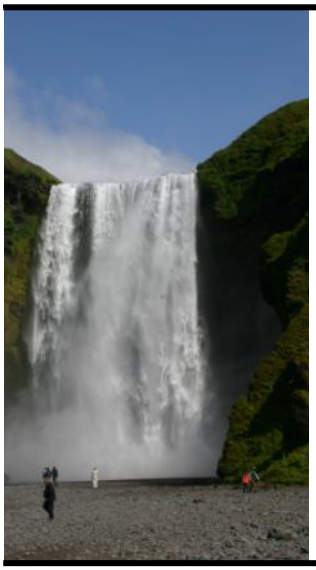

DEVELOPING ICELAND'S PROTECTED AREAS: TAKING STOCK AND LOOKING AHEAD

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ABSTRACT

With about 20 per cent of Iceland's land area protected under formal mechanisms, this paper outlines the current position and discusses some factors in the transition from traditional to current approaches. It reviews elements of the development of Iceland's protected areas over recent decades, specifically large-scale, landscape connectivity approaches, innovative governance structures to engage local stakeholders, and new mechanisms of conflict resolution between protection and development. Some important challenges for the future are identified, comprising the need for a systematic review of nature as a basis for developing the protected areas network, dealing with increasing visitor numbers, developing new mechanisms for financing protected areas and improving inter-organizational collaboration in the management and governance of protected areas.

Key words: Iceland, protected areas, co-management, conflict resolution, connectivity.

ICELAND'S PROTECTED AREA ESTATE

Iceland is a 103,000 km² volcanic island located in the North Atlantic Ocean. It is endowed with a spectacular range of natural assets and unique geophysical features related to its location on the Mid-Atlantic Ridge where the Eurasian and the North American tectonic plates divide. Its population density is the lowest of any country in Europe, but is highly urbanized, with around 2/3 of its 330,000 inhabitants living in the Reykjavik capital area. Iceland's economy is largely natural resources based, with around 80 per cent of export income from three main natural resource based sectors: fishing, energy and export-related heavy industries, and nature-based tourism.

With around 20 per cent of the terrestrial land area formally protected in 113 individual units, Iceland has one of the highest areal coverages of land under formal protection of any OECD country (OECD, 2014) (Figure 1). The protected area estate has been gradually evolving since the designation of the first area, Þingvellir[1] National Park in 1930. The protected areas are widely distributed, with a relatively higher proportion in the uninhabited central highlands and in the south west (Figure 2).

Iceland has two main pathways to formally establish protected areas. Firstly, and most commonly, protected areas are designated according to the Nature Conservation Act. The original act of 1956 has been repeatedly updated and a major revision was recently passed by the parliament and entered into force in November 2015[2]. The former Act allowed for five different categories of protected areas, in addition to the protection of individual species: national parks, nature reserves, natural monuments, country parks and habitat protection areas. The Government's Environment Agency (I: *Umhverfisstofnun*) carries out the preparation for declaring an area protected, drafts the terms of protection and defines the site boundaries. This is followed by a period of consultation with landowners, local authorities, and other relevant interested parties. Once the parties have agreed to the terms, the proposal is submitted to the Minister for the Environment and Natural Resources. Protection comes into force on the Minister's confirmation and then is advertised in the Legal Gazette.

Secondly, some protected areas have been established under site-specific legislation. This approach is rarely used, but significantly includes some of the larger areas

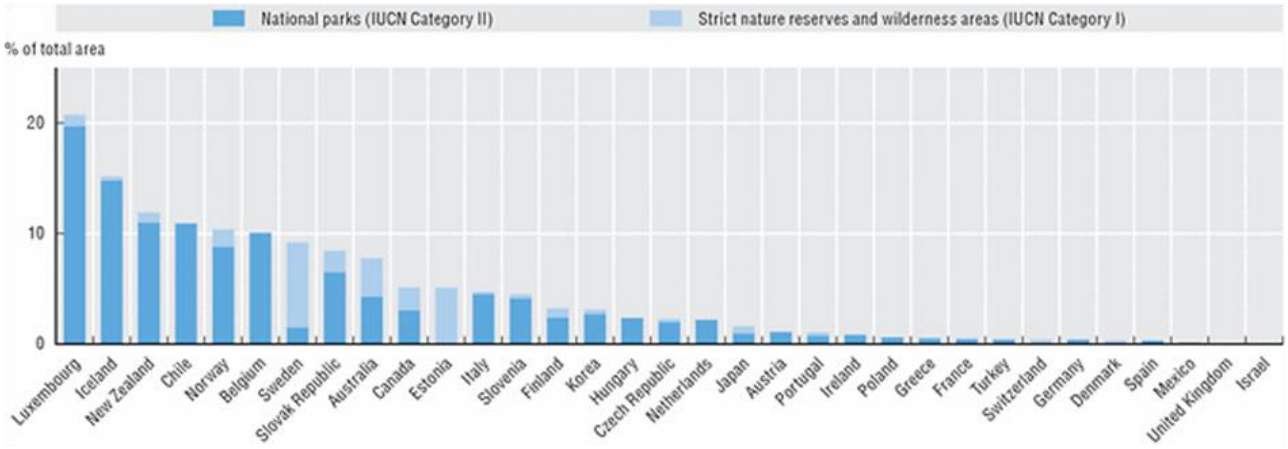

Figure 1. Strict protected areas (IUCN category I and II) coverage in different OECD countries. Source: OECD, 2014

