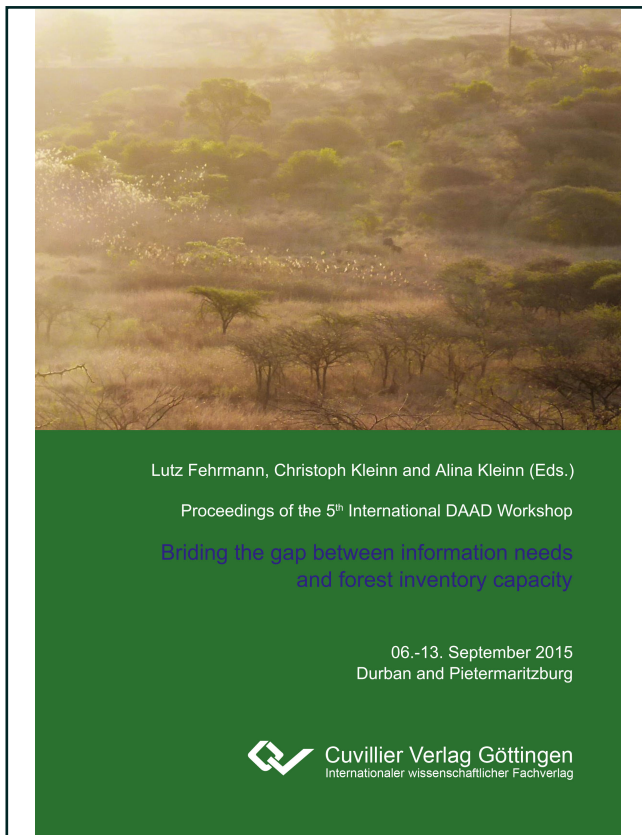




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**Proceedings of the 5th International Workshop on The role of
forests for future global development**

*Addressing information needs for sustainable management of forest
resources*



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Chapter one

Forest policies and Management





Who needs forest information and why?

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This article is a position paper that reflects the personal view of the author and is not based on detailed research and or analysis of existing literature.

Abstract

Over the last decennia a number of changes have taken place in the forest sector. The variety of forest management objectives has increased and has had an enormous impact on the forest sector as well as on a number of other sectors. These changes influence the scope for forest data and information as well as the capacity to produce and use these data and information. The adaptation of the forest monitoring and assessment capacity to these changes is an ongoing process.

1 Introduction – background

Those who produce forest data and information need to understand who the users of their products are, why they need these products and whether they are in a position to understand and use the products effectively. Those who need and use forest data and information need to understand in general terms how the data and information are generated. It is not just a give and take but also rather the understanding of the usefulness of the products and the ways and means by which to use them that are important.

During the last 30 years there have been major changes in the forest sector:

- After the Rio Conference in 1992 the understanding of the significance and impact of sustainable development changed: Sustainable forest management has to be understood in line with overall sustainable development.
- Linkages between the forest sector and other related sectors are becoming closer.
- Interested actors in the forestry sector come from a much wider background than before.

To understand the gap between forest information needs and forest inventory capacity there is a strong need to understand past, current and potential future changes within the forestry sector and related sectors. Before the United Nations Conference on Environment and Development (UNCED), also known as the Rio Summit or Rio Conference in 1992, the interest for forestry resources and forest management came mainly from government and private forest owners, forest managers and timber industries. Until that time sustainable forest management concentrated predominantly on forest areas, timber production and to a certain extend on con-

ervation issues but was very much orientated on technical forestry as such. After the conference the perspective of sustainable forest management became much broader. The superordinate goal changed from a technical sector perspective to a more general sustainable development perspective, which included ecological, social and economical dimensions.

The development of forest management objectives nowadays involves a wider and more diversified group of persons who are interested in forest data information. These changes need to be understood by those who produce and distribute forest information products. When we discuss the gap between forest information needs and forest inventory capacity these changes need special attention and consideration.

2 Forest management objectives

The development of a wider variety of forest management objectives leads to a number of consequences for data and information needs as well as assessment processes. Originally the forest community focused on forest areas, timber production/protection, and forest conservation. The role and functions of forest is much wider nowadays. Additional objectives like biodiversity, non-timber forest products, agro-forestry, watershed management, climate change adaptation and mitigation etc. are on the agenda (fig. 1).

