


Protected Areas in Forest Conservation: Challenges and Opportunities

Panayiotis G. Dimitrakopoulos ^{1,*}  and Nikoleta Jones ^{2,*}

¹ Department of Environment, University of the Aegean, 811 00 Mytilene, Greece

² Department of Land Economy, University of Cambridge Conservation Research Institute, University of Cambridge, Cambridge CB3 9EP, UK

* Correspondence: pdimi@env.aegean.gr (P.G.D.); nj322@cam.ac.uk (N.J.); Tel.: +30-22510-36236 (P.G.D.); +44-(0)-1223-331025 (N.J.)

Forest ecosystems are important habitats for a vast number of species worldwide. These ecosystems are degrading faster than they are regenerating, due to the increased demand for natural resources and the continued application of non-sustainable practices by humans. In order to protect these important ecosystems, the designation of protected areas (PAs) has become the primary policy tool for forest conservation and the provision of ecosystem services nowadays. According to the International Union for Conservation of Nature (IUCN) approximately 10% of forests across the world are officially designated as protected areas [1].

The number of forest PAs is expected to significantly increase in the next decade considering the commitment of several governments to protect 30% of land by 2030 (such as the European Union and the United States). This Special Issue (SI) aims to explore challenges and opportunities within forest PAs, focusing on all aspects of the forest policy process, from forest policy planning to implementation. A total of 15 papers are included, ranging from studies focusing on national and regional, to global scales.

Four main themes are explored in the SI. The first theme refers to current initiatives of forest management across the world, reflecting the tremendous efforts by several organizations in halting deforestation. Major challenges have also been identified, reflecting the declining rates of forest coverage across the world [2,3]. A second theme refers to policy planning processes within existing forest governance frameworks focusing, in particular, on the level of engagement and empowerment of local stakeholders. The benefits of including a variety of stakeholders in decision-making process has long been underlined in the literature [4]. In this SI, several studies focus on this topic, identifying the urgent need for further improvements based on the principles of inclusivity and diversity while highlighting the important role of trust in specific entities. In close relation to this topic, a third theme of the SI refers to social equity, and in particular, how the impacts of forest PAs are distributed among different users [5]. The need to accurately assess the social impacts of PAs has been gaining momentum in the relevant literature during recent years [6]. How these impacts are distributed will influence social equity issues and ultimately the governance of PAs [7]. Several papers in this SI highlight issues with social equity and how this has obstructed the effectiveness of forest PAs. A final theme in the SI refers to potential solutions aimed at halting the loss of biodiversity within forest ecosystems. Several directions are proposed by the SI authors which can be useful for policy makers and practitioners, especially in the context of the 30 by 30 targets.

As regards the first theme of the SI, on current policy practices, a variety of initiatives in forest management across different regions are presented. In the Misuku Hills in Malawi, for example, a variety of policies have been adopted following international standards to increase local control and promote community-based management in forests. Despite the lack of implementation and enforcement of the proposed policies, forest conservation activities (e.g., enhancing tree planting and natural regeneration, forest protection at a



Citation: Dimitrakopoulos, P.G.; Jones, N. Protected Areas in Forest Conservation: Challenges and Opportunities. *Forests* **2021**, *12*, 488. <https://doi.org/10.3390/f12040488>

Received: 15 March 2021

Accepted: 12 April 2021

Published: 15 April 2021

Publisher's Note: MDPI stays neutral with regard to jurisdictional claims in published maps and institutional affiliations.



Copyright: © 2021 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

catchment scale to conserve biological and cultural diversity, forest resources extraction regulation, promotion of beekeeping) indicate that rural communities have the potential to take over the management of customary and public forest lands [8]. In Tanzania, Gizachew et al. [9] found that most PAs were effective in reducing deforestation rates, even if there were important pressures in their surrounding lands. In Europe, Bujoczek et al. [10] found that the quality of forest habitats under strict and active protected status in the regions was enhanced relative to that of managed forests. In Serbia, Maruna et al. [11] describe the historical context of forest planning and management processes and discuss how the concept of land use planning for urban forest protection was established in the country through the critical re-assessment of the institutional structure of land use planning in a post-socialist environment. Finally, in the Western Terai Region of Nepal, timber harvesting increased substantially three years after scientific forest management implementation in community forestry systems, even if mean timber volume was reduced for community forest users [12].

Despite the increase in policy initiatives such as those mentioned above, meeting biodiversity conservation targets remains problematic, as many areas face continuous pressures. In the study by Wade et al. [13] presented in this SI, the authors estimated global trends in tree cover loss between 2001 and 2018. They found a remarkable loss of forested land inside PAs, and a similar pattern in temporal trends in forest loss in PAs compared to those of global forest loss. These challenges are expected to be further aggravated by the COVID-19 pandemic. The actual long-term impacts of the pandemic on environmental and socio-economic issues are expected to be extremely complex and will take several years to be thoroughly explored. In this SI, a collaborative study by researchers and practitioners from European PAs is presented [14], with some initial findings on how COVID-19 has caused an increase in PA visitors, accompanied by an increase in irresponsible behaviors bringing additional challenges for management authorities.