Land area	103,000 km^2
Population	330,000
Demographic	About 2/3 live in the capital area
Land area under formal protected area regime	Around 20,000 km^2 or ca. 20% of the terrestrial area
Number of protected areas	113 units
National Parks (3)	Þingvellir National Park Vatnajökull National Park Snæfellsjökull National Park
Ramsar Sites (6)	Mývatn-Laxá – site-specific legislation Þjórsárver – nature reserve Grunnafjörður – nature reserve Guðlaugstungur – nature reserve Snæfell and Eyjabakkar – wetland within Vatnajökull National Park Andakíll – habitat protection area
World Heritage Sites (2)	Surtsey Nature Reserve Þingvellir National Park

Table 1. Some key facts about Iceland and its protected areas

like Þingvellir National Park, Vatnajökull National Park, Mývatn-Laxá Nature Conservation Area and Breiðafjörður Conservation Area. This usually allows for a more tailor-made approach to governance of the respective area. In addition, some of the Icelandic protected areas have international recognition; there are six wetland areas designated as Ramsar Sites and two areas protected as World Heritage Sites (Table 1).

In addition to formal protection, there are also other statutory and non-statutory types of land-based protection. These relate specifically to implementation of national policy to halt vegetation loss, forest and land degradation and promote soil conservation, through a combination of sand stabilization, soil conservation, afforestation, forest protection and ecological restoration (Blöndal and Gunnarsson, 1999; Crofts, 2011). Further, there are areas subject to softer conservation mechanisms according to the Nature Conservation Act, rather than formal protected areas, Special protection (I: *Sérstök vernd*) and Nature Conservation Register (I: *Náttúruminjaskrá*). Finally, there is other land owned by national or local government or privately which is often set aside for recreation or water protection, and areas held under site-specific local municipal spatial planning protection (I: *Hverfisvernd*), that might qualify as protected areas. These other areas have, however, not yet been tested for conformity with the IUCN definition of a protected area (Dudley, 2008). These are not the subject of this paper, but are important tools in the nation's conservation and restoration effort.

SITE PROTECTION IN TRANSITION

In recent decades, many factors have contributed to a transition in the approach to protected area management and governance in Iceland. This partly resembles similar evolution in many other countries and has certainly influenced the Icelandic debate (e.g. Child, 2014; Dudley et al., 2014; Watson et al., 2014). A number of key societal factors have contributed to this transition and have been, both directly and indirectly, influential in determining the current approaches and responses in protected area policy and practice.

The interest in protected areas in Iceland was for a long time vague, and most decision and policy makers

Figure 2. Protected areas in Iceland. Source: Environmental Agency

generally regarded them as 'economic black holes' (Child, 2014), hence unproductive areas in the otherwise productive landscapes, and the rationale behind their existence was mainly defined by conservationists and philanthropists. The first protected area, the 50 km² Þingvellir National Park, was established in 1930 when the founding legislation passed in 1928 came into force. By 1970, the number had only increased to seven formally protected areas covering some 555 km². However, by 1996 the number of protected areas had increased to ca. 80 units and their area to 9,807 km² (Statistics Iceland). This was largely the result of the implementation of the revised Nature Conservation Act of 1971 which put much more emphasis – and gave conservation actors more leverage – on the establishment of protected areas. This legislation also led to increased funding, the establishment of a permanent conservation office, implementation of an effective structure of a Nature Conservation Council, and recruitment of conservation staff who became instrumental in advancing site-based conservation.

The nature conservation debate in Iceland in recent decades has centred largely on the interplay with site-based energy development proposals, mainly hydro-electricity for heavy industry, which has become a major element in the diversification of the Icelandic economy from a very high dependence on the export of sea fish. There has been a sequence of cases that have caused major societal debate and conflicts. Three cases illustrate these conflicts. On the river Laxá í Aðaldalur, in north Iceland, a group of local people used dynamite to blow away a dam in 1970 built to convert Lake Mývatn partly into a reservoir. This resulted in the protection of Lake Mývatn and the river Laxá by special legislation in 1974. This case is regarded as a major trigger for the development of the nature conservation movement in Iceland (Karlsdottir, 2010). The second case is in the central highlands, Þjórsárver (an extensive wetland ecosystem) where step-wise hydro-electricity development on the river Þjórsá was predicted to cause irrevocable damage to the ecosystems and the wilderness quality of the area (Crofts, 2004). Part of the Þjórsárver wetland area was protected as a nature reserve, under the 1981 Nature Conservation Act, but extensions to fully protect the ecosystem are still being discussed. The third case was the heavily debated construction of the Kárahnjúkar hydropower plant in the heart of the wilderness area north-east of the Vatnajökull ice cap in east Iceland (Karlsdottir, 2010). The cumulative effect of these cases contributed to a widespread call for improved decision making on energy development and greater integration with nature conservation (Thorhallsdottir, 2007a; 2007b; Bjornsson et al., 2012).

