



# ASSESSING LAND-USE GOVERNANCE SYSTEMS AS POTENTIAL OECMS IN ICELAND

Jon Geir Petursson<sup>1\*</sup>, Helga Hvanndal Bjornsdottir<sup>1</sup> and Jukka Siltanen<sup>1</sup>

\* Corresponding author: [jgp@hi.is](mailto:jgp@hi.is)

<sup>1</sup> Environment and Natural Resources Graduate Program, University of Iceland  
Saemundargata 2, 102 Reykjavík, Iceland

## ABSTRACT

Protected areas (PAs) and Other Effective Area-based Conservation Measures (OECMs) are nation states' key conservation strategies to meet the 30 per cent area-based conservation target of the Global Biodiversity Framework (GBF). Iceland is updating its biodiversity strategy, aligning with the GBF targets. The objective of this study is to progress the development of OECMs and to examine their potential in Iceland. Iceland has multiple area-based governance systems with various objectives, additional to its formal PA estate. We identify and analyse relevant area-based governance systems in the country, employing a stepwise approach based on institutional analysis and application of the IUCN-WCPA OECM site-level tool. The study identifies eleven area types for consideration while the analysis reveals their different qualities and challenges and suggests eight of these as potential OECMs. This first study of terrestrial OECMs in Iceland illustrates a considerable potential to expand such area-based conservation efforts. OECMs are not yet included in Iceland's nature conservation policy framework, highlighting a need for national policy guidance, for which we provide recommendations.

**Keywords:** Global Biodiversity Framework, nature conservation policy, institutional analysis, governance

## INTRODUCTION

The UN-CBD Global Biodiversity Framework (GBF) commits signatory countries to conserve at least 30 per cent of terrestrial and inland water areas, and of marine and coastal areas, within systems of protected areas (PAs) and Other Effective Area-based Conservation Measures (OECMs) before the year 2030, especially in areas of particular importance for biodiversity and ecosystem functions and services (CBD, 2022).

PAs are a well-established approach, generally set up under national legal frameworks, spatially defined with different systems of governance and have nature conservation as the primary objective, while also delivering multiple other ecosystem services to society (Dudley, 2008). Their coverage has been increasing and currently encompasses around 18 per cent of the global terrestrial area, still far from the 30 per cent target although with significant national differences (Maxwell et al., 2020; Robinson et al., 2024).

In addition to formal PAs, many other area-based governance arrangements have the capacity to deliver nature conservation (Gurney et al., 2021; IUCN-WCPA, 2019). Such potential can be found, for example, in forest reserves, military sites, recreational areas and water conservation areas (Cook, 2024a). Where such an area can demonstrate achievement of biodiversity conservation outcomes, it could be considered as an OECM (Dudley et al., 2018; Gurney et al., 2021; Robinson et al., 2024). OECMs are now a legitimate part of nation states' efforts to reinforce nature conservation in the new GBF, and are seen as additional and complementary to each country's formal PA estate (Jonas et al., 2018, 2024). Key differences between OECMs and PAs are that firstly, OECMs must demonstrate positive biodiversity outcomes, and secondly OECMs can be managed with primary objectives other than nature conservation (Jonas et al., 2018). Area-based governance systems that deliver conservation in addition to formal PAs can enable more inclusive conservation

efforts managed by a diverse set of stakeholders, which broadens the spectrum of area-based conservation measures.

A major challenge in nation states' efforts in recognising and including areas as OECMs within area-based conservation is defining the necessary qualities such areas must possess. In 2018, the Convention on Biological Diversity (CBD) adopted a definition of OECMs and provided the criteria an area must fulfil to be considered as an OECM (CBD, 2018). General guidelines that interpret these criteria (IUCN-WCPA, 2019) and a site-level tool (Jonas et al., 2023) have also been provided to support the application of the CBD decision. While this guidance is useful, the concept is still evolving, and there is ongoing discussion about their attributes and how they might be accommodated within diverse national contexts and systems (Fitzsimons et al., 2024a). Many nation states are evaluating which land-use governance systems can be recognised as OECMs (Cook, 2024a, 2024b; Dudley et al., 2018). Some apply the IUCN-WCPA (2019) criteria to screen possible OECMs (Cook, 2024a). Examples include Japan (Shiono et al., 2021), Spain (Rodríguez-Rodríguez et al., 2021), South Africa (Marnewick et al., 2021), UK (IUCN-UK, 2023) and Australia (Fitzsimons et al., 2024b).

This paper focuses on identifying potential terrestrial OECMs in Iceland, a country that is currently assessing its national biodiversity policy, seeking to align it with the new GBF commitments. This paper complements a recent study assessing the potential for marine OECMs in Iceland (Ólafsdóttir et al., 2024). The objective is to examine which area-based governance systems might qualify as terrestrial OECM candidates and to contribute to the policy development for including such areas into conservation efforts. The following research questions guided our analysis:

1. What area-based land-use systems of governance are likely to include individual areas suitable for consideration as candidate OECMs, and what are the associated challenges and opportunities?
2. What are the policy implications of the analysis for formalising OECMs in Iceland and beyond?

## ICELAND'S PROTECTED AREAS AND OTHER AREA-BASED CONSERVATION GOVERNANCE

The first PA was established in Iceland in 1930 in Þingvellir National Park under site-specific legislation (Siltanen et al., 2022). After a quarter-century hiatus, the *Nature Conservation Act* was passed in 1956, prompting a gradual expansion of the PA estate (Petursson et al., 2016). After nearly a century of area-based conservation efforts, formal terrestrial PAs now cover approximately 25 per cent of the country's total terrestrial area of 103,000 km<sup>2</sup>, divided into around 130 individual PA units of various size, established either under the Act or through site-specific legislation (URN, 2022). Notably one PA is by far the largest: Vatnajökull National Park, established in 2007, covers around 15,000 km<sup>2</sup>, is a World Heritage Site and the largest national park in Europe outside Russia (Petursson & Kristofersson, 2021).

