

Protected Areas

Basic knowledge



This module is intended for forest managers, practitioners, policymakers, and others who want to know more about the planning and management of protected areas and about their uses, benefits, governance, challenges and potential.

This module provides both basic and more detailed information on the planning and management of protected areas, with forest-specific considerations where appropriate. It also provides links to tools and case studies to showcase the various aspects of sustainable management of protected areas, including those where a significant portion of the area is natural forest.

Protected areas are essential to the conservation of biodiversity. They safeguard nature and cultural resources and contribute to livelihoods, particularly at the local level. There are over 238 563 designated protected areas worldwide, equivalent to 14.9 percent of the earth's land surface, varying in their extension, level of protection and type of management (IUCN, 2018).

Forest protected areas are a subset of all protected areas in which a significant portion of the area is forest; this may be the whole or only a part of the protected area

Currently, around 17 percent of the world's natural forests are located within legally established protected areas (FAO, 2015). Considering that the area of forest within protected areas has increased by 200 million ha since 1990, particularly in the tropics, forest protected areas are now considered to be the cornerstone of any national or international strategy to conserve forest ecosystems, combat the loss of biodiversity and to secure the sustainable provision of ecosystem services.

The 2030 Agenda for Sustainable Development and its Sustainable Development Goals (SDGs) recognize protected areas as a key strategy for the conservation of biodiversity and for sustainable development in the targets they contain; for example, SDG 14: Life below water, and SDG 15: Life on land. Other SDGs provide opportunities to highlight the contribution of protected areas to human welfare and wellbeing including poverty alleviation (SDG 3: Good health and well-being), food and water security (SDG 6: Clean water and sanitation), sustainable cities (SDG 11: Sustainable cities and communities) and climate change strategies (SDG13: Climate action) and others. A summary of how protected areas contribute towards meeting the SDGs can be found [here](#).

As the United Nations Decade on Biodiversity 2011–2020 comes to an end, and as attention turns towards the post-2020 global biodiversity framework, protected areas are expected to continue to play a pivotal role in the conservation of biodiversity and to secure the sustainable provision of benefits for people and the planet.

Definition

Although the modern form of protected areas is relatively recent, from the late nineteenth century, the idea of conserving natural areas to maintain their value has existed for centuries. Examples of these are sacred sites, hunting reserves and community forests. The first national park was established in the United States of America in the 1870s, and the modern protected-area concept spread worldwide in the twentieth century.

As the number of protected areas grew, both their objectives and the forms they took became more diverse, as did the way they were described. For example, in North America, the first protected areas were mainly meant to preserve scenery; in Africa, the concern was with game parks; and in Europe, the main aim was to protect landscapes.

To make sense of this diversity, regardless of the objectives, governance or management of protected areas, the International Union for Conservation of Nature (IUCN) has provided a definition of protected areas as:

"A clearly defined geographical space, recognized, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values (IUCN 2008)"

Benefits and values of protected areas

The benefits of protected areas extend beyond their immediate environment and time. In addition to conserving nature, protected areas are crucial for securing the long-term delivery of ecosystem services. They provide numerous benefits including the conservation of genetic resources for food and agriculture, provision of medicines and health benefits, provision of water, recreation and tourism, and for acting as a buffer against disaster. Increasingly, there is acknowledgement of the wider socioeconomic values of these natural ecosystems and of the ecosystem services they can provide.

Protected areas can play an important role in poverty alleviation and food security through income- generating activities for people residing in or living near protected areas (see [FAO Report on Protected areas, people and food security](#)). Protected areas and their associated development can directly benefit communities by providing access to infrastructure, employment opportunities and other services.

Figure 1 outlines the various ecosystem services provided by protected areas.