The second theme of this SI analyzes issues of decision-making processes. Laktić et al. [15] analyze links and relations between different stakeholders during participatory planning processes of the Natura 2000 management program in Slovenia. A main direction proposed by the authors is that groups of stakeholders from different institutions and sectors must be further empowered in order to be included in such processes. Similar issues emerged in the study by Kimengsi et al. [16] in Nepal. The authors highlighted the need to include underprivileged groups in co-management processes in the Annapurna Conservation Area who remain highly motivated to participate despite the current top-down approach [16]. Furthermore, in the study by Pezdevšek Malovrh et al. [17] the authors identify a lack of stakeholder engagement and participation as one of the main parameters negatively influencing the implementation of conservation policies in several EU and non-EU countries. In close relation to engagement and empowerment, trust in specific entities and organizations is another important factor that needs to be taken into consideration. For example, in the study by Referowska-Chodak [18] in Poland, the authors found that levels of trust towards foresters were high, leading to a favorable opinion for this specific group to have a more leading role in nature conservation policies.

The third theme of the SI refers to issues of social equity in forest PAs. Forests provide a variety of goods to local communities such as timber, food, fuel, and pharmaceutical products. Nevertheless, the equitable distribution of benefits derived from forests among users remains unclear. For example, in a study conducted in the Western Terai Region of Nepal, most of produced timber was distributed among middle- and high-class groups, while poor households had very limited access to these resources [12]. In Mount Cameroon National Park, Akonwi Nebasifu and Majorjy Atong [19] found, through an ethnographic study, that state regulations restricted—to some extent—access to natural resources for local communities. However, the authors identified alternative unofficial pathways, which allowed customary practices to take place, and access to resources was possible for local communities via informal processes.

Considering the challenges identified in the previous three topics and the ambitious 30 by 30 target, it is crucial for the Editors of this SI to define a final theme which focuses on potential solutions and future policy directions. Several suggestions have been made in the papers constituting the SI, focusing on ecological and socio-economic aspects. Ecological connectivity is a key point for future policy directions. Common management activities aimed at reducing high deforestation rates in large PAs and connecting these areas through restored forest corridors at the landscape level were proposed as a main priority in the study by Gizachew et al. [9] in Tanzania. Connectivity of forests with corridors was also proposed to promote long-term persistence of sacred church forests in northern Ethiopia by increasing species dispersal rates and reducing human disturbance within forests [20]. Restoration of the structure and composition of remaining forest habitats and reforestation were proposed to be adopted in the Mississippi Alluvial Valley, as a small percentage of the forest patch area was currently protected [21].

Following a more holistic approach, Ola and Benjamin [22] demonstrated in Western Africa, that both environmental protection and economic goals must be combined before effective environmental protection can take place. However, poverty alleviation targets must not be completely ignored, as many West Africans rely on forest and catchment resources to support their livelihoods [19,22]. Finally, a common proposal in several papers of the SI, which brings us back to the second theme of the SI, is that forest conservation needs to become more inclusive and diverse by incorporating a number of local stakeholders in decision making processes [15–18].

As a concluding remark, this SI captures key debates in the forest management literature, especially in relation to PAs and how the management of these areas can be improved. The next decade is expected to be particularly important for biodiversity conservation, considering the commitment of several nations to the ambitious target of protecting 30% of land and 30% of water by 2030. The evidence provided in this SI is useful for practitioners, policy-makers and researchers working towards these targets. A broad conclusion in this SI is that future policies in forest management need to focus on the issues of social equity, empowerment and governance in order to halt the loss of biodiversity and achieve the more sustainable co-existence of people and forests.

Author Contributions: Conceptualization, P.G.D. and N.J.; writing—original draft preparation, P.G.D. and N.J.; writing—review and editing, P.G.D. and N.J. Both authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Conflicts of Interest: The authors declare no conflict of interest.

References

1. Dudley, N.; Phillips, A. *Forests and Protected Areas: Guidance on the Use of the IUCN Protected Area Management Categories*; IUCN: Gland, Switzerland; Cambridge, UK, 2006; p. 58.
2. Keenan, R.J.; Reams, G.A.; Achard, F.; de Freitas, J.V.; Grainger, A.; Lindquist, E. Dynamics of global forest area: Results from the FAO global forest resources assessment. *For. Ecol. Manag.* **2015**, *352*, 9–20. [[CrossRef](#)]
3. Wolf, C.; Levi, T.; Ripple, W.J.; Zárrete-Charry, D.A.; Betts, M.G. A forest loss report card for the world's protected areas. *Nature Ecol. Evol.* **2021**. [[CrossRef](#)] [[PubMed](#)]
4. Berkes, F. Evolution of co-management: Role of knowledge generation, bridging organizations and social learning. *J. Environ. Manag.* **2009**, *90*, 1692–1702. [[CrossRef](#)] [[PubMed](#)]
5. Jones, N.; Graziano, M.; Dimitrakopoulos, P.G. Social impacts of European Protected Areas and policy recommendations. *Environ. Sci. Policy* **2020**, *112*, 134–140. [[CrossRef](#)] [[PubMed](#)]
6. Jones, N.; McGinlay, J.; Dimitrakopoulos, P.G. Improving social impact assessment of Protected Areas: A review of the literature and directions for future research. *Environ. Impact Asses.* **2017**, *64*, 1–7. [[CrossRef](#)]
7. Ward, C.; Stringer, L.C.; Holmes, G. Protected area co-management and perceived livelihood impacts. *J. Environ. Manag.* **2018**, *228*, 1–12. [[CrossRef](#)]
8. Coutts, C.; Holmes, T.; Jackson, A. Forestry Policy, Conservation Activities, and Ecosystem Services in the Remote Misuku Hills of Malawi. *Forests* **2019**, *10*, 1056. [[CrossRef](#)]