Although Iceland has already developed a considerable terrestrial PA estate, much of it features glaciers and highlands; areas that do not necessarily possess high biodiversity conservation value. Ottósson et al. (2016) noted that there is a need to expand conservation efforts to encompass more biodiversity-rich areas, particularly in the lowlands. Supplementary Material 1 gives further detail on the Icelandic PA context.

Concurrent with the evolution of PAs, Iceland developed multiple other land-use area-based governance systems. These include areas reserved for forestry, land restoration, water conservation, religious purposes, recreation, local government purposes and single site-specific arrangements. We examined the extent to which such governance types might contain individual sites with potential to be designated as OECMs.

## METHODS

We organised our analysis of possible OECMs in Iceland according to the following stepwise design (Table 1). The data used for the analysis come from both primary and secondary sources.

The first step was scoping area-based governance arrangements in Iceland. This was carried out by a systematic analysis of the key regulatory frameworks and policy documents that relate to land-use governance systems. This resulted in eleven possible area types that we deemed having potential to qualify as OECMs. The scoping approach was broad to ensure the inclusion of as many potential area types as possible.

The second step was an institutional analysis of the governance systems associated with the potential area types (Petursson & Kristofersson, 2021; Siltanen et al.,

**Table 1.** A stepwise analytical approach to assess area types as possible OECM candidates

Step	Approach	Description
1	Scoping	Review of policy and regulatory documents, examining possible area-based governance arrangements and identifying possible OECM candidates
2	Institutional analysis	Analysis of the qualities of the area-based governance systems identified in the scoping step
3	Application of the OECM framework	Adaptation of the IUCN-WCPA site-level tool for OECMs (Jonas et al., 2023) to assess the candidate area types
4	Interviews	Representatives of OECM candidate area types interviewed about their perceptions of potential OECM identification (see Supplementary Material 2 for details)
5	Ranking	Ranking area types according to suitability to be considered OECMs
6	Recommendations for identifying potential OECMs	Discussing opportunities and constraints for each area type and needs for a possible recognition as OECM

2022). This included analysis of governance components such as their key management objectives, legal and regulatory frameworks, lead actors, property rights, extent and coverage. This analysis provided information about the qualities of the respective governance systems and allowed for an understanding of suitability for OECM consideration.

In the third step we applied the guidelines and criteria from the IUCN-WCPA site-level tool for OECMs to the eleven area type candidates we had identified and analysed (Jonas et al., 2023). This framework served as a basis for determining the extent to which an area type is likely to meet the international OECM criteria. While these criteria are designed to be applied at the site-level, we have adapted them to assess governance types, leaving out those that cannot be deployed at this level. Our analysis is intended to identify the most promising governance types for follow-up site-based analyses.

The fourth step involved key informant semi-structured interviews with representatives from the governance authority responsible for each of the area types with potential to be OECMs. Given the voluntary nature of OECM establishment (Fitzsimons et al., 2024a), understanding governance authority perceptions is of critical importance because seeking free, prior and informed consent is an essential precursor to applying the site-level tool (Jonas et al., 2023). Questions focused on their understanding of OECMs, views on the various systems being considered as OECMs and reconciliation of biodiversity and nature conservation objectives with current management objectives.

The fifth step was to examine key opportunities and constraints for including each area as an OECM. We then ranked the area types from the most likely to the

least likely to include suitable OECMs and grouped them accordingly.

As a final step, we provide policy and institutional recommendations on the area types that are well aligned with OECMs. We conclude the analysis with general comments and observations identifying potential OECMs within the context of Iceland's area-based nature conservation efforts.

## RESULTS AND DISCUSSION

### Scoping and assessing the attributes of area-based governance systems

The scoping of the area-based systems of governance in Iceland resulted in eleven area types deemed suitable for further analysis. Analysis of these eleven governance systems illustrates their different qualities and attributes relevant to OECM status, focusing on their institutional attributes such as policy objectives, key actors, legal frameworks, management regulations, land tenure and current extent (Table 2).