<p>SUPPORTING SERVICES (i.e. service necessary for provision of all other ecosystem services) Ecosystem process maintenance (soil formation, nutrient cycling, primary production, etc.) Lifecycle maintenance (nursery habitats, seeds dispersal, species interaction, etc.) Biodiversity maintenance and protection (genetic, species, and habitat diversity)</p>		
<p>PROVISIONING SERVICES (i.e. ecosystem's ability to provide resources) Food provisioning Water provisioning Provision of raw material (timber, wood, fuel, fibre) Provision of medicinal resources / biochemical (natural medicines, cosmetics, pharmaceuticals, etc.) Provision of ornamental resources Provision of genetic resources</p>	<p>REGULATING SERVICES (i.e. ecosystem's beneficial regulatory processes) Climate regulation Natural hazard regulation Purification and detoxification of water, air and soil Water / waterflow regulation Erosion and soil fertility regulation Pollination Pest and disease regulation</p>	<p>CULTURAL SERVICES (i.e. ecosystem's non-material benefits) Opportunities for recreation and tourism Aesthetic values Inspiration for the arts Information for education and research Spiritual and religious experience Cultural identity and heritage Mental wellbeing and health Peace and stability</p>

Figure 1. Main ecosystem services and related goods from protected areas (Worboys *et al.*, 2015).

Forest protected areas in particular play many important roles including as a provider of habitat, shelter, food and genetic materials, and as a buffer against disaster. They deliver stable supplies of many goods and environmental services. At the global level, forest protected areas provide a substantial proportion of the drinking water for one-third of the world's 100 largest cities (See [Running Pure Report](#)).

The role of protected areas, especially forest protected areas, in mitigating and adapting to climate change has increasingly been recognized over the last few years. Protected areas not only store and sequester carbon (i.e. the global network of protected areas stores at least 15 percent of terrestrial carbon), but also enable species to adapt to changing climate patterns by providing refuges and migration corridors. Protected areas also protect people from sudden climate events and reduce their vulnerability to weather-induced problems such as floods and droughts (UNEP-WCMC, 2016).

Conversely, degraded or damaged forests can lead to less stored carbon, and the loss of the important services provided by forests contributes to climate change and to reduced adaptive capacity. For further information on the link between protected areas and climate change, and for information on why protected areas should be included in climate change strategies, see [WWF Forest and Climate learning session](#) and [Amazon Vision- Protected Areas: Natural Solutions to Climate Change](#).

A wider cultural perspective is also necessary to understand the importance of protected areas. For many communities, protected areas are sites of spiritual importance, and are intimately related to the beliefs and practices of indigenous traditions. For other communities, these sites represent places for inspiration and are symbols of identity. Iconic protected areas are deeply connected to the cultural and historical values of communities and are important to a country's heritage.

Other effective area-based conservation measures

Although efforts have focused mainly on providing guidance on protected areas, the international community increasingly refers to "protected and conserved areas" to recognize that many areas outside the network of national and regional protected areas also contribute to the effective in-situ conservation of biodiversity and to securing the livelihoods of people. Aichi Target 11 of the Strategic Plan for Biodiversity 2011–2020 states that conservation will be achieved through "effectively and equitably managed, ecologically representative and well connected systems of protected areas and other effective area based conservation measures."

In November 2018, Parties to the Convention on Biological Diversity (CBD), in [Decision 14/8](#), adopted the following definition of other effective area-based conservation measures (OECM):

"Other effective area-based conservation measure" means "a geographically defined area other than a Protected Area, which is governed and managed in ways that achieve positive and sustained long-term outcomes for the in situ conservation of biodiversity, with associated ecosystem functions and services and where applicable, cultural, spiritual, socio-economic, and other locally

relevant values".

While protected areas must have a primary conservation objective, this is not necessary for OECMs. OECMs may be managed with many different objectives in mind, but they must deliver effective conservation. More information on OECMs can be found [here](#).

Protected areas contributes to SDGs:





Related modules

- [Forest inventory](#)
- [Forest management planning](#)
- [Silviculture in natural forests](#)
- [Wildlife management](#)

In more depth

This section presents more in-depth information about categories of protected areas, key considerations of good planning, governance, including transboundary issues, and management effectiveness as well as information about the enabling conditions needed for effectively managing protected and conserved areas.