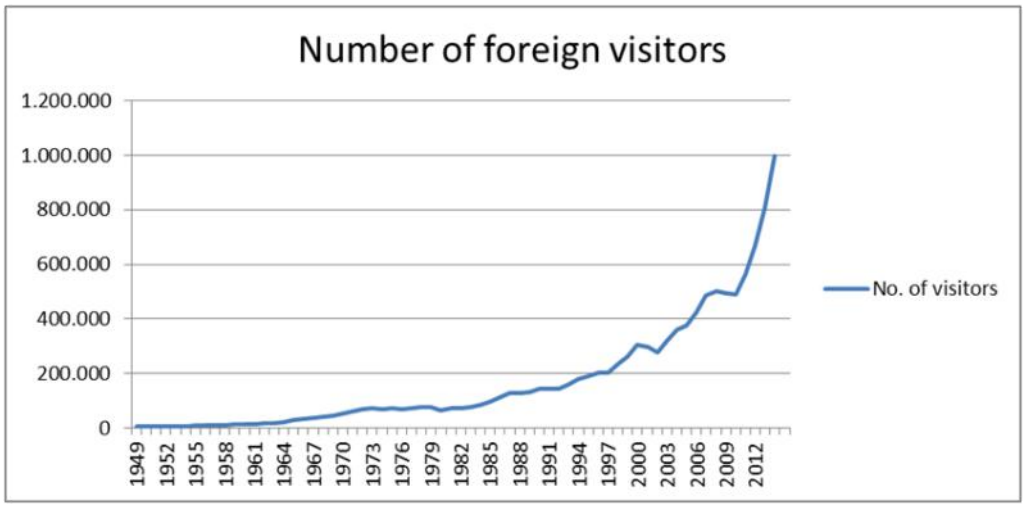

Figure 3. Annual number of foreign visitors to Iceland from 1949-2014, arriving by air and ship.
Source: Icelandic Tourist Board.

Another dimension of the transition relates to competing land use strategies. Sheep grazing was the dominant land use in the Icelandic highlands with legal privileges, based on 1,000 year-old institutional structures, and a long cultural tradition (Eggertsson, 1992). The sheep stock expanded to around 1 million winterfed ewes in the 1970s with a very substantial ecological impact, but was reduced by half following major agricultural reforms after 1980 mainly because of overproduction of lamb (Crofts, 2011). Although many protected areas allow sustainable sheep grazing, the diminishing sheep stock not only reduced pressure on the land but also reduced competition over land and opened up alternative land use strategies and the opportunity for major ecological restoration programmes (Crofts, 2011). At the same time, land availability has changed due to a rural exodus to urban areas, so that around 95 per cent of the population lives in urban settings.

Another important factor of the recent transition in site protection relates to property rights in the central highlands. Property rights to most land in that area have not been clear. Historically, the central highlands have traditionally been used primarily as summer pastures for sheep on a common shared basis within communities. It was unclear if the farmers had only a *usufruct* right to graze the summer pastures (i.e. no ownership title) or if their rights entailed real ownership of the land. This uncertain tenure created multiple conflicts over rights and responsibilities, encompassing about half of Iceland. In order to settle this and clarify property rights to those lands, new legislation entered into force in 1998 placing a duty on the Committee of the Interior (I: *Óbyggðanefnd*) to establish a legal land reform process to resolve land ownership disputes in the highlands. This is an ongoing process, but has to date addressed and resolved the ownership of around three-quarters of the highlands with a substantial area declared as 'public land' (I: *þjóðlenda*), meaning that the state is the owner but governance is subject to collaboration with local government and with the farmers maintaining some *usufruct* rights, especially to sheep grazing in the traditional highland pasture areas assigned to their community. The land reform process has been subject to major debates, but the outcome has been clarification of the tenure rights and responsibilities, and as a result, has removed a constraint from the designation of new protected areas.

One of the most recent factors impacting on protected areas transitions in Iceland is the very rapidly growing numbers of tourists, specifically nature-based tourism (Saethorsdottir, 2013). The number of tourists in 2015 was about four times the Icelandic population: around 1.2 million (Figure 3). Icelandic nature, in its many and various guises, is the key magnet, with more than 80 per cent of visitors claiming that nature is the key reason for visiting the country.