**Table 2.** Institutional analysis of area-based governance systems for potential terrestrial OECMs in Iceland

Area type	Primary policy objective	Biodiversity as secondary objective	Key actor	Legal framework	Management regulation	Land tenure	Current extent
<b>1. Forest Reserve</b> ( <i>Þjóðskógar</i> )	Forestry and forest conservation	Yes, in the legal framework	Land and Forest Iceland*	<i>Forests and Forestry Act</i> 33/2019	By-laws for each site, management plans	Mainly central government	Ca 50 areas, less than 500 km <sup>2</sup> new sites can be added
<b>2. Soil Conservation Areas</b> ( <i>Landgræðslusvæði</i> )	Land restoration, soil conservation	Yes, in the legal framework	Land and Forest Iceland	<i>Land Restoration Act</i> 155/2018	By-laws for each site, management plans	Mainly central government	Ca 77 areas, total 2,850 km <sup>2</sup> , new sites can be added
<b>3. Parsonage Land</b> ( <i>Prestsetursjarðir</i> )	Farms, sites for priests and churches	No	Church body, local priest	<i>National Church Act</i> 77/2021	Policy on parsonage	The National Church	35 farms
<b>4. Public Lands</b> ( <i>Þjóðlendur</i> )	Site specific, or not specified	Yes, outlined in the public land policy	Prime Minister's office; local government	<i>Public Lands Act</i> 58/1998	Not specified	Designated public	Ca 250 units, ca 40 per cent of Iceland, some PAs
<b>5. Nature Conservation Register</b> ( <i>Náttúruminjaskrá</i> )	Nature Conservation	Yes, in the law	Environment Agency	<i>Nature Conservation Act</i> 60/2013	Act imposes some rules for sites on the register	Multiple, designation does not require landowners' consent	Around 500 sites
<b>6. Recreation Areas</b> ( <i>Heiðmörk Útivistarsvæði</i> )	Recreation, forestry, land restoration	No	Local government. Commonly in cooperation with local forest NGOs	<i>Planning Act</i> no. 123/2010	Management plans for many sites	Mainly local government	No register of number or area
<b>7. Water Conservation Areas</b> ( <i>Vatnsvermdarsvæði</i> )	Water protection	Yes, for aquatic ecosystems	Local government	<i>Water Management Act</i> no. 36/2011, <i>Sanitation and Pollution Prevention Act</i> no. 71/1998	By laws for each site	Multiple	No register of number or area
<b>8. Municipal Spatial Planning Protection Areas</b> ( <i>Hverfisvermdarsvæði</i> )	Multiple protection objectives; cultural and natural heritage	Yes, in legislation and associated by-laws	Local government	<i>Planning Act</i> no. 123/2010	Objectives for each site	Multiple, designation does not require landowners' consent	No register of number or area
<b>9. Þingvallavatn Catchment Area</b> ( <i>Vatnasvið Þingvallavatns</i> )	Water protection in the Þingvallavatn catchment and lake	Yes, in legislation	Environment Agency, local government	<i>Law on the protection of Þingvallavatn and its catchment area</i> no. 85/2005	By-law under the legislation	Multiple	Fixed size of around 1,300 km <sup>2</sup> , including a PA
<b>10. Ramsar site in Mývatn &amp; Laxá</b> ( <i>Ramsarsvæði í Mývatnssveit</i> )	Wetland protection for the only Ramsar site in Iceland that is not a PA	Yes, in legislation	Environment Agency, local government	<i>Conservation of Mývatn and Laxá and its Water Catchment Area Act</i> no. 97/2004	Act allows for formal management plan and policy	Mainly public land	Fixed size of around 200 km <sup>2</sup> , includes a PA
<b>11. Geoparks</b> ( <i>Reykjanes Jarðvangur</i> )	Geoheritage, nature-based tourism	No	Local government, diverse stakeholders	Established by agreement between local governments, NGOs and UNESCO	Geopark policy	Multiple, designation does not require landowners' consent	Reykjanes, 829 km <sup>2</sup> and Katla 9,542 km <sup>2</sup>

\*Established in 2024 by merging the Forest Service and Soil Conservation Service





**Public lands:** The Þórsmörk area is public land that has been governed as a forest reserve for decades. The area has spectacular landscapes and biodiversity-rich native birch woodlands. This large area is not a protected area but might qualify as an OECM © Helga Hvanndal Björnsdóttir.



**Forest reserves:** The study finds many forest reserves with potential to be OECMs in Iceland. This is a native woodland in Litla-Skard forest reserve in West Iceland © Jón Geir Pétursson.



**Parsonage lands:** Parsonage properties are potential OECM candidates. This photo is one such property, Borg in West Iceland © Jón Geir Pétursson.

## Potential of the area types to qualify as OECMs

We adjusted the IUCN-WCPA criteria specified in the site-level tool to refer to governance systems and assessed whether each of the eleven systems might include individual areas suitable for OECM status (Table 3). All governance systems met Criterion 1 “other than a protected area” and Criterion 2 “reasonable likelihood of containing biodiversity”, which are required to move to the stage of a full assessment. All area types likewise met Criterion 3 “The site is a geographically defined area”. We did not apply Criteria 4 and 7, as these require site-level analyses. Assessments against Criteria 5, 6 and 8 gave varied results.



**Table 3.** Analysis of area-based governance types as OECM candidates using the IUCN-WCPA site-level tool (Jonas et al., 2023)

Area type in Iceland	Criteria*							
	1	2	3	4	5	6	7	8
1 Forest Reserves	Green	Green	Green	Grey	Green	Green	Grey	Green
2 Soil Conservation Areas	Green	Green	Green	Grey	Green	Green	Grey	Green
3 Parsonage Lands	Green	Green	Green	Grey	Yellow	Yellow	Grey	Green
4 Public Lands	Green	Green	Green	Grey	Yellow	Yellow	Grey	Green
5 Nature Conservation Register	Green	Green	Green	Grey	Red	Red	Grey	Red
6 Water Conservation Areas	Green	Green	Green	Grey	Green	Yellow	Grey	Green
7 Recreation Areas	Green	Green	Green	Grey	Yellow	Yellow	Grey	Green
8. Municipal Spatial Planning Protection Areas	Green	Green	Green	Grey	Red	Red	Grey	Red
9 Þingvallavatn Catchment Area	Green	Green	Green	Grey	Yellow	Yellow	Grey	Green
10 Ramsar Site – Mývatn and Laxá	Green	Green	Green	Grey	Yellow	Yellow	Grey	Green
11 Geoparks	Green	Green	Green	Grey	Red	Red	Grey	Red

\*Assessment criteria

**Key:** **Green** – meets criteria. **Orange** – partially meets criteria. **Red** – does not meet criteria.  
**Grey** – not applicable to governance-level assessment

### Screening assessment

Criterion 1: No individual site within the governance type is a PA

Criterion 2: There is a reasonable likelihood that the governance type includes individual areas that support important biodiversity values