Protected areas categories and Sustainable Forest Management

Different countries and regions identify and designate protected areas in many different ways in accordance with their own domestic policies, laws and regulations; consequently, there are many different ways in which protected areas are described and named. The IUCN has introduced systems of nomenclature to provide a “common language” that can apply internationally and provide the basis for comparing protected areas around the world. One aspect of this is the IUCN Protected Area Categories system.

The system recognizes six different categories of protected areas based on their main management objective, distinguishing features and level of human presence within the protected area boundary. The categories of the typology are presented below (IUCN, 2018):

IUCN category		Description
Ia	Strict nature reserve	Set aside to protect biodiversity and possibly geological/geomorphologic features, where human visitation, use and impacts are strictly controlled and limited. These are areas for scientific research and monitoring.
Ib	Wilderness area	Large unmodified or slightly modified areas, which are protected and managed to preserve their natural condition.
II	National park	Large natural or near natural areas set aside to protect large-scale ecological processes, which also provide a foundation for environmentally and culturally compatible, spiritual, scientific, educational, recreational and visitor opportunities.
III	Natural monument or feature	Set aside to protect a specific natural monument, these are generally quite small protected areas and often have high visitor value.
IV	Habitat/species management area	Aiming to protect a particular species or habitats. Many protected areas will need regular, active interventions to address the requirements of particular species or to maintain habitats, but this is not a requirement of the category.
V	Protected landscape/seascape	Area of distinct character with significant, ecological, biological, cultural and scenic value, where safeguarding the integrity of this interaction is vital to protecting and sustaining the area.
VI	Protected area with sustainable use of natural resources	Protected areas that conserve ecosystems and habitats together with associated cultural values and traditional natural resource management systems. They are generally large, where a proportion is under management and where low-level non-industrial use of natural resources are compatible.

Table 1. IUCN- Protected area categories. Adapted from Dudley, N., 2008.

IUCN categories are intended for all kinds of protected area. Some of these may consist entirely of forests, others will contain only a proportion of forest, and some again will have no forest at all. With regard to forest protected areas, there has been some confusion among managers around what constitutes a forest protected area, particularly when such information needs to be reported in wider data collection about forest resource management (IUCN, 2008).

According to [IUCN Guidelines for Applying Protected Area Management Categories](#), to define an extent of forest as a “forest protected area”, it should meet the overall definition of a protected area and fall into one of the IUCN categories of protected areas.

In calculating the proportion of forest in any protected area, managers should remove any areas of trees that do not meet the definition of forest established by the UNCEFE-FAO (see [FAO FRA terms and definitions](#)). In particular:

- Planted forests where the principal management objective is for industrial roundwood, gum/resin or fruit production should *not* be counted.
- Land being restored to natural forest *should* be counted if the principal management objective is to maintain and protect biodiversity and associated cultural values.
- “Cultural forests” should be included *if* they are being protected primarily for their biodiversity and associated cultural values.

Sustainable forest management (SFM) as a dynamic and evolving concept aims to maintain and enhance the economic, social and environmental value of all types of forests for the benefit of present and future generations (UNFF 2009). SFM is compatible with the objectives of protected areas in several of these categories, particularly in categories V and VI. In all categories, management activities

should engage local communities and be consistent with the conservation and sustainable use of biodiversity.

Planning and management

In planning for a protected area system, it is necessary to identify the range of purposes of protected areas and to aim to balance these across the system. Planning should include representative samples of ecological regions and natural landscapes, hotspots of biodiversity and rarity, and habitats for viable populations of rare, endangered and keystone species. To achieve their goals and objectives and to respond to the multiple uses of these areas and potential threats to them, protected areas require specific management actions and interventions, usually set out through a management planning process. In some countries, such planning is legally required for guiding the appropriate management of protected areas.

Management planning in protected areas ensures that management decisions are based on a clear understanding of the protected area's resources, values and goals. It aims to provide a framework to managers for day-to-day operations and long-term management and, if objectives are clear and well written, to set a robust baseline to monitor its effectiveness.