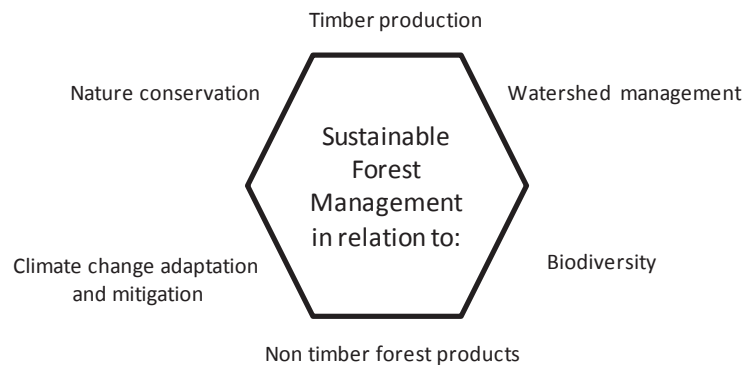


Figure 1. Forest management objectives

The perspective changed from looking only into the forest to building a bridge and looking at areas both inside and outside forest. The context changed from a single forest sector perspective to an overall inter-sector perspective. This is of great relevance because now a much wider audience is interested in forestry issues. The definition and decision on forest management objectives is not the sole responsibility of foresters any more but increasingly of other sectors as well as the general public with interest in the impact of forest management on overall sustainable development. The decision on forest management objectives is in fact not only a technical solution any more but a negotiating process between all involved sectors and interested groups from the civil society.



3 Forest information needs

During the last 40 years the interest in forest development increased enormously, specifically because of its ecosystem functions. This is a real challenge. On the one hand, the increase of interest gives the forestry sector a higher level of relevance and importance. On the other hand, the demand for reliable data and information by all interested groups must be met.

The participants of negotiating processes concerning forest management objectives depend very much on data and information regarding the specific location and ownership of the forest resource, the local political and administrative structure, and last but not least the environmental and economical value of the forest resources. This leads to a number of implications in what concerns the needed additional information, the interpretation of information, information management, information provision, communication processes as well as information collection and management capacities.

Depending on the local situation, the administrative system and structure and the involvement of the general public, the required data and information needs to be identified. Most probably, a differentiation has to be made for the various user groups and between the various levels of involvement like the national, provincial or state, district and local level.

The national level needs information for its policy-making and regulatory responsibilities, the province and state level for their planning, budget and monitoring and the district and local level for their operational planning and implementation responsibilities. Since each sector needs information for their own purposes, it is very likely that each involved sector, like forestry, agriculture, energy, transport, environment, rural development etc., needs their own set or selection of data and information.

A special target group for forest information is of course the general public and civil society, with different reasons for their interest in forest resources. Their interest can be based in several areas such as general environmental concerns, climate change, specific conservation, water management, tourism, or recreational reasons. It can be expected that each sector and the various interest groups will have its own scope of interpretation, depending on its institutional objectives.

4 Forest inventory capacity

Capacity is the ability of people, organisations and societies as a whole to manage their affairs successfully and to continuously adapt in response to changing conditions. This involves identifying development constraints, designing solutions and successfully implementing these (GIZ definition). In our context this means that forest inventory capacity includes the availability of an effective regulatory framework for inventories (policies, laws, guidelines etc.), well functioning respective government, non-government and private institutions (organisations, mandates, institutional processes), and sufficient qualified and professional staff.

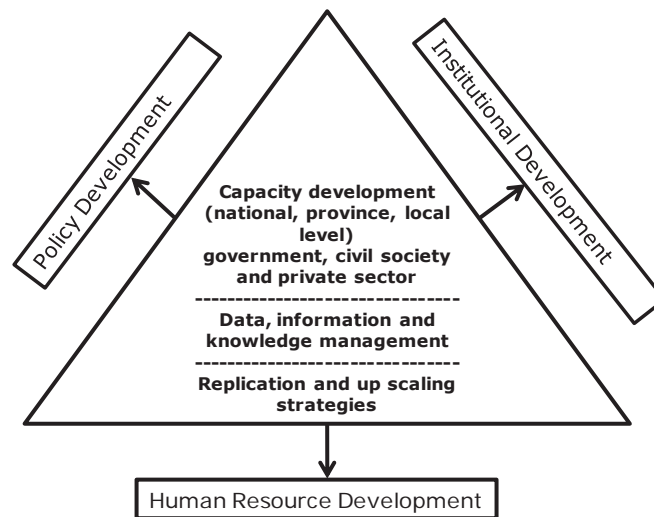


Figure 2. Capacity development

It is important to ensure that development processes of the three development dimensions, policy, institutions and human resources, are based on the same information, data and knowledge (fig. 2). Since data, information and consequently knowledge change over time, policy-, institutional- and human resources development is a never-ending process. Continuous adjustments are required. The quality and the thereof resulting usefulness of inventories and assessments depend totally on the available capacities.