### Full assessment

Criterion 3: The individual areas within the governance type are all geographically defined

Criterion 4: Each individual area within the governance type is assessed as to whether it supports important biodiversity values

Criterion 5: Institutions or mechanisms exist to govern and manage the site

Criterion 6: Governance and management of the site achieve or are expected to achieve the in-situ conservation of important biodiversity values

Criterion 7: In-situ conservation of important biodiversity values is expected to be for the long-term

Criterion 8: Governance and management arrangements address equity considerations

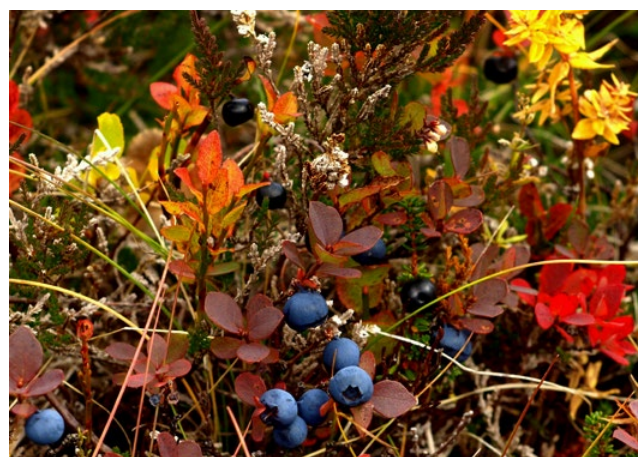
### Management authority perceptions of OECMs

We conducted semi-structured interviews with a key representative from all the area types (see Supplementary Materials 2). All key actors from the management authorities we assessed expressed a positive attitude towards potential OECM recognition. This is important since effective participation and consent of the respective governance authority is required for an OECM recognition (IUCN-WCPA, 2019). Many (8 out of 11) expressed an interest in exploring protection of

biodiversity conservation values as an additional purpose for their respective areas, implying that currently some have biodiversity as a secondary or ancillary objective. None of the actors expressed a negative attitude towards evaluation of their areas as possible OECMs. The concept of OECM was however new to 9 out of the 11 representatives and their knowledge was limited. The only concern came from the two representatives of water conservation areas, as they considered delivery of clean drinking water should override any other objectives.

### Ranking the area types as potential OECMs

Based on our analysis in Table 3, we ranked the eleven area types according to their potential as OECMs given how well they meet the seven assessment criteria, and examined related opportunities and challenges (Table 4).



**Recreational areas:** Some of the recreational areas around urban areas can be considered as OECMs according to the analysis. This is native vegetation in Heiðmörk, close to the Reykjavík capital area © Hugl Ólafsson.

**Table 4.** Potential land-based governance systems as OECMs in Iceland, ranked from most to least promising

Ranking order	Area types	Opportunity	Challenges
Most promising OECMs	Forest Reserves	<ul style="list-style-type: none"> <li>• Strong legal framework</li> <li>• Enduring governance, capable management, extensive network of sites</li> <li>• Biodiversity conservation an explicit objective in law</li> <li>• Long-term security of tenure</li> </ul>	<ul style="list-style-type: none"> <li>• Sites have different qualities</li> <li>• Zoning needed for individual areas</li> </ul>
	Soil Conservation Areas	<ul style="list-style-type: none"> <li>• Strong legal framework</li> <li>• Enduring governance, capable management, extensive network of sites</li> <li>• Biodiversity conservation an explicit objective in law</li> <li>• Long-term security of tenure</li> </ul>	<ul style="list-style-type: none"> <li>• Sites have different qualities.</li> <li>• Zoning needed for individual areas</li> </ul>
	Water Conservation Areas	<ul style="list-style-type: none"> <li>• Strong legal framework</li> <li>• Long-term security of tenure</li> </ul>	<ul style="list-style-type: none"> <li>• Sites have different qualities</li> <li>• Concept lacks full confidence among stakeholders</li> <li>• Need to be assessed on case basis for biodiversity values</li> </ul>
Area types that could qualify as OECMs pending minor reforms	Þingvallavatn Catchment Area	<ul style="list-style-type: none"> <li>• Strong legal framework</li> <li>• Long-term security of tenure</li> <li>• Connects with a national park</li> </ul>	<ul style="list-style-type: none"> <li>• Lacks clear management responsibility</li> </ul>
	Recreational Areas	<ul style="list-style-type: none"> <li>• Well demarcated</li> <li>• Some management capacity exists</li> </ul>	<ul style="list-style-type: none"> <li>• Weak legal framework</li> <li>• Multiple land use</li> </ul>
	Parsonage Lands	<ul style="list-style-type: none"> <li>• Many farms in lowland Iceland</li> </ul>	<ul style="list-style-type: none"> <li>• Lack of policy</li> <li>• Sites have various values</li> </ul>
	Ramsar Mývatn and Laxá	<ul style="list-style-type: none"> <li>• The only Ramsar site in Iceland that is not fully recognised as a PA</li> <li>• Has existing management capacity</li> </ul>	<ul style="list-style-type: none"> <li>• Need case-specific attention and coordination between stakeholders</li> </ul>
Area type that needs major reform to be considered as OECMs	Public Lands	<ul style="list-style-type: none"> <li>• Strong legal framework</li> <li>• Large part of Iceland's terrestrial area</li> </ul>	<ul style="list-style-type: none"> <li>• Need consensus between central and local governments</li> <li>• Not clear who would serve as management authority</li> </ul>
Area types that lack important attributes to be considered as OECMs	Municipal Spatial Planning Protection Areas	<ul style="list-style-type: none"> <li>• Large areas, many important for biodiversity</li> </ul>	<ul style="list-style-type: none"> <li>• Weak legal framework</li> <li>• Lack of long-term security and management</li> </ul>
	Geoparks	<ul style="list-style-type: none"> <li>• Large areas with an objective to promote sustainable land use and highlight geological attributes</li> </ul>	<ul style="list-style-type: none"> <li>• Lack of governance and management, although some include PAs</li> </ul>
	Nature Conservation Register	<ul style="list-style-type: none"> <li>• Are defined as a precursor to being selected as protected areas</li> </ul>	<ul style="list-style-type: none"> <li>• Lack of governance and management</li> </ul>

### Most promising OECM candidates

The most promising area types were *Forest Reserves*, *Soil Conservation Areas* and *Water Conservation Areas*.