There are various management frameworks and tools to assist protected area managers to organize their operation in terms of planning, organizing administration and staff, decision support and management effectiveness and monitoring (e.g. [IUCN Guidelines for Management Planning of Protected Areas](#), [Best Practice in Strategic Park Management](#), [the Nature Conservancy's Conservation Action Planning Handbook](#)).

Management plan

Management plans are place-specific plans that are based on an assessment of the protected area's values and the potential threats to it. They clearly establish the objectives, strategies and actions to best manage the area. Although a management plan is considered the main product, management planning is a process, and not an event, and it does not end with the approval of the plan.

Management plans should be flexible enough to continuously integrate the results of monitoring into the management process and to adjust and respond accordingly. This adaptive management cycle considers that management is essentially an experimental process, which is being continuously adapted and improved through "learning by doing".

Developing a protected area management plan usually involves four steps, which should be formulated within a rational, adaptive and participatory planning process (Figure 2).



Figure 2. Rational, adaptive and participatory managing planning process (Spoelder, P. *et al.*, 2015)

While each of the six protected-area categories addresses different objectives, all require a proper management planning process. IUCN has developed [management guidance](#) for each of the IUCN protected area categories.

In addition to conserving biological and cultural diversity, it is now recognized that protected areas have important social and economic functions, which are represented in the multiple objectives of many protected areas. Therefore, it is essential to consider a variety of social needs, values and institutional structures, as well as the (potentially conflicting) opinions of all stakeholders. Such considerations can make the preparation of a management plan a complex and challenging task.

Until recently, management planning for protected areas was often done by technical planners without significant consultation with stakeholders or due consideration of their concerns. Given the wide variety of objectives that are now recognized as important for protected areas, and the frequent lack of consensus among stakeholders over these objectives, few people today consider a purely technical planning approach to be sufficient.

Most national and subnational protected-area institutions now recognize that it is essential to include all stakeholders – particularly indigenous peoples, local communities and traditional user groups – in the management planning process, if there is to be consensus on, and participation in, the implementation of the management plan. When it is developed with communities living inside protected areas or dependent communities, a management plan can also be used as a negotiation or an agreement tool among different stakeholders.

Governance

Whereas management is concerned with the actions involved in managing a particular site, governance is concerned with who actually

determines what should be done, who decides what management is carried out, who is responsible for the management and who is held accountable. Governance addresses such principles as legitimacy and voice, the direction taken, the measurement of performance, accountability and addressing fairness and rights.

A wide variety of rights-holders and stakeholders are involved in the governance and management of protected areas, including forest protected areas, such as government agencies and ministries at various levels, elected and traditional authorities, indigenous peoples and local communities, private individuals and non-profit trusts, among others.

Most protected-area and forest management institutions acknowledge the importance of recognizing the rights of indigenous peoples and local communities, sharing the costs and benefits of protected areas and actively involving them in their governance and management. This has led to the recognition of four main types of governance, defined on the basis of who holds authority, responsibility, and who can be held accountable for the key decisions for protected areas:

Governance type	Sub-types
Type A. Governance by government	<ul style="list-style-type: none"> Federal or national ministry or agency in charge Sub-national ministry or agency in charge (e.g. at regional, provincial, municipal level) Government-delegated management (e.g. to an NGO)
Type B. Shared governance	<ul style="list-style-type: none"> Transboundary governance (formal arrangements between one or more sovereign states or territories) Collaborative governance (through various ways in which diverse actors and institutions work together) Joint governance (pluralist board of the multi-party governing body)
Type C. Private governance	<ul style="list-style-type: none"> Conserved areas established and run by: <ul style="list-style-type: none"> Individual landowners Non-profit organizations (e.g. NGOs, universities) For-profit organizations (e.g. corporate landowners)
Type D. Governance by indigenous peoples and local communities	<ul style="list-style-type: none"> Indigenous peoples' conserved territories and areas – established and run by indigenous people Community conserved areas and territories – established and run by local communities

Source: IUCN, 2008

Currently, many protected areas have been established on state-owned lands and waters and are governed by governments; nevertheless, many of the most important places for biodiversity occur on private, communal or on the lands of indigenous peoples. [Privately protected areas](#) as well as private conservation efforts, self-generated by local communities, indigenous peoples or other individual groups, play an essential role in increasing the ecological representation for biodiversity conservation. They promote the participation of a broader scope of stakeholders and the application of innovative funding mechanisms.

