	
Republic of Korea				8
Thailand	900	865	1 020	261
Viet Nam	1 200	1 200	1 300	813
Subtotal Asia	**5 153**	**5 083**	**15 556**	**10 132**
Congo	100	100	102	
Ethiopia	800	800		167
Gambia				
Kenya	165	150	156	
Rwanda	19	17		
Uganda	15	15		
Other African countries			1 500	
Subtotal Africa	**1 099**	**1 082**	**1 758**	**167**
Brazil (state of Acre)			94	
Belize				12
Jamaica				3
Subtotal Central and South America			**94**	**15**
Total	**6 252**	**6 165**	**17 408**	**10 313**

In the late 1980s, the Kenya Forest Research Institute attempted to sum up some regional data on bamboo forest cover and species distribution (Kigomo, 1988). The author reported that "about 80 percent of bamboo area is distributed within the southern tropical region of Asia. Africa and South America are poorly populated with bamboo". Madagascar was recognized as the richest country in Africa in terms of biodiversity of bamboo species.

In the *Global Forest Resources Assessment 2000* – FRA 2000 (FAO, 2001a), although bamboo data were not requested or specified, eleven countries – eight from Asia, one from Africa and two from Central and South America – provided data on the extent of their bamboo forests. However, inconsistency in the countries' methodologies for assessment and reporting affected data quality. Interestingly, India, which has the largest area of bamboo resources in the world, did not present data on their extent. On the other hand, Myanmar seems to have overestimated its bamboo area.

Bamboo resources were addressed in several FAO publications on NWFPs (FAO 1995, 2001c, 2002). The publications include some statistics on bamboo removal and utilization, but regard the data as 'tip of the iceberg' (FAO, 2002).

Pabuayon and Espanto (1997) support the statements made by FAO. Their report reviewed China, India, Indonesia, Nepal and the Philippines and focused primarily on markets and trade rather than resources. Despite information gaps and inconsistencies, the most reliable information comes still from Asia, where bamboo is treated as an important economic asset.

Londoño (2001) provides the most comprehensive collection of data on bamboo resources in Latin America. She presents valuable information and references from several countries, and her report was used in the current study for data validation.

Two joint studies, carried out by the United Nations Environment Programme (UNEP), its World Conservation Monitoring Centre (UNEP-WCMC) and INBAR, shed some additional light on the issue (Bystriakova *et al.*, 2003, 2004). The studies quantified the likely range of various bamboo species. Analysing the loss of species and their productive area, the authors argued that the survival of about half of all bamboo species may be threatened.

INBAR has also developed a number of studies of production-to-consumption systems to identify constraints and opportunities for the development of bamboo supply chains. Although the studies vary in size and quality, they offer a valuable data verification tool, which takes into account social, economic, environmental and policy aspects.

The available literature on bamboo lacks reliable quantitative data, especially at the broad regional and global scale. Reports from local projects are not comparable, owing to the use of different approaches and methodologies. The present study is the first attempt to estimate global bamboo resources and to launch their regular and systematic assessment and monitoring. It also attempts to develop a common methodology for data collection, reporting, processing and analysis.

APPLICATION OF REMOTE SENSING TO BAMBOO RESOURCES ASSESSMENT

Remote sensing has recently become popular in natural resources assessment, planning, management and monitoring. The system acquires images from remote sensors (such as satellites, planes and balloons) and sends them to ground stations. The ground stations process and analyse the images and provide the necessary information and assessment.

Remote sensing enables spatial and temporal assessment of land and vegetation. It has been successfully used not only for global assessment and classification of major forest resources, but also for monitoring of non-wood forest vegetation, including bamboo. Higher spatial and spectral images (such as LANDSAT, IKONOS and SPOT) can be used in assessing secondary and minor vegetation. The temporal images offer an opportunity to observe ecosystem dynamics and development. Some remote sensing data may be acquired at low or even no cost. For example, MODIS provides useful information for large-scale resource mapping.