*Forest Reserves* and *Soil Conservation Areas* are national systems administrated by the central government and have similar legal status and the same government authority responsible for their management. The legal frameworks for both have recently been updated, which gives effective policy guidance for their

management and promotes biodiversity conservation as a part of their objectives. As biodiversity conservation is a part of their legal objectives, it gives important impetus for those areas to be considered as OECMs. The primary objective of *Forest Reserves* is forestry and forest conservation, including the main native woodlands of Iceland, while ecosystem restoration is the primary objective of *Soil Conservation Areas*. However, these areas are many and diverse, some contain high biodiversity conservation values, while others may

allow activities harmful to biodiversity conservation. Some contain important natural ecosystems, such as some of the most biodiversity-rich native woodlands (Ottósson et al., 2016). Other Soil Conservation Areas contain commercial plantations or exotic species land reclamation areas, so individual site assessments are required to ascertain their suitability as OECMs. Some of the larger areas could be subject to internal zoning where sites for biodiversity conservation could be identified within the larger area. The legislation provides for by-laws and management plans that could formalise the role of such zones for biodiversity conservation and set long-term management objectives. Designating some Forest Reserves and Soil Conservation Areas as OECMs has the potential to add significantly to area-based conservation in Iceland, both in terms of biodiversity in unrepresented habitat types and land area. A representative from each of the Forest Reserve and Soil Conservation authorities expressed interest in considering their OECM potential.

*Water Conservation Areas* also have potential as OECM candidates. Area-based water conservation in Iceland is well formalised in legislation, with protective zoning around designated water sources enforced by local governments. The “well zone” protects the immediate surroundings of the water sources, a “near-zone” protects a wider water catchment and an extensive “distant zone” places various restrictions on human activities. Where they contain nature conservation values, the two first zones, which place strong restrictions on access and allowable activities, could qualify as OECMs. The “distant zones” have significantly weaker regulations and generally could not be considered as OECMs. Water Conservation Areas have considerable promise as OECMs, as they are long-term enduring systems of governance that could provide conservation outcomes, but would require assessments to determine their biodiversity values. Representatives from local governments expressed an interest in the potential of these areas to become OECMs, but also expressed concern that the key objective of water protection should not be jeopardised. It is encouraging that biodiversity conservation is typically compatible with maintaining water quality and quantity.

### **Promising area types pending minor reforms**

We ranked four area types in the second most promising category for consideration as OECMs, based on how they meet the criteria (Table 4). However, each of these area types has constraints that need to be addressed before OECM recognition can be progressed.

The first two are rather extensive site-specific governance arrangements of high conservation interest, adjacent to long-established PAs. *Pingvellir Water Catchment Area* is established under a site-specific legislation that demarcates the whole of Þingvallavatn water catchment area and has the conservation of Þingvallavatn Lake as a primary objective but also addresses biodiversity conservation. This large area includes Þingvellir National Park, a PA. Our institutional analysis indicates that the area has long-term potential for biodiversity conservation due to its strong legal framework, with central and local government authorities having primary responsibility. However, the related legislation lacks provision for the development of management plans and related instruments, is unclear what restrictions apply within the area, and the legislation lacks clauses that allow for enforcement. To consider this area type as an OECM, legislative amendments would be desirable to address these limitations.

The *Mývatn and Laxá Ramsar Site* is situated within the water catchment area of Mývatn and Laxá. It has a site-specific legal framework that also establishes a PA in part of the area (mainly the lake and the river) and further, provides a legal basis for conservation of the whole water catchment. Notably, the other five Ramsar sites in Iceland are all PAs. The Environment Agency, a government agency, is the appointed governance authority for the Mývatn and Laxá PA and the administrative authority for the whole catchment area. The Agency works in cooperation with local governments. The site-specific Act has multiple provisions for conservation of the area, allows for by-laws and management plans and specifically stipulates biodiversity conservation. The legal framework also includes long-term management through the making of a specific conservation plan. We find the Mývatn and Laxá Ramsar site, outside the part that is a formal PA, a potential OECM candidate with most of the requirements already inscribed in the legal framework for the area. However, enhanced collaboration between the central and local government is needed to ensure its effectiveness.

Numerous designated *Recreational Areas* close to urban settlements are found in Iceland, although there is no systematic register available for their number or coverage. Most of these areas are established on land owned by local governments and have commonly been developed in cooperation with local forestry associations for outdoor recreation. These areas have become venues for tree planting, land restoration and infrastructure development, and for recreational facilities such as picnic sites and walking tracks. Our analysis indicates that key





**Soil conservation areas:** Gunnlaugsskógur is a soil conservation area that has many attributes that fulfil the requirements of an OECM. The same applies to many such areas in the country. The volcano Hekla is in the background © Hreinn Óskarsson.

constraints are their weak legal status and lack of active management in many of the areas. Although demarcated, their boundaries can be altered if the priorities of the responsible local government change. Some such as Heiðmörk have well established management plans that allow for zoning of the area to identify biodiversity values and limit activities that might be harmful, while many others have no such plans. Such management plans could also promote a long-term perspective on conservation of significant areas and exclude from OECMs areas that have been allocated to incompatible uses. A case-by-case analysis of each Recreational Area is required, with engagement and inputs from the relevant local governments.