9. Gizachew, B.; Rizzi, J.; Shirima, D.D.; Zahabu, E. Deforestation and Connectivity among Protected Areas of Tanzania. *Forests* **2020**, *11*, 170. [[CrossRef](#)]
10. Bujoczek, L.; Zięba, S.; Bujoczek, M. Variation in Deadwood Microsites in Areas Designated under the Habitats Directive (Natura 2000). *Forests* **2020**, *11*, 486. [[CrossRef](#)]
11. Maruna, M.; Crnčević, T.; Milojević, M.P. The Institutional Structure of Land Use Planning for Urban Forest Protection in the Post-Socialist Transition Environment: Serbian Experiences. *Forests* **2019**, *10*, 560. [[CrossRef](#)]
12. Bhusal, P.; Karki, P.; Kimengsi, J.N. Timber Distribution Dynamics in Scientifically Managed Community Forests: Learning from Nepal. *Forests* **2020**, *11*, 1032. [[CrossRef](#)]
13. Wade, C.M.; Austin, K.G.; Cajka, J.; Lapidus, D.; Everett, K.H.; Galperin, D.; Maynard, R.; Sobel, A. What Is Threatening Forests in Protected Areas? A Global Assessment of Deforestation in Protected Areas, 2001–2018. *Forests* **2020**, *11*, 539. [[CrossRef](#)] [[PubMed](#)]
14. McGinlay, J.; Gkoumas, V.; Holtvoeth, J.; Fuytes, R.F.A.; Bazhenova, E.; Benzoni, A.; Botsch, K.; Martel, C.C.; Sánchez, C.C.; Cervera, I.; et al. The Impact of COVID-19 on the Management of European Protected Areas and Policy Implications. *Forests* **2020**, *11*, 1214. [[CrossRef](#)]
15. Laktić, T.; Žiberna, A.; Kogovšek, T.; Pezdevšek Malovrh, Š. Stakeholders' Social Network in the Participatory Process of Formulation of Natura 2000 Management Programme in Slovenia. *Forests* **2020**, *11*, 332. [[CrossRef](#)]
16. Kimengsi, J.N.; Bhusal, P.; Aryal, A.; Fernandez, M.V.B.C.; Owusu, R.; Chaudhary, A.; Nielsen, W. What (De)Motivates Forest Users' Participation in Co-Management? Evidence from Nepal. *Forests* **2019**, *10*, 512. [[CrossRef](#)]
17. Pezdevšek Malovrh, Š.; Paletto, A.; Posavec, S.; Dobšinská, Z.; Đorđević, I.; Marić, B.; Avdibegović, M.; Kitchoukov, E.; Stijović, A.; Trajkov, P.; et al. Evaluation of the Operational Environment Factors of Nature Conservation Policy Implementation: Cases of Selected EU and Non-EU Countries. *Forests* **2019**, *10*, 1099. [[CrossRef](#)]
18. Referowska-Chodak, E. The Organization of Nature Conservation in State-Owned Forests in Poland and Expectations of Polish Stakeholders. *Forests* **2020**, *11*, 796. [[CrossRef](#)]
19. Akonwi Nebasifu, A.; Majory Atong, N. Land Use and Access in Protected Areas: A Hunter's View of Flexibility. *Forests* **2020**, *11*, 481. [[CrossRef](#)]
20. Woods, C.L.; Bitew Mekonnen, A.; Baez-Schon, M.; Thomas, R.; Scull, P.; Abraha Tsegay, B.; Cardelús, C.L. Tree Community Composition and Dispersal Syndrome Vary with Human Disturbance in Sacred Church Forests in Ethiopia. *Forests* **2020**, *11*, 1082. [[CrossRef](#)]
21. Elliott, A.B.; Mini, A.E.; McKnight, S.K.; Twedt, D.J. Conservation–Protection of Forests for Wildlife in the Mississippi Alluvial Valley. *Forests* **2020**, *11*, 75. [[CrossRef](#)]
22. Ola, O.; Benjamin, E. Preserving Biodiversity and Ecosystem Services in West African Forest, Watersheds, and Wetlands: A Review of Incentives. *Forests* **2019**, *10*, 479. [[CrossRef](#)]