Remote sensing is a quick, reliable, rather accurate and comparatively cheap method for the assessment, classification and mapping of natural resources. It is very important in the planning, management and sustainable utilization of these resources. A geographical information system (GIS) is generally integrated with remote sensing for storing and analysing data and producing maps and statistics. GIS can be used to monitor the vast resources of bamboo regularly, as well as for smaller project activities.

Inventory of bamboo resources is still in an initial phase of development. Ground inventory is rather accurate, but may be costly in time and resources. Remote sensing alone cannot compete with ground methods in accuracy and scope, but can provide an excellent framework for field inventories and can save on cost. In combination with limited field samples, remote sensing can produce excellent results at a reasonable and competitive price. It can be especially useful in the monitoring and analysis of bamboo cover changes.

It is not easy to apply remote sensing techniques to bamboo compared with other forest species. The electromagnetic reflection of bamboo may be confused with that of other forest species and crops, such as pine, sugarcane and maize. Given that bamboo is often scattered throughout the forest and on other lands, it might be difficult to separate it from other species and would require field validation. Sympodial bamboo is particularly difficult to spot because it grows in smaller clusters. Medium resolution images (such as Landsat with 30 m resolution) may not be sufficient for bamboo identification of clusters of less than one hectare. Due to the scattered nature of bamboo, its assessment requires sufficient ground-truth information, with the exact GPS coordinates. A possible solution is to use high-resolution images, but they are generally quite expensive. Some bamboo represents undergrowth, which is difficult to map without accurate field data. On the other hand, remote sensing can easily locate forest types typically associated with bamboo understorey and thus provide a rather accurate guess, which can then be used to develop an effective sampling design.

There are already several promising studies and pilot projects on assessing the area of bamboo using remote sensing (Box 2). Pure monopodial and sympodial bamboo forest can be easily detected with very limited on-the-ground information. Bamboo is evergreen. If it is intermixed with deciduous trees, a temporal seasonal analysis may detect bamboo resources by measuring its reflection patterns. Bamboo is easier to locate during winter or the dry season, when other trees are losing their green crowns.

Some algorithms (such as neural networks and decision trees) can help map potential bamboo areas using a series of additional parameters, including climate, soil and elevation. High-resolution images such as IKONOS and Quick Bird can be used for data training. The available experience indicates that using remote sensing in combination with ground samples, GIS and other appropriate technologies may provide a valuable tool for global bamboo resources assessment.

BOX 2

Pilot studies

Several successful pilot studies on remote sensing of bamboo are discussed below:

Bamboo undergrowth mapping at Woolong Nature Reserve. This pilot study mapped the spatial distribution of understorey bamboo in Woolond Nature Reserve in southwestern China. Using artificial neural network methods, Landsat thematic mapper (TM) data and training on limited ground data, the study achieved 80 percent accuracy despite the occurrence of other understorey vegetation. The results prove that remote sensing can successfully map forest undergrowth. This success in bamboo mapping has important implications for the conservation of the giant panda (Linderman *et al.*, 2004).

Forest-cover mapping in India. The Centre for Indian Bamboo Resource and Technology (CIBART) has carried out bamboo development planning using remote sensing and GIS in northeast India, including the Tamenglong district in Mapur state and two districts in Tripura state (Bharadwaj *et al.*, 2003). IRS 1D LISS III images were analysed and classified using the supervised classification technique. The training set included images from different forest types. The knowledge-based system used the digital evaluation model and considered such parameters as bamboo resource types, slopes and drainage level. The information collected during the field survey was used to correlate distribution of the various species with the land characteristics. The correlation provided guidance for the classification of sites. The accuracy of this study was over 85 percent.

Guadua bamboo presence in the Amazon area. The study used remote sensing techniques for the spatial and temporal analysis of the *Guadua* bamboo forest in the southwestern Amazon area of Brazil (Nelson, 2004). Key findings of the study included the following:

- *Guadua* genets reproduce and die synchronously.
- The life cycle of a genet is about 30 years.
- Dying bamboo creates a wave of mortality.
- Edges of bamboo areas are well defined, but some of these edges may only be visible at exactly the same intervals, approximately every 30 years.
- For about one year after mortality, the dead plant material remains visible to satellites.
- For about 10–15 years after mortality, a new cohort of seedlings remains in the understorey. At this stage, the spectral pattern of a bamboo-dominated forest resembles forest without bamboo. Bamboo cannot be detected by satellites during about 30–50 percent of its life cycle.
- The lifecycle pattern of bamboo makes it difficult to accurately map the extent of bamboo forest unless two images are available for the entire area, ideally with a time interval of approximately 15 years.