*Parsonage Lands* are properties owned, governed and managed by the national church of Iceland. There are currently 32 such properties across multiple locations in Iceland that serve as a seat for a priest and commonly a church site, many of which are within large farms. As for the parsonages and other church properties, the primary management objective is to “preserve, own and lease properties that support its services and goal”, which mainly includes accommodating priests and maintaining the services of the church according to formal operating rules. Additionally, there is a national church policy that specifies the primary objective of church property management is to preserve those properties, while simultaneously respecting other relevant values such as cultural heritage, environmental quality and nature conservation (The Church Assembly, 2018). The key decision-making on land-use policy for each parsonage is vested in the hands of the local priest along with the church assembly. Given their current

management system, Parsonage Lands are potential OECM candidates. The operating rules of the national church show that there is effective long-term, sustained governance of these areas that is ensured by law and regulations. The institutional framework for the church Parsonage Lands is robust, allowing for development of flexible land-use policies and identifying a clear authority in decision-making. However, decisions on land use can be reviewed by the church should it decide to manage a property under different management objectives, thereby potentially undermining the long-term security of conservation management. If they are to be considered as OECMs, coordination would be required between church administration and local priests to commit to long-term biodiversity conservation as a land-use practice on those properties.

### **Area types that need major attention if they are to be considered as OECMs**

*Public Lands*, covering approximately 40 per cent of Iceland’s terrestrial area, are subject to an ongoing process designed to clarify property rights over these common lands (Solnes, 2017). Public Lands cannot be sold to private interests, and the related legislation outlines co-management arrangements between central and local governments, with the responsibilities of each defined under the Act. Management objectives of these 200+ individual sites vary, with a considerable number being already designated as a PA. For those that are not PAs, the current legal framework provides for management and specifies the rights and responsibilities of the relevant management authority. However, given the large number of areas, their varied characteristics



**Þingvallavatn water catchment area:** The whole water catchment of Þingvallavatn, the largest lake in Iceland, is protected by a specific act. This act has many attributes that make this large area an interesting OECM candidate © Hugli Ólafsson.

and the lack of management objectives in general, a well-developed management capacity is not in place. Individual public lands therefore need to be assessed on a site-by-site basis, with a focus on involvement of local government. Since the legislation authorises the promulgation of subsidiary management regulations, this opens up a potential for requiring management to be in accordance with OECM objectives. Further, the current Prime Minister's Policy on Public Lands specifically emphasises conservation objectives for the areas, including biodiversity and ecosystem services, indicating a will for sustained and effective conservation action. With strengthening of existing management structures and coordinated efforts between the central and local governments, some Public Lands might then be candidates for OECMs. There is a clear governance authority, and the existing legal framework offers the possibility of long-term management.

### **Area types that lack important attributes to be considered as OECMs**

The governance systems for *Municipal Spatial Planning Protection Areas*, *Natural Heritage Register* and *Geoparks* are spatially defined and include nature conservation objectives, but fail to meet important criteria for OECM candidacy. Those area types are not designed to support sustained governance and effective management and cannot ensure long-term conservation outcomes. Further, designation of such areas does not require a consent from landowners, seen as essential for OECM recognition.

## **CONCLUSION AND IMPLICATIONS FOR POLICY**

Iceland is currently working on updating its biodiversity policy to ensure national objectives align with the GBF commitments. This first study of the potential for terrestrial OECMs to be recognised in Iceland illustrates considerable opportunity to expand the country's area-based conservation efforts. It also illustrates that, given the differences between various governance systems, each land-use type needs its own assessment process, before progressing to the site-by-site assessment required by the site-level tool. Out of the eleven area types analysed, eight were found to have potential to be considered as OECMs.

Based on the analysis we suggest the following policy guidance for a process of designating terrestrial OECMs in Iceland and including them in its conservation efforts. Firstly, Iceland has not yet established a policy framework to guide OECM establishment and management and to formalise their registration as contributors towards national conservation efforts. There is also a need for policy guidance whereby a mandate is formally provided to a specified institutional actor to further develop OECMs at a national level. Secondly, the government needs to facilitate a process with key stakeholders from those management authorities of promising land-use types that have been identified in this paper as having characteristics that render them worthy of further consideration as OECMs. We identify eight such systems. For many stakeholders, there may well be a need to establish incentivising and facilitating structures. Thirdly, an analysis needs to overlay available information about biodiversity-rich areas with high conservation value on

the areas of the most promising OECM area types, thereby identifying initial priorities for OECM establishment in Iceland.

There may well be other OECM candidates in Iceland that we have not analysed in this study. Firstly, there are many privately owned areas that may have conservation potential. Some of these properties are large and are likely to contain significant biodiversity value. Identification of such areas and engagement with their owners would provide a further opportunity to establish a nation-wide OECM network. Secondly, there is a recent move to legally protect large areas, including entire landscapes, that contain significant cultural heritage. Some such landscapes may well satisfy the criteria for consideration as OECMs. Additionally, Iceland has a specific *Wildlife Conservation Act* that provides for conservation of wildlife habitats, including for example bird nesting areas. However, to date this Act has had weak institutional support, limited application and few management outcomes. However, amendments to this Act are currently under consideration, with the aim of strengthening its provisions. If this occurs, it could become an additional regulatory instrument contributing to the establishment and management of OECMs.

