

## Chapter 10

# Conclusions

Mangroves fulfil many necessary functions from the productive, protective and social points of view. Yet increased population pressures in coastal areas and lack of awareness have led to large-scale conversion of mangrove areas to other uses. Numerous case studies and anecdotal evidence exist describing mangrove losses over time. However, access to comprehensive information on the status and trends of mangrove areas at the global level has been limited.

Analysis of the most recent reliable estimate identified for each country and area shows that the area of mangroves varies from a few hectares (e.g. Nauru, with 2 ha) to more than 1 or 2 million hectares in individual countries and that five countries (Indonesia, Australia, Brazil, Nigeria and Mexico) account for about 47 percent of the global area of these ecosystems. More than 60 percent of the total mangrove area is found in just ten countries. By region, the largest areas of mangroves are found in Asia and Africa, followed by North and Central America.

The study illustrates the problems that varying methodologies over time – and lack of recent, reliable information for a few countries – create in generating reliable trends. The estimate for 2005 is thus indicative and is likely to change when results from ongoing and future assessments become available.

Nevertheless, the trend analysis indicates that the current mangrove area worldwide has fallen to about 15.2 million hectares, down from 18.8 million hectares in 1980. The world has thus lost some 3.6 million hectares of mangroves over the last 25 years, or 20 percent of the extent found in 1980.

The study also indicates that the loss of mangroves continues at alarming rates, but that the rate of net loss is showing signs of slowing down – in line with the trend in forests (FAO, 2006a). From about 185 000 ha lost every year in the 1980s, the net loss dropped to some 118 500 ha per year in the 1990s and to 102 000 ha per year (or a loss of 0.66 percent annually) during the 2000–2005 period, reflecting an increased awareness of the value of mangrove ecosystems. Most countries have now banned the conversion of mangrove areas for aquaculture purposes and require environmental impact assessments prior to large-scale conversion of these areas for other uses. This has led to new legislation, better protection and management and, in some countries, to an expansion of mangrove areas through active planting or natural regeneration.

Even though mangroves have been often used for the collection of wood forest products and as a source of subsistence for local populations, wood removal is rarely the main cause of loss. Human pressure on coastal ecosystems and thus competition for land for aquaculture, agriculture, infrastructure and tourism are often intense and are among the major causes of the reported decrease in these forest areas over time. More specifically, the relatively large losses of mangrove areas in Asia, the Caribbean and Latin America during the 1980s were caused primarily by large-scale conversion of these areas for aquaculture and tourism infrastructure. On a positive note, integrated coastal area management has been identified as a possible solution to competing land uses in several countries.

In addition to providing access to all primary data and thus facilitating analysis of these by others, the database prepared during this study also indicates where information is lacking and where efforts should be directed in order to obtain more recent and reliable estimates.

FIGURE 17  
Future of mangroves – a human choice



M. WILKIE

*Mangrove stand killed by pollutants*



S. FORTUMA

*Healthy and protected forest*



M. WILKIE

*Mangrove area converted to other land use*



M. WILKIE

*Multiple use of the ecosystem*



FAO/FO-6382/INL, KASHIO

*Degraded mangroves*



M. WILKIE

*Mangrove rehabilitation*

Better information is needed on both the extent and the condition of mangroves as an aid to policy- and decision-making for the conservation, management and sustainable use of the world's remaining mangrove ecosystems.

Despite efforts by several organizations, conventions and governments, the true value of mangroves and other wetlands is still underestimated. Much remains to be done to reduce the rate of loss, which is significantly higher than for other forest types. If deforestation of mangroves were to continue, it could lead to severe losses of biodiversity and livelihoods, in addition to salt intrusion in coastal zones and the siltation of coral reefs, ports and shipping lanes, with consequent losses of income from tourism and the loss of knowledge of mangroves and their use as recreational sites for coming generations. In a time of scenario development for the forestry and other sectors, Figure 17 clearly shows the two scenarios that local and international communities – together with governments and organizations – have to choose between for these valuable habitats.

The health of mangroves and of all the related marine and terrestrial ecosystems depends on their effective conservation and sustainable management.