Since the information products of forest inventory and assessment institutions are used by a number of different users with most probably different interests, it has to be ensured that these inventory and assessment institutions follow certain rules and regulations. These institutions need transparent criteria and indicators for their independent working procedures and communication processes.

5 Provision of forest information

As mentioned before, the group of users of forest information is increasing and diversifying over time. Since some of the user groups do not have a forest technical background or training, the type of forest information needed as well as its use is most probably not clear to everybody. Those who are providing forest information should be aware and consider these aspects. Forest information must be provided as user friendly as possible. The question is who is responsible and capable to translate the available forest information into products that can be understood and used by the different user groups.

In most cases capacity building for those who need and use forest information is required in order to enable them to decide which information, in what kind of format (documents, training, practical experiences), they would like to receive. Practical experiences show that capacity building for forest information users is essential for an optimal use of the provided information. Capacity building for the different target groups needs specific packaging (fig. 3).

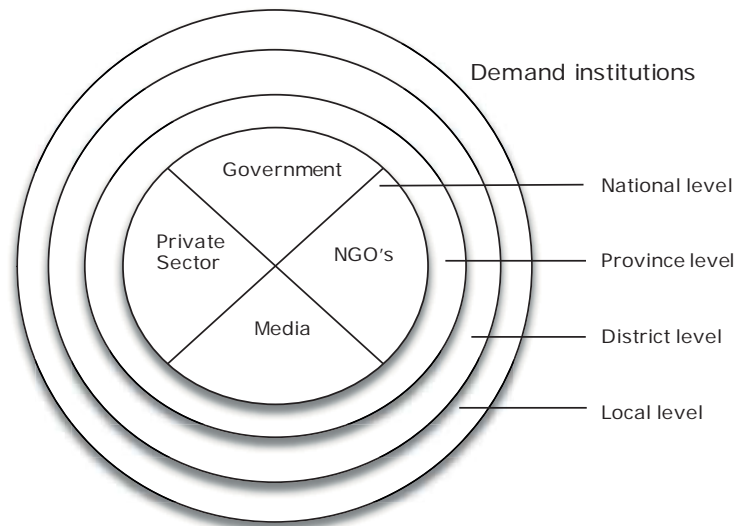


Figure 3. Target groups and levels

6 Conclusions

Sustainable forest management and its growing role within overall sustainable development asks for special consideration of changes in the need for forest data and information by the different user groups. In this context not only the forestry sector should be observed but all sectors with some kind of relationship to actual forest management objectives.

It is advisable in each country to identify the desirable collection and distribution of data and information, to observe the relevant changes over time and to adapt the inventory strategy if needed. Capacity development (policy development, institutional development and human resources development) for all institutions and persons involved with special consideration of the actual changes in the forestry sector and forest management objectives is a never-ending process.

All forest data and information products should be translated in an understandable way and language for the different user groups and into user friendly packaged.

Continuous exchange of experiences between information producers and consumers is needed to improve the production and use of the products (fig. 4).