While the categories presented above capture the main features of protected area governance, the reality can be far more complex. It can often be difficult to assign a governance type to a protected area, as some combine elements of several governance types or have different governance types across different zones. Private-public partnerships for protected area management are crucial to ensuring the long-term involvement of stakeholders and its financial sustainability. Landowners, private sector, indigenous peoples and local communities, NGOs, among others, need to be actively engaged to ensure conservation efforts are integrated for further optimization of protected area management.

Further information about the different types of protected area governance can be found in the [IUCN Guidance on Governance of Protected Areas: From understanding to action](#).

Quality of governance

Good governance of protected areas is essential if management is to be effective and the objectives are to be achieved; it is often the key to preventing or managing social conflicts and generating and maintaining public support. According to the Programme of Work on Protected Areas (PoWPA) of the CBD, the following key concepts should be considered to ensure the good governance of protected areas (CBD, 2004):

- **Participation:** Ensure the full and effective participation of relevant rightsholders and stakeholders, including indigenous peoples, local communities and actors entitled because of customary rights and considerations of gender and social equity.
- **Innovation:** Open the way for new types of governance for protected areas to be legally recognized, effectively managed and promoted through policy, financial, institutional and community mechanisms.

- **Respect:** Ensure attention and respect for the rights, culture and needs of the people living in and around protected areas and especially for the local knowledge, practices and institutions of indigenous peoples and local communities.
- **Benefit-sharing:** Ensure mechanisms are in place to assess the economic, socio-cultural costs, benefits and impacts arising from protected areas, and to ensure the equitable sharing of the costs and benefits.
- **Free prior and informed consent:** Require the consent of rights holders, including indigenous peoples and local communities, before undertaking actions that would affect their occupancy of an area, or change their access to natural resources as a consequence of establishing or managing protected areas.
- **Governance principles:** Consider good governance in all decision-making processes. Such governance respects the rights of local communities, promotes constructive dialogue and fair access to information, is accountable; and establishes institutions and procedures for fair dispute resolution.

Transboundary protected areas

Defined by IUCN as “Transboundary protected areas” (TBPA), these areas span the boundaries of one or more countries and involve some form of co-operation for governance or management (Vasilijevi?, M *et al.*, 2015). The most recent inventory identified 227 TBPA complexes, incorporating 3 043 individual protected areas or internationally designated sites (UNEP-WCMC, 2007).

IUCN recognizes three overarching trends of good practice for transboundary conservation governance. Firstly, governance should engage multiple players and stakeholders; secondly, governance should be nested in various governance systems at various levels; and, thirdly, governance should be highly adaptive, and should consider robust monitoring and evaluation systems. For more information on the governance of TBPAs, see [IUCN Transboundary Conservation](#).

Management effectiveness

Information on management effectiveness is a cornerstone of the good management of protected areas. Management effectiveness evaluation is defined as the assessment of how well the protected area is being managed – primarily the extent to which it is protecting values and achieving goals and objectives. The term “management effectiveness” reflects three main themes: design issues relating to both individual sites and protected area systems; adequacy and appropriateness of management systems and processes; and delivery of protected area objectives including conservation of values.

Evaluation tools

The Protected Area Management Effectiveness (PAME) approach has been applied widely to evaluate the strengths and weakness of individual protected areas and systems of protected areas. PAME can be defined as “the assessment of how well protected areas are being managed – primarily the extent to which management is protecting values and achieving goals and objectives” (Hockings *et al.*, 2006).