Forest mapping in China. The Chinese State Forestry Administration (SFA) is mapping forests using remote sensing techniques (Han, 2005). SFA used Landsat TM and enhanced TM (ETM)+ for the mapping. According to experience, bamboo shows a special pattern in the band combination of 453. Supervised classification was done with sufficient ground information. A map of the country was prepared and was complemented by provincial maps.

THE PRESENT STUDY

Because bamboo can also grow outside forests on other lands, the assessment has tried to include these resources. This approach does not contradict the framework and methodology of FAO's Global Forest Resources Assessment, in which forest resources are defined as encompassing forests, other wooded land and trees outside forests.

The reporting framework was developed in the course of the current study and consisted of a reporting outline and guidelines. The outline contained a set of tables to be completed by national correspondents for the bamboo study. The guidelines provided the appropriate methodology, techniques and instructions for completion of the outline. The outline and guidelines in general reflected the reporting tables for FRA 2005, addressing specific bamboo-related issues when necessary. The following tables were included (see Annex 1):

1. Extent of bamboo
2. Ownership of bamboo
3. Characteristics of bamboo
4. Bamboo growing stock
5. Bamboo biomass and carbon stock
6. Diversity of bamboo species
7. Bamboo removals (poles and fuelwood)
8. Value of bamboo removals
9. Other bamboo products
10. Value of other bamboo products

In addition, the map of country bamboo resources distribution and the list of bamboo species in the country were included.

Although formally bamboo is a grass, it is included in the definition of forests used by FAO when the minimum height, crown cover and area criteria are met, and the surveying of bamboo resources is not much different from the surveying of the other tree species. It can easily be incorporated into national forest resource assessments and has been in many countries. Where there are differences between bamboo and tree species, they were specified and addressed in the outline and guidelines of the present study. The State Forest Administration of China (SFA) tested the new reporting format in the spring of 2004 and managed to complete almost all required fields in the reporting tables successfully and to provide the necessary explanatory notes. For ownership, data were requested for 1990 and 2000, and for diversity of bamboo species for 2000 only.

THE PROCESS

The study was initiated early in 2004 by FAO, INBAR and SFA. INBAR and SFA jointly developed the reporting outline and guidelines. In May 2004, a joint FAO/International Tropical Timber Organization (ITTO)/INBAR workshop was held at ITTO headquarters in Yokohama, Japan. The Chinese delegation presented its first national report on bamboo, and the workshop resolution encouraged the national correspondents for FRA 2005 from India and Indonesia to complete their reports on a trial basis. Both countries successfully completed the reporting format, which indicates that most of the data for the report were available and could be compiled from existing sources. Where data were not available, expert evaluations were employed to bridge the information gap.

Pilot results from the three countries were presented at a joint FAO/INBAR workshop in Bangkok in November 2004, attended by over 30 national correspondents from across Asia. The workshop participants recommended inclusion of bamboo as a seventh thematic study in the framework of FRA 2005, along with the six already selected.

In May 2005, some 30 national correspondents and country representatives gathered at INBAR in Beijing for the FAO/INBAR International Workshop on Bamboo Resources Assessment, at which they submitted their country reports. Although the reports differed in the quality and reliability of the data presented, they did signify the first attempt of a comprehensive assessment of the world's bamboo resources.

The information provided in the reports was reviewed, analysed, verified and, where needed, complemented by additional information from literature sources and from consultations with the FRA 2005 national correspondents and bamboo experts (see Annex 2 for the list of contributors to the study). FAO and INBAR bibliographic databases were reviewed in order to incorporate relevant information currently available on bamboo resource assessment and utilization.