Calculated by export income, tourism is now the single biggest economic sector, exceeding the long domination of the fisheries sector. This has a significant effect on protected areas as their previous management had only a marginal economic dimension. Protected areas in Iceland are no longer regarded as the 'economic black holes' in the landscape, but as a major natural resource base for tourism, and currently a key driver of the Icelandic economy. This has the effect of bringing more attention and resources to their governance, while simultaneously the impact and scale of tourism poses a great challenge to the integrity, values and quality of the protected areas.

NEW APPROACHES IN PROTECTED AREA POLICY AND PRACTICE

It is not only in Iceland that management and governance of protected areas have been in transition; it is a world-wide trend (Child, 2014), as demonstrated in

Mývatn Conservation Area the mecca for all types of ducks and crossing ground between North American and European species and important Atlantic salmon rivers. Diatomite extraction has now ceased improving the feeding grounds for the birds. Gas eruption pseudo-craters surround the lake © Jóhann Óli Hilmarsson

the recent outcomes from the 6th IUCN World Parks Congress in Sydney in 2014. Iceland has not been immune to changes in protected area policies and practice and there are some aspects where Iceland can provide informative cases that may contribute to the relevant global policy and practice debates. We highlight three particular approaches: landscape connectivity and large-scale protected areas, the diversity of governance models, and mechanisms to resolve conflicts between development and conservation.

- **Landscape connectivity and large-scale protected areas**

The biggest protected area development in Iceland was the establishment of Vatnajökull National Park in 2007 from a series of unconnected protected areas and unprotected land. The park encompasses the entire Vatnajökull ice cap, outlet glaciers, nunataks, some recently and historically deglaciated areas adjacent to the glacier and many of its surrounding landscapes. It includes the former national parks in Skaftafell, established in 1967, and Jökulsárgljúfur, established in 1973, as well as the natural monument Lakagígar, established in 1975. To achieve the creation of the larger and connected protected area required a long process, with significant work by many pioneers, that formally began in 1999 with a parliamentary resolution on its establishment (Gunnarsson, 2010; Guttormsson, 2011) and instigating a formal process of consultation with all interests, especially local communities with traditional rights, and concluding with specific legislation in 2007 creating the park.

Since its establishment, the national park has gradually been expanded to its current size of approximately 14,000 km^2; this constitutes around 14 per cent of Iceland's total land area. There are ongoing consultations on further extensions to the park. It is the second largest national park in Europe, slightly smaller than the Yugyd Va National Park in European Russia. The establishment of Vatnajökull National Park was a continuation of the major national environmental movement that began in the 1990s to conserve the Icelandic highlands as one of Europe's largest wilderness areas. This was further promoted as a strategy to achieve a landscape-scale approach in protected area management, moving from disconnected and small units to larger interconnected units. Four objectives of the park have been defined: to protect nature, to allow public access and enjoyment, to provide an educational and research resource, and to strengthen communities and stimulate business activity. The park is further seen as a vehicle to promote rural development, as manifested in its objectives, especially nature-based tourism.

- **Innovative governance structures**

Iceland has been pursuing alternative governance structures for protected areas, seeking more local legitimacy and acceptance by the neighbouring communities and local governments. For example, the innovative governance structure of the Vatnajökull National Park is quite different from its more centrally governed predecessors. The park has formal status as an independent governmental authority directly reporting to the Ministry for the Environment and Natural

Kerlingarfjöll rhyolite mountains and small hanging glaciers, currently being considered for protection © Roger Crofts

Resources and was established by special legislation enacted in 2008. The park has a co-management governance system giving local government and civil society a formal role in its governance, decision making and executive action alongside the state. The park is divided into four administrative regions, representing different geographical areas, each with its own regional committee with representatives of local governments, environmental, recreational and tourism organizations and a national park manager, with joint responsibility for the management of the respective units. The park as a whole is governed by a park board, comprising a chairman and vice chair appointed by the minister, representatives from the four regions appointed by the local government authorities adjacent to the park, and representatives of environmental organizations. Funding is provided mainly from central government, supplemented by income generated by the park itself. The co-management regime has been subject to a thorough review after its first five years of operation. The preliminary results indicate that the regime is perceived as legitimate, has generally been effective and the local actors accountable for the power that has been devolved from central to local level (Petursson & Kristofersson, 2014). It is clear that the decentralized co-management model was one of the key factors in local government and local stakeholders accepting the establishment of such a large protected area. Even though the protected area in uninhabited, the local communities and local government authorities have historical rights and current responsibilities respectively for the land and its management, and without their support the enlarged park would not have been possible.

It is important to continue the development of the co-management approach in Iceland, both in the Vatnajökull National Park