The IUCN and the IUCN World Commission on Protected Areas (WCPA) have developed the [Framework for assessing management effectiveness of protected areas](#), from which several management effectiveness methodologies have been developed. Currently there are more than 40 different PAME methodologies that have been applied in more than 100 countries.

Most commonly used are the [Rapid Assessment and Prioritization of Protected Area Management \(RAPPAM\)](#) and [Management Effectiveness Tracking Tool \(METT\)](#), both developed by the World Wild Fund for Nature (WWF). To learn more about the different PAME methodologies, visit the Protected Planet Section [Methodologies](#).

Currently, several initiatives worldwide promote good effective management for protected areas. The UNEP-WCMC has launched [The Global Data Base on Protected Areas Management Effectiveness \(GD-PAME\)](#) aimed to gather information on management effectiveness assessments across protected areas, with current information from 169 countries globally.

As a way to encourage improved performance in protected area management, in 2014, the IUCN launched the [IUCN Green List of Protected and Conserved Areas Programme](#), which aims to increase the number of protected and conserved areas that are effectively and equitably managed, and that deliver positive conservation outcomes. The programme is set up as a voluntary mechanism, where the performances of protected areas are assessed against a set of criteria and generic indicators defined by the IUCN Green List Standard, covering four themes: i) good governance, ii) sound design and planning, iii) effective management, and iv) positive conservation outcomes.

PAME assessments are a major component of the IUCN Green List, providing both an important entry point for candidate sites and an indicator of good management. As of today, 46 sites in 14 countries (Australia, China, Columbia, Egypt, France, Italy, Jordan, Kenya, the Republic of Korea, Lebanon, Mexico, Peru, Spain and the United Arab Emirates) have been certified according to the IUCN Green List.

Challenges and the way forward

Protected areas are essential to address biodiversity loss, combat climate change, and to sustain the livelihoods of millions of people around the world. They are a key to reaching global biodiversity strategies and achieving many of the SDGs to which national governments around the world have committed themselves within the framework of the United Nations.

Challenges

Protected areas, including those with a significant portion of forested area, face numerous challenges to achieving their purpose. Even if a management system is in place, protected areas may be threatened by wildlife poaching, illegal extraction of forest products such as timber, deforestation, illegal mining, encroachment by settlers, overuse by tourists, natural disasters such as fires and droughts, and infrastructure development. Sometimes there is local opposition to having protected areas because of a negative perception of the associated costs and constraints imposed and because of negative opinions about the way they are managed and governed, which contributes to the degradation of these areas.

Many protected areas lack sustainable funding, effective management and the support and involvement of local and indigenous peoples. In addition, there may be conflicting laws and rights over the tenure and use of, as well as access to, natural resources within protected areas. Maintaining a balance between conservation measures and customary use is a continuing challenge in many forest protected areas, and human activities such as poaching and fire may also have significant negative impacts on conservation objectives.

Transboundary air pollution and climate change are also among the emerging challenges and threats to forest protected areas. With rapid economic change and, in some cases, declining state revenues, governments are under increasing pressure to open-up protected areas to extractive industries. Moreover, where the protected-area system is insufficiently developed, a lack of integration of land-use plans and landscape connectivity reduces the capacity of isolated protected areas to maintain sufficient good-quality habitat for certain species and to ensure their resilience in the face of climate change.

Way forward

Protected areas, including forest protected areas, nevertheless remain an important part of global conservation efforts. Natural ecosystems make a significant contribution to climate-change mitigation by storing and sequestering carbon in vegetation and soils, and to adaptation by maintaining essential ecosystem services that help societies respond to, and cope with, climate change and other environmental challenges.

Directing efforts and resources for assessing the effectiveness of protected area management and developing systemic reporting systems is key to fostering an adaptive management approach. This can help towards overall improved management and towards targeting funding and resources more efficiently. Investment in expanded and better-connected protected-area systems, under a wider range of governance and management regimes, should be prioritized as a key strategy to maintain the viability of species, communities and ecosystems. Protected-area systems should be designed to address the threats posed by climate change, as well as the increased demand for, and changing patterns of, resource use.