The information was processed according to the recommended methodology for FRA 2005. Linear interpolation was used in cases where figures for two inventory periods were provided, while data for 2005 were obtained through forecasting and extrapolation of values into the future. Reclassification was performed where necessary and possible, with the objective of fitting national data into the reporting format. Reclassification matrices were particularly useful for bamboo, which, as mentioned earlier, is often mixed with other species and can grow outside forests. The FAO methodology ensured more reliable, realistic and comparable results.

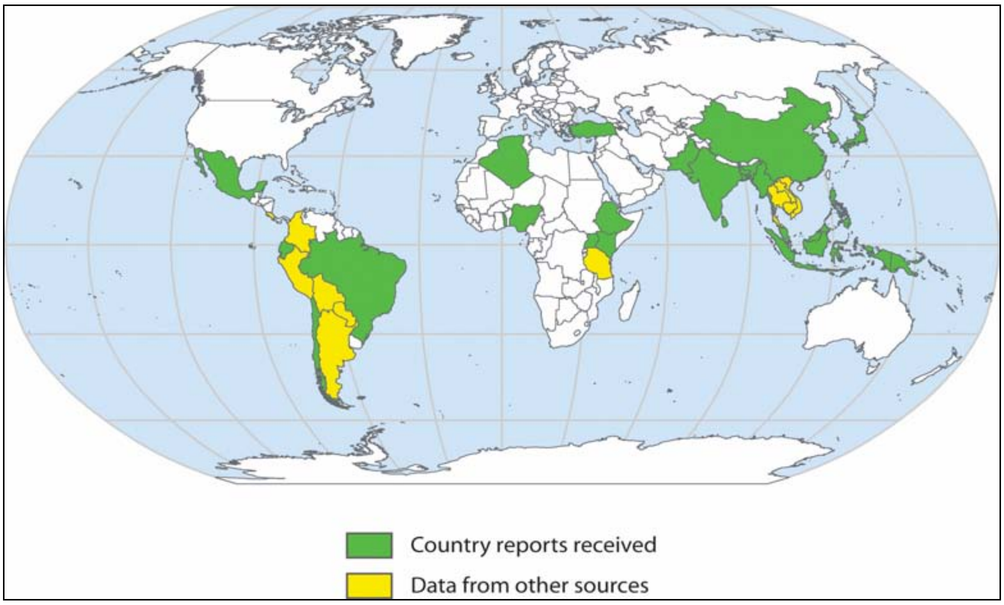
During the summer of 2005, two INBAR teams worked on the study, one in Rome with FAO and the other in the United States with UNEP and USGS. The United States team worked on remote assessment aspects, with the goal of establishing an INBAR bamboo inventory laboratory to train national correspondents and country representatives in bamboo resources assessment.

A joint Bamboo Inventory Training Workshop in support of the study was held in China by FAO, INBAR and the International Centre for Bamboo and Rattan in October–November 2005. Two international task forces were formed during the workshop to design bamboo inventory manuals for the on-the-ground and remote sensing assessments. Both manuals will assist countries in including data on bamboo in their national forest inventory programmes.

INFORMATION AVAILABILITY

The data presented in this report were mostly provided in the form of reports submitted by participating countries. A total of 22 countries submitted national bamboo reports – five countries in Africa, 13 in Asia and the Pacific and four in Latin America (Figure 1).

FIGURE 1
Countries participating in the FAO/INBAR bamboo thematic study



The reports were compiled by the FRA 2005 national correspondents and their teams, together with experts, and in most cases represent the best available knowledge on the subject. Where possible, the presented information was verified using other available sources, including expert estimates.

The quality and quantity of the information provided in the country reports varied significantly depending on the significance of the bamboo sectors in the countries surveyed. Asia has the longest tradition of bamboo utilization, and bamboo plays a fundamental role for a significant part of the population. Hence, Asian countries as a rule submitted more comprehensive and accurate data than Latin America and Africa. Several countries highlighted the need for a more systematic assessment of bamboo resources to further their sustainable development.