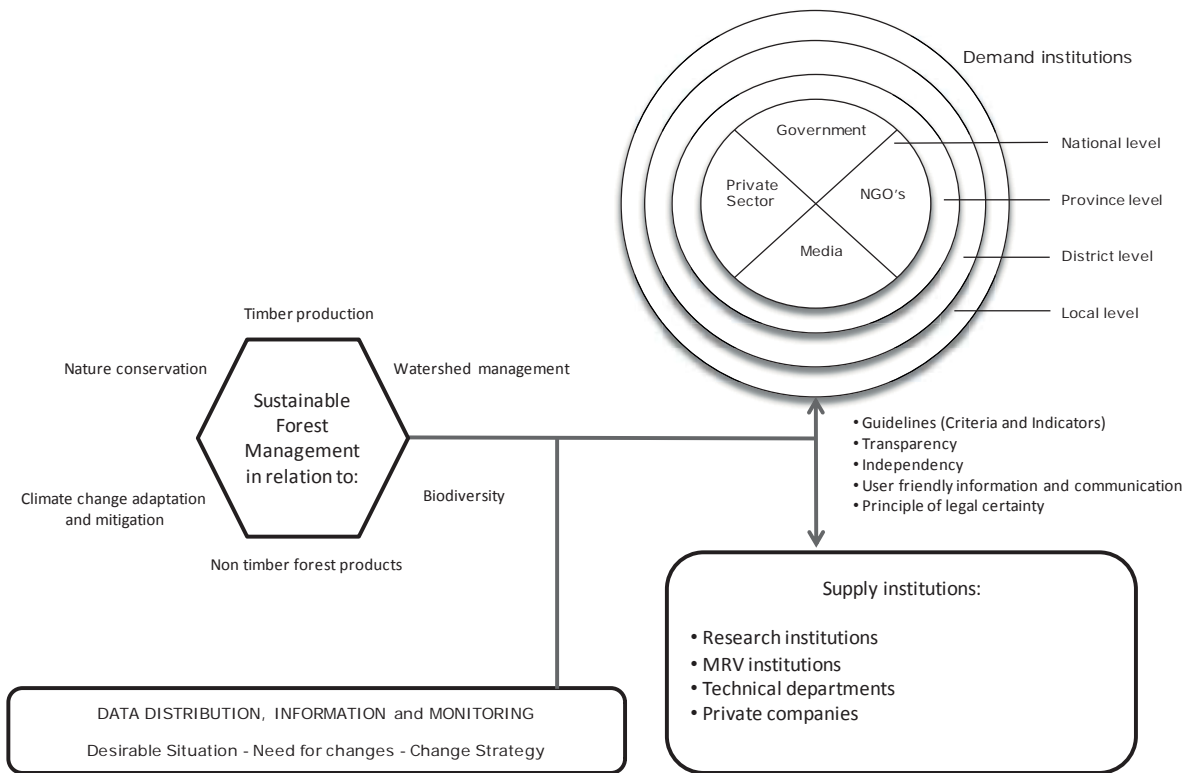


Figure 4. Forest information system



Implications of state policies related to upland watershed management in the conservation and sustainable use of forests: the cases of Bangladesh and Guatemala

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Abstract

The relevance of the watershed as a management unit in ecologic, economic and social terms has been widely acknowledged. The majority of national development plans consider it to be a key point and many state policies take it into account to set the aims and objectives of public policy. Hence, the watershed management state policies in each country play a key role in the sustainable use and conservation of the natural forest cover in these watersheds, aspects closely related to the provision of goods and services to the population, and to the reduction of vulnerability in the context of climate change. In this study we describe implications of the available legislations related to watershed management for the sustainable use of upland forests in two developing countries: Bangladesh and Guatemala. The comparison was made by selecting available published case studies and identifying strengths and weaknesses which can improve the conservation and sustainable use of strategic forests in each country.

1 Introduction

According to the Global Forest Resources Assessment (FAO, 2010), forests cover 31% of total land area (approximately 4 billion hectares). They provide direct and indirect benefits and contributions to livelihoods for more than 1.5 billion people, of which 60 million are indigenous people who are almost entirely dependent on forests for their livelihoods (Polman, 2015). A review of 51 studies from 19 countries suggests that forest may contribute as much as 22% of household incomes in these countries (UNFF, 2013). Despite the ecological and socio-economic role of forests, the rate of deforestation worldwide is alarmingly high. Around 13 million hectares of forest per year were lost in the last decade, mainly due to the conversion of tropical forests into agricultural land (FAO, 2010).

The current rate of forest loss is beginning to compromise the goods and services provided by forests on a local and regional scale, affecting services such as the provision of drinking water. Taking this into account, the conservation and sustainable management of forest cover of headwaters areas and watershed divides has become an issue of worldwide



concern. Accordingly, the area of forest designated primarily for the protection of soil and water increased by 59 million hectares between 1990 and 2010, accounting for 8% of the forest area (FAO, 2010). These measures imply the development of forest policies, laws and national forest programmes for sustainable forest management. Consequently, according to the Global Forest Resources Assessment (FAO, 2010), close to 75% of the world's forests are covered by a national forest programme.