This study of OECMs adds to the growing number of studies from diverse countries that seek to inform and promote the development of these critical area-based contributions to the global nature conservation effort, in particular the meeting of GBF targets. Iceland's efforts in this regard are in their infancy, and we offer these findings as an initial contribution to supporting the development of an OECM network in this country.

## ABOUT THE AUTHORS

**Jon Geir Petursson** is a Professor in environmental governance at the Environment and Natural Resources Graduate Program, University of Iceland. He has been engaged in interdisciplinary research on protected area governance in many countries with the focus on policy and institutional aspects and their multiple social and economic interconnections.

**Helga Hvanndal Bjornsdottir** is a graduate of the Environment and Natural Resources Program at the University of Iceland, where she focused on the implementation of OECMs in Iceland. For the past decade, she has been working as a park ranger in various protected areas throughout the country.

**Jukka Siltanen** is a PhD fellow at the University of Iceland, Environment and Natural Resources Program, working on research regarding the economic impacts and

management of protected areas. When not at the university, you might meet him as a park ranger at Þingvellir National Park.

## SUPPLEMENTARY MATERIALS

1. Icelandic protected area context
2. Key informant interviews

## REFERENCES

- CBD. (2018). *Protected Areas and Other Effective Area-based Conservation Measures*. CBD/COP/DEC/14/8. <https://www.cbd.int/doc/decisions/cop-14/cop-14-dec-08-en.pdf>.
- CBD. (2022). *Kunming-Montreal Global Biodiversity Framework*. CBD/COP/DEC/15/4. <https://www.cbd.int/doc/decisions/cop-15/cop-15-dec-04-en.pdf>.
- Cook, C. N. (2024a). Progress developing the concept of other effective area-based conservation measures. *Conservation Biology*, 38(1), e14106. <https://doi.org/10.1111/cobi.14106>
- Cook, C. N. (2024b). Diverse approaches to protecting biodiversity: The different conservation measures discussed as possible other effective area-based conservation measures. *Conservation Letters*, 17(4), e13027. <https://doi.org/10.1111/conl.13027>
- Dudley, N. (2008). *Guidelines for applying protected area management categories*. Gland, Switzerland: IUCN.
- Dudley, N., Jonas, H., Nelson, F., Parrish, J., Pyhälä, A., Stolton, S., & Watson, J. E. (2018). The essential role of other effective area-based conservation measures in achieving big bold conservation targets. *Global Ecology and Conservation*, 15, e00424. <https://doi.org/10.1016/j.gecco.2018.e00424>
- Fitzsimons, J., Stolton, S., Dudley, N., & Mitchell, B. (2024a). Clarifying 'long-term' for Protected Areas and Other Effective Area-Based Conservation Measures (OECMs): Why only 25 years of 'intent' does not qualify. *PARKS*, 30(1), 89–93. <https://doi.org/10.2305/GLFT980>
- Fitzsimons, J. A., Partridge, T., & Keen, R. (2024b). Other Effective Area-Based Conservation Measures (OECMs) in Australia: Key considerations for assessment and implementation. *Conservation*, 4(2), 176–200.
- Gurney, G. G., Darling, E. S., Ahmadia, G. N., Agostini, V. N., Ban, N. C., Blythe, J., Claudet, J., Epstein, G., Himes-Cornell, A., & Jonas, H. D. (2021). Biodiversity needs every tool in the box: use OECMs. *Nature*, (595), 646–649. <https://doi.org/10.1038/d41586-021-02041-4>
- IUCN-UK. (2023). *Statements of Compliance for UK Protected Areas and 'other effective area-based conservation measures': 2023 Review*. Protected Areas Working Group of the IUCN National Committee UK.
- IUCN-WCPA. (2019). *Recognising and Reporting Other Effective Area-based Conservation Measures*. Gland, Switzerland: IUCN.
- Jonas, H. D., Bingham, H. C., Bennett, N. J., Woodley, S., Zlatanova, R., Howland, E., Belle, E., Upton, J., Gottlieb, B., . . . Ruiz, L. (2024). Global status and emerging contribution of other effective area-based conservation measures (OECMs) towards the '30x30' biodiversity Target 3. *Frontiers in Conservation Science*, 5, 1447434. <https://doi.org/10.3389/fcsc.2024.1447434>
- Jonas, H. D., MacKinnon, K., Dudley, N., Hockings, M., Jessen, S., Laffoley, D., MacKinnon, D., Matallana-Tobón, C. L., Sandwith, T., & Waitthaka, J. (2018). Editorial essay: other effective area-based conservation measures: from Aichi Target 11 to the Post-2020 Biodiversity Framework. *PARKS*, 24, 9–16.
- Jonas, H. D., MacKinnon, K., Marnewick, D., & Wood, P. (2023). *Site-level Tool for Identifying Other Effective Area-based Conservation Measures (OECMs)*. Gland, Switzerland: IUCN.
- Marnewick, D., Stevens, C. M., Jonas, H., Antrobus-Wuth, R., Wilson, N., & Theron, N. (2021). Assessing the extent and