Generally speaking, current bamboo resource statistics are inconsistent, fragmented and scattered. There are several reasons for this:

- Systematic inventories of global bamboo resources have never been done.
- Consistent methodology and techniques have not yet been developed.
- Bamboo is often intermixed with other forest species or grows outside forests, making assessment more difficult.
- Most bamboo is harvested and traded locally without entering official statistical records.
- The term 'bamboo forest' often has different and incompatible definitions in different countries.

Table 2 lists the sources of the data used for the present study, including additional verification and validation sources.

TABLE 2

Sources of information and validation for the study

Sources of information	No. of sources
National reports from INBAR member states	14
National reports from other countries	8
National forest research institutions	9
FRA 2005 country reports	7
Expert estimates	6
National forestry inventories	5
Other sources	13

Annex 3 lists the classifications and definitions of bamboo in different countries and indicates that less than 30 percent of the countries surveyed have a clear definition of 'bamboo forest' in their national forest classification systems. Several countries include subclasses for selected forest tree species, such as rubber tree and mangroves, in recognition of their economic and social value. It is hoped that recognition of the development value of bamboo will promote its better assessment and further development.

Table 3 summarizes the information contained in the reports received, classified according to the reporting tables.

The table on bamboo species diversity is the most complete. Almost all the countries managed to fill in this table reasonably well. About 80 percent completed the tables on bamboo resources extent, ownership and characteristics. Some complementary information was extracted from national forest inventories. Some 50 percent of the respondents completed the tables on bamboo growing stock and biomass. Lack of an appropriate methodology for obtaining biomass data was reported as a primary reason for the data gaps. Information on the amount and value of bamboo removals was also rather scarce. This relates particularly to the bamboo products that are traded locally, without entering national statistical records.

TABLE 3
Summary of information provided in country reports

Country Reports	Extent	Ownership	Charac-teristics	Growing stock	Biomass stock	Diversity of bamboo species	Removals *(poles & fuelwood)*	Value of poles & fuelwood removed	Removals of other bamboo products	Value of other bamboo products
Bangladesh	1	1	1	1	1	1	1	-	-	-
China	3	2	3	3	3	1	3	3	3	3
India	3	2	3	3	3	1	1	1	1	1
Indonesia	2	2	2	2	-	1	2	2	1	1
Japan	3	2	-	-	-	1	3	3	-	-
Republic of Korea	3	2	3	-	3	1	-	-	2	2
Malaysia	1	1	1	2	-	1	2	2	-	-
Myanmar	3	2	3	3	3	1	3	3	3	3
Pakistan	3	2	3	3	3	1	3	3	-	-
Papua New Guinea	3	2	3	-	-	1	-	-	-	-
Sri Lanka	3	2	3	-	-	1	3	-	-	-
Philippines	1	1	1	1	-	1	3	3	2	2
Turkey	3	3	3	2	-	1	-	-	2	2
Total Asia	**13**	**13**	**12**	**9**	**6**	**13**	**10**	**8**	**7**	**7**
Algeria	3	2	3	3	1	1	-	1	1	1
Ethiopia	1	2	1	1	1	1	-	-	-	-
Kenya	3	2	3	3	-	1	-	-	-	-
Nigeria	1	1	2	2	-	-	2	2	-	-
Togo	-	-	-	-	-	1	-	-	-	-
Total Africa	**4**	**4**	**4**	**4**	**2**	**4**	**1**	**2**	**1**	**1**
Brazil	-	-	-	-	-	1	-	-	-	-
Chile	1	-	1	1	1	1	2	2	-	-
Ecuador	2	1	2	-	2	1	3	3	-	3
Mexico	-	-	1	-	-	1	-	-	-	-
Total Latin America	**2**	**1**	**3**	**1**	**2**	**4**	**2**	**2**	**0**	**1**
Total no. of country reports	**19**	**18**	**19**	**14**	**10**	**21**	**13**	**12**	**8**	**9**
Percentage of total no. of participating countries	**86**	**82**	**86**	**64**	**45**	**95**	**59**	**55**	**36**	**41**

Note: The numbers 1, 2 and 3 for each country and category indicate the number of reporting years for which data were provided. The regional totals indicate how many countries provided information for each table for at least one reporting year.