In particular cases, the creation and promotion of national forest policies has also generated conflicts with the indigenous groups and their traditional way of forest management. Considering this short coming, current international agreements such as the Convention on Biological Diversity (CBD), support the idea that indigenous agroforestry can contribute to better ecological management and conservation. Interestingly, this entails the cooperation of two different, and to a certain extent, antagonistic systems of natural resources management: the government management carried out by the creation and implementation of public policies and the communal management applied by indigenous peoples.

In order to highlight the relevance of incorporating local perspectives of forest use and conservation into national decision and policy-making, this paper aimed to analyze and establish the implications of state policies related to watershed management in the conservation and sustainable use of forests in Bangladesh and Guatemala. The comparison between the two countries was made by the selection of case studies and by, identifying strengths and weaknesses which can improve the conservation and sustainable use of strategic forests in each country.

2 Current status of upland watersheds in Bangladesh and Guatemala

2.1 *The case of Bangladesh*

Bangladesh is one of the most highly populated countries, with more than 150 million inhabitants (approximately 12 persons per ha) (BBS, 2014). The deltas and alluvial plains of the Ganges, Brahmaputra and Meghna rivers form major land surface of the country. The forest cover of the country is 7% of the total land area along with 0.7% protected area (World Bank, 2009). Most of the uplands are located on the east, northeast and southeast of the country and vary between 70 and 1000 m with a series of valley and ridges. The country's major portion of watersheds (constituting 10.97% of upland watershed) is located in the regions of Chittagong and Chittagong Hill Tracts (CHTs) which are characterized by 77% of sloping land falls (Figure 1) (Haque et al., 2014; Roy and Halim, 2001). In the plain land watershed boundaries are clear but they are not well defined in Chittagong and CHTs (Khan, 1991). Forests of CHTs constitute about 30% of the nation's total forest area and play a great role in providing soil and water conservation services for sustainable natural resource management in this part of the country.



The CHTs are the habitat of more than 13 forest dwelling indigenous communities and their watersheds support subsistence farming and hence their livelihood. However, these tribal communities are gradually being outnumbered by mainland settlers in recent waves of migration to hill districts (Figure 2) (Miah et al., 2014). Consequently, day by day once rich upland watersheds of CHTs are losing their natural resources including forest due to different causes such as clear felling followed by burning, deforestation, shifting cultivation, faulty management system, as well as weak implementation of national policies. The rate of land use change has become more rapid after 1990 due to the growing population and an absence of space for rotation of cultivation on the newly available lands (Haque et al., 2014). Due to a shortage of land and flood havoc in lower regions of the country, people have been migrating to CHTs. The removal of vegetation leads to soil erosion, siltation in downstream areas and consequently soil fertility decline, thereby increasing food insecurity in the upland watershed (Khisa et al., 2006). Therefore, and due to the geographic and geological conditions of this lower riparian country, watershed management bears a strong significance for the country's ecological and economic health.