A new agenda for protected areas requires that a broad spectrum of actors and rightsholders be involved, and that more attention is paid to landscapes managed by indigenous peoples, local communities, private owners and other actors as part of protected area systems. Enabling them to apply their traditional knowledge and securing their rights to land and resources will support a more equitable approach to protected area governance and management and may lead to greater success of protected areas for biodiversity conservation. There should be more attention focused on ways to integrate and mainstream protected areas into sustainable development, including by promoting “green” infrastructure as a strategic part of responses to climate change. SFM has an important role to play in meeting the future challenges facing protected areas.

Also key to adaptive management is the ability to learn from existing practices in relation to new challenges, and to build this learning into exchange programmes that will help to improve knowledge and capacity among protected area professionals. One way to achieve this is to document and learn from case studies that cover the many themes and topics involved in protected area governance and management. The [PANORAMA web platform](#) promotes innovative approaches to protected area management and governance itself, including a wide range of case studies on forest protected areas.

Further detailed guidance and support for establishing and managing protected areas can be found in the [Tools](#) and [Case studies](#) of this module.

Further learning

- Ashley, R., Russell, D. & Swallow, B. 2006. [The policy terrain in protected area landscapes: challenges for agroforestry in integrated landscape conservation](#). *Biodivers Conserv* (2006) 15: 663.
- Bennett, A.F. 2003. [Linkages in the Landscape: The Role of Corridors and Connectivity in Wildlife Conservation](#). IUCN, Gland, Switzerland and Cambridge, UK. xiv + 254 pp.
- Borrini-Feyerabend, G., Dudley, N., Jaeger, T., Lassen, B., Pathak Broome, N., Phillips, A. & Sandwith, T. 2013. [Governance of Protected Areas: From understanding to action](#). Best Practice Protected Area Guidelines Series No. 20, Gland, Switzerland: IUCN. xvi + 124pp.
- Brown, J., Mitchell, N., & Beresford, M. (Eds.). 2004. [The Protected Landscape Approach: Linking Nature, Culture and Community](#). IUCN, Gland, Switzerland and Cambridge, UK. xv + 270pp. plus 12 colour plates.
- Coad, L., Campbell, A., Miles, L. & Humphries, K. 2008. [The costs and benefits of forest protected areas for local livelihoods: a review of the current literature](#). UNEP-WCMC.
- Dudley, N. & Stolton, S. 2003. [Running Pure: The Importance of Forest Protected Areas to Drinking Water](#). WWF, Gland.
- Duinker, P., Wiersma, Y., Haider, W., Hvenegaard, G. & Schmiegelow, F. 2010. [Protected areas and sustainable forest management: What are we talking about?](#) — THE FORESTRY CHRONICLE. 86. 10.5558/tfc86173-2.
- Ellis, E.A. & Porter-Bolland, L. 2008. [Is community-based forest management more effective than protected areas? A comparison of land use/land cover change in two neighboring study areas of the Central Yucatan Peninsula, Mexico](#). *Forest Ecology and Management*, 256: 1971–1983.
- Ervin, J., Sekhran, N., Dinu, A., Gidda, S., Vergeichik, M. & Mee, J. 2010. [Protected Areas for the 21st Century: Lessons from UNDP/GEF's Portfolio](#). New York: United Nations Development Programme and Montreal: Convention on Biological Diversity.
- FAO. 2014. [Protected areas, people and food security](#). An FAO contribution to the World Parks Congress, Sydney, 12–19 November 2014.
- Geldmann, J., Manica, A., Burgess, N., Coad, L. & Balmford, A. 2019. [A global-level assessment of the effectiveness of protected areas at resisting anthropogenic pressures](#). *Proceedings of the National Academy of Sciences*. 116. 201908221. 10.1073/pnas.1908221116.
- Graham, J., Amos, B., & Plumtre, T. 2003. [Governance principles for protected areas in the 21st Century](#). Paper prepared for presentation at 5th World Park Congress, Durban, South Africa.
- Hayes, T. 2006. [Parks, People, and Forest Protection: An Institutional Assessment of the Effectiveness of Protected Areas](#). *World Development*. 34. 2064-2075. 10.1016/j.worlddev.2006.03.002
- Lausche, B. 2011. [Guidelines for Protected Areas Legislation](#). IUCN, Gland, Switzerland. xxvi + 370 pp.
- Leemans, S. 2017. [Preventing Paper Parks: How to Make the EU Nature Laws Work](#). WWF, UK
- Lopoukhine, N., Crawhall, N., Dudley, N., Figgis, P., Karibuhoye, C., Laffoley, D., Londoño, J., MacKinnon, K. & Sandwith, T. 2012. [Protected areas: Providing natural solutions to 21st Century challenges](#). *Sapiens*. 5. 116-131.
- Mansourian, S., Belokurov, A. & Stephenson, P.J. 2009. [The role of forest protected area in adaptation to climate change](#). *Unasylva*, 60 (1-2), 63-68
- Porter-Bolland, L., Ellis, E., Guariguata, M., Ruiz-Mallén, I., Negrete-Yankelevich, S. & Reyes-García, V. 2012. [Community Managed Forests and Forest Protected Areas: An Assessment of Their Conservation Effectiveness Across the Tropics](#). *Forest Ecology and Management*, Vol. 268, 6-17.
- Prüssmann J., Suárez, C. & Chaves, M. 2019. [Atlas of Conservation opportunities in the Amazon biome under climate change considerations](#). Amazon Vision Initiative. Redparques, WWF, FAO, IUCN, UNEP, 80 p., Cali (Colombia).