- contribution of OECMs in South Africa. *PARKS*, 27(1), 57–70. <https://doi.org/10.2305/IUCN.CH.2021.PARKS-27-1DM.en>
- Maxwell, S. L., Cazalis, V., Dudley, N., Hoffmann, M., Rodrigues, A. S., Stolton, S., Visconti, P., Woodley, S., Kingston, N., & Lewis, E. (2020). Area-based conservation in the twenty-first century. *Nature*, 7828, 217–227. <https://doi.org/10.1038/s41586-020-2773-z586>
- Ottósson, J. G., Sveinsdóttir, A., & Harðardóttir, M. (Eds.). (2016). *Vistgerðir á Íslandi*. (Vol. 54). Náttúrufræðistofnun Íslands.
- Ólafsdóttir, G. Á., Henke, T., Chambers, C. P., & Ólafsdóttir, S. H. (2024). Gaps in legislation and communication identified as stakeholders reflect on 30x30 policy in Icelandic waters. *Marine Policy*, 170, 106422. <https://doi.org/10.1016/j.marpol.2024.106422>
- Petursson, J. G., & Kristofersson, D. M. (2021). Co-Management of protected areas: A governance system analysis of Vatnajökull National Park, Iceland. *Land*, 10(7), 681. <https://doi.org/10.3390/land10070681>
- Petursson, J. G., Thorvardardóttir, G., & Crofts, R. (2016). Developing Iceland's protected areas: Taking stock and looking ahead. *PARKS*, 22(1), 13–24. <https://doi.org/10.2305/IUCN.CH.2016.PARKS-22-1JGP.en>
- Robinson, J. G., LaBruna, D., O'Brien, T., Clyne, P. J., Dudley, N., Andelman, S. J., Bennett, E. L., Chicchon, A., Durigan, C., & Grantham, H. (2024). Scaling up area-based conservation to implement the Global Biodiversity Framework's 30x30 target: The role of nature's strongholds. *PLoS Biology*, 22(5), e3002613. <https://doi.org/10.1371/journal.pbio.3002613>
- Rodríguez-Rodríguez, D., Sánchez-Espinosa, A., & Malak, D. A. (2021). Potential contribution of OECMs to international area-based conservation targets in a biodiversity rich country, Spain. *Journal for Nature Conservation*, 62, 126019. <https://doi.org/10.1016/j.jnc.2021.126019>
- Shiono, T., Kubota, Y., & Kusumoto, B. (2021). Area-based conservation planning in Japan: The importance of OECMs in the post-2020 Global Biodiversity Framework. *Global Ecology and Conservation*, 30, e01783. <https://doi.org/10.1016/j.gecco.2021.e01783>
- Siltanen, J., Petursson, J. G., Cook, D., & Davidsdóttir, B. (2022). Diversity in protected area governance and its implications for management: An institutional analysis of selected parks in Iceland. *Land*, 11(2), 315. <https://doi.org/10.3390/land11020315>
- Solnes, V. (2017). Administrative Committee Clarifying Land Ownership – The Icelandic Wasteland Commission. *Nordisk Administrativt Tidsskrift*, 2(94).
- The Church Assembly [Kirkjuping]. (2018). *Property Policy of the National Church* [Fasteignastefna þjóðkirkjunnar]. Reykjavík: The National Church of Iceland.
- URN. (2022). *Þjóðgarðar og önnur friðlýst svæði: Staða og áskoranir*. Reykjavík: Iceland Ministry for the Environment, Energy and Climate.

## RÉSUMÉ

Les zones protégées (ZP) et les autres mesures efficaces de conservation basées sur les zones (OECM) sont les principales stratégies de conservation des États-nations pour atteindre l'objectif de 30 % de conservation basée sur les zones du Cadre mondial pour la biodiversité(GBF). L'Islande est en train de mettre à jour sa stratégie en matière de biodiversité, en s'alignant sur les objectifs du cadre mondial pour la biodiversité. L'objectif de cette étude est de faire progresser le développement des OECM et d'examiner leur potentiel en Islande. L'Islande dispose de plusieurs systèmes de gouvernance par zone avec différents objectifs, en plus de son domaine officiel d'aires protégées. Nous identifions et analysons les systèmes de gouvernance par zone pertinents dans le pays, en employant une approche progressive basée sur l'analyse institutionnelle et l'application de l'outil OECM de l'UICN-WCPA au niveau du site. L'étude identifie onze types de zones à prendre en considération, tandis que l'analyse révèle leurs différentes qualités et défis et suggère huit d'entre elles comme OECM potentielles. Cette première étude des OECM terrestres en Islande illustre le potentiel considérable d'expansion de ces efforts de conservation par zone. Les OECM ne sont pas encore inclus dans le cadre de la politique de conservation de la nature en Islande, ce qui souligne la nécessité d'une orientation politique nationale, pour laquelle nous formulons des recommandations.

Traduit avec DeepL.com (version gratuite)

## RESUMEN

Las áreas protegidas (AP) y otras medidas eficaces de conservación basadas en el área (OECM) son estrategias de conservación clave de los Estados nación para alcanzar el objetivo de conservación basado en el área del 30% del Marco Global de Biodiversidad (GBF). Islandia está actualizando su estrategia de biodiversidad, alineándola con los objetivos del GBF. El objetivo de este estudio es avanzar en el desarrollo de las OECM y examinar su potencial en Islandia. Islandia cuenta con múltiples sistemas de gobernanza basados en áreas con diversos objetivos, además de su patrimonio formal de AP. Identificamos y analizamos los sistemas de gobernanza basados en áreas relevantes de en el país, empleando un enfoque gradual basado en el análisis institucional y la aplicación de la herramienta OECM a nivel de sitio de la UICN-CMAP. El estudio identifica once tipos de áreas para su consideración, mientras que el análisis revela sus diferentes cualidades y desafíos y sugiere ocho de ellas como potenciales OECM. Este primer estudio de OECM terrestres en Islandia ilustra un potencial considerable para ampliar los esfuerzos de conservación basados en áreas. Los OECM aún no están incluidos en el marco político de conservación de la naturaleza de Islandia, lo que pone de relieve la necesidad de una orientación política nacional, para la que ofrecemos recomendaciones.

Traducción realizada con la versión gratuita del traductor DeepL.com