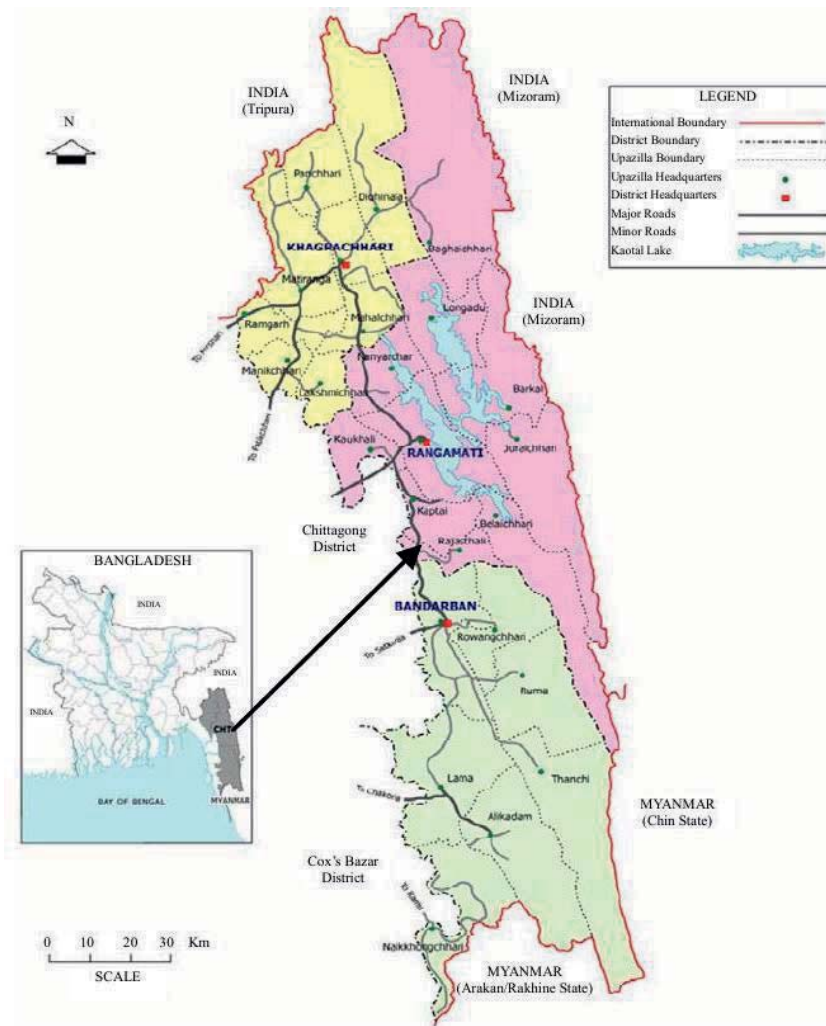


Figure 1. Map showing CHT constituting major part of upland watershed of Bangladesh (source: Adnan and Dastidar, 2011).

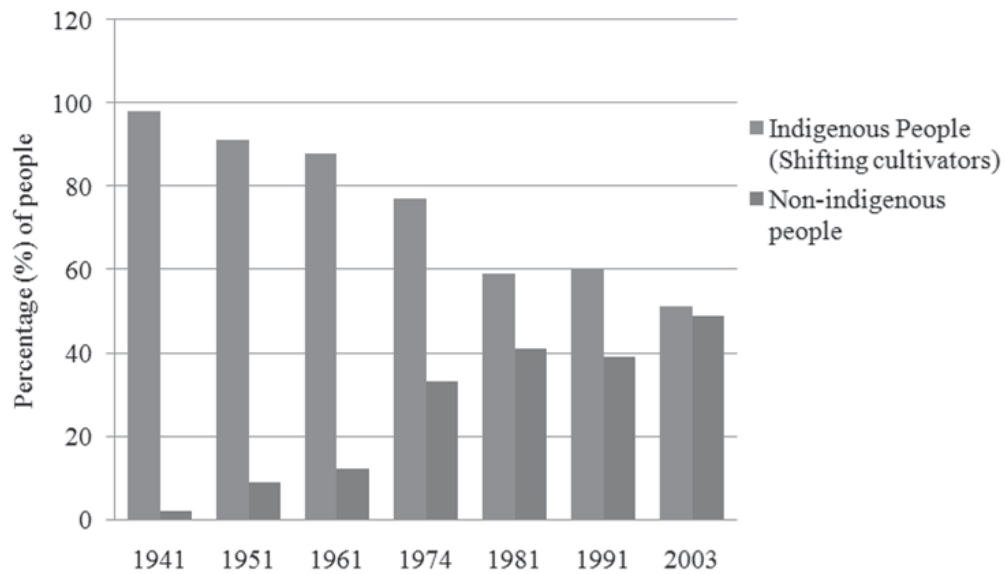


Figure 2. Increasing pattern of non-indigenous people (%) in CHTs (Source: Talukdar, 2005; Uddin, 2010).

2.2 The case of Guatemala

With an area of 10.89 million ha (USAID, 2010), Guatemala is part of the bridge that links the Neartic to the Neotropic region. The country has a population of approximately 15.5 million inhabitants (1.4 persons per ha), of which 60% lives in rural areas and 56% live in poverty (Melgar, 2003). The country is divided into three major hydrographic regions: the Pacific Rim with 18 major basins (22% of the country), the Caribbean with 7 major basins (31%), and the Gulf of Mexico with 10 basins (47%) (Melgar, 2003). The upland watersheds of Guatemala are shown in Figure 3 with their respective elevations from mean sea level.