Qin, S., Golden Kroner, R.E., Cook, C., Tesfaw, A.T., Braybrook, R., Rodriguez, C.M., Poelking, C. & Mascia, M.B. 2019. [Protected area downgrading, downsizing, and degazettement as a threat to iconic protected areas](#). *Conservation Biology*, 33: 1275-1285.

Tauli-Corpuz, V., Alcorn, J. & Molnar, A. 2018. [Cornered by Protected Areas: Replacing Fortress Conservation with Rights-based Approaches Helps Bring Justice for Indigenous Peoples and Local Communities, Reduces Conflict, and Enables Cost-Effective Conservation and Climate Action](#). Washington, DC: Rights and Resources Initiative.

The International Institute for Environment and Development (IIED). 2016. [From livelihoods to equity for better protected area conservation](#).

The International Institute for Environment and Development (IIED). 2016. [Advancing equity in protected area conservation](#).

UNEP-WCMC. 2016. [A decade of protected area growth](#). UNEP-WCMC. Cambridge, UK.

Vasiljevi?, M., Zunckel, K., McKinney, M., Erg, B., Schoon, M., & Rosen Michel, T. 2015. [Transboundary Conservation: A systematic and integrated approach](#). *Best Practice Protected Area Guidelines Series No. 23*, Gland, Switzerland: IUCN. xii + 107 pp

Velazquez, A., Bray, D.B., Duran, E., Romas, V.H., Mas, J.-F., McNab, R., Barry, B.D. & Radachowsky, J. 2008. [Tropical deforestation, community forests, and protected areas in the Maya Forest](#). *Ecology and Society*, 13: 56

Zafra-Calvo, N., Garmendia, E., Unai, P., Ignacio, P., Gross-Camp, N., Brockington, D., Cortes-Vazquez, J. Coolsaet, B. & Burgess, N. (2019). [Progress toward Equitably Managed Protected Areas in Aichi Target 11: A Global Survey](#). *BioScience*. 69. 1-7. 10.1093/biosci/biy143.

Credits

This module was completely revised in 2020, and developed with the kind collaboration of the following people and/or institutions:

Author(s): Kristina Rodina, Luna Milatovic, Fabiola Espinoza - FAO

Contributor(s): Hivy Ortiz-Chour - FAO

Reviewer(s): Trevor Sandwith, Nigel Dudley - IUCN World Commission on Protected Areas