Due to the high deforestation rate, between 1950 and 2003 Guatemala has lost 60.32% of forest cover (USAID, 2010). In 2010 the forest cover was estimated to be 3,722,595 ha (34%) (CONAP, 2014), even though 49% of the country's land area has the potential for forest cover (USAID, 2010). The latest report on forest dynamics counts gross losses of 132,000 hectares per year for the period 2006-2010, which corresponds to a rate of deforestation of 3.4% (one of the highest in Latin America) (UVG, INAB, CONAP and URL, 2011; INAB and IARNA-URL, 2012; CONAP, 2014). Among the main causes of deforestation are illegal logging and land use change, dominated by the conversion of forest and grassland to agriculture and ranching (INAB and IARNA-URL, 2012).

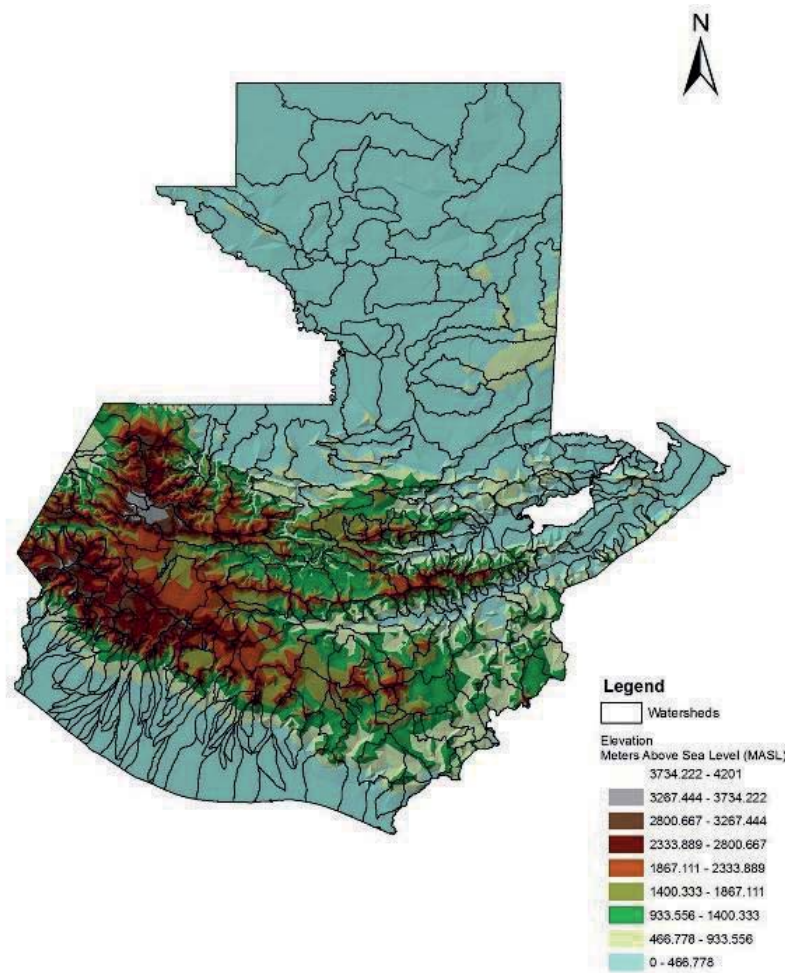


Figure 3. Topographic map of Guatemala showing the location of watersheds (polygons) with their respective elevation (meters above sea level). Source: own elaboration with information provided by the National Geographic Institute of Guatemala (IGN).

3 Threats to and challenges of watershed management in Bangladesh and in Guatemala

3.1 Bangladesh

Shifting cultivation, locally known as Jhum, has long been practiced by indigenous communities in the hilly watersheds of Bangladesh. It is a traditional system in which clear felling of natural vegetation is followed by slash and burning process for land preparation. This type of cultivation system has been well adapted to the livelihood of the community people in the past with little adverse effects on the ecosystem. However, a lack of suitable lands for the rapidly increasing population generated a shortening of the shifting cycle from 15-20 years in 1900 to 3-5 years in 1990s (Osman et al., 2013) which contributing to a sharp decline in Jhum productivity (Osman et al., 2013; Gain, 1998).

The use of natural resources including that of the forest beyond carrying capacity affects watershed management as well as conservation and sustainable forest management in the upland. Ever increasing population numbers and their extent and intensity of exploitation of re-



sources are also considered as important factors that need to be controlled for watershed conservation in the hilly landscape. Clear felling of natural vegetation followed by artificial regeneration mostly through monocultures of fast growing exotic species (e.g. *Accacia auriculiiformis*) in the headwaters and the watershed divide generates ecological disruption in the watershed. In the past, wealthy people leased forest land from the government and planted rubber with the intention of profit maximization. The plantations were established without complying with norms and rules of the indigenous communities. Inappropriate tillage techniques and deep ploughing on steep slopes practiced by migrant farmers cultivating tuber crops in a monoculture system (disregarding traditional mixed cultivation) aggravated the problem (Osman et al. 2013; Tomich et al. 1998).

There is a lack of watershed management policies and of a strong authority to monitor the headwaters and critical areas of the watershed, which is being gradually degraded. Weak or no implementation of the existing forest and environmental policies in the headwaters is indirectly promoting the deterioration of the natural resources in general, and the forest cover in particular. Furthermore, the rural areas have not received attention from policy makers and international development organizations.

3.2 Guatemala

The conservation and sustainable management of forests in Guatemala faces global and local threats. Among the global threats are the effects of climate change, illegal trade of timber and non-timber forest products, and drug trafficking.

The most important local threats include: habitat loss, degradation and fragmentation, land conversion for agriculture and cattle, mining activities, oil extraction, and the introduction of exotic or opportunistic species (CONAP, 2014).

These threats have been found to be strongly influenced by social and institutional drivers like poverty and exclusion, weak environmental institutions, inadequate or ineffective policies, lack of coordinated land and resource use planning and management, unregulated human population growth and migration, and lack of verified land titles (USAID, 2010; CONAP, 2014).

3.3 Coping with the challenges

Bangladesh and Guatemala need to take into account the relevance of one strengthened environmental policy framework that includes clear mandates to specific governmental institutions, this in order to avoid overlapping of functions, efficient use of resources, and a better conservation and management of the natural resources of each of these countries (USAID, 2010). Coordination between the related ministries and local government agencies along with implementation of bottom up management approach will enhance the quality of upland watershed health. Local participation needs to be promoted in order to secure the sustainable use



of the resources, as well as the provision of goods and services for the improvement of the livelihoods, especially of the population in the rural areas.

4 Implications of state policies related to watershed management in the conservation and sustainable use of forests

4.1 Legal framework associated with watershed management

4.1.1 Legal framework related to watershed conservation and management in Bangladesh

Despite being a deltaic plain there is no specific watershed policy, strategy or plan in Bangladesh. In general there is no national or CHT specific institution with a particular mandate for watershed management. Evaluation of the state policies showed that there is no direct outline for conservation of watershed health but in related sections and subsections watershed management was mentioned. Here it should be noted that due to the rapid deforestation rate of 3.3% in the 1980s, government banned harvesting and any kind of illegal logging both from public and private forests in 1989 (USAID, 2010). The government has set a target to reach upto 20% forest cover by 2015 (ADB, 2008). However, the country's most relevant legislation for watersheds is the National Forestry Policy of 1994 (Bangladesh Gazette, July 6 1995, pp. 241-244). In that policy, in order to preserve soil, water and biodiversity, a provision is made to declare the country's natural forests of hilly areas and catchments of the rivers as protected areas. Moreover, the amended National Forest Policy of 2015 has been drafted giving more emphasis on participatory watershed management systems under section 5, sub-section 5.4: "Integrated watershed management approach with gainful participation of local community will be developed and implemented in hill forests and headwater reserves".

Many other legal instruments are in force in Bangladesh like act, ordinance, rules, policies, president orders and administrative orders pertaining to management and conservation of forests, the environment and protected areas. Some are related to watershed and others are very general laws. Some of the watershed related legislations include Bangladesh Environment Conservation Act 1995 (amended on 2010), Bangladesh Environment Policy 1992, National Land use Policy 2001, Bangladesh National Water Policy 1999, Bangladesh Biological Diversity Act 2012, Wildlife (Conservation and Security) Act 2012, Bangladesh National Conservation Strategy 1991 and 2004 etc. However, although there are policy regimes in place that have many positive features, there is a lack of effective implementation. Some of them need to be reviewed and amended to be effectively implemented.

Government agencies like the Ministry of Environment and Forest (MoEF), the Ministry of Land (MoL), the Ministry of Water Resources (MoWR), the Ministry of Chittagong Hill Tracts Affairs, among others, are engaged indirectly in protecting degradation of watershed health by formulating policy, laws and also implementing development projects in the target area. Each of these organizations has sub-management units for example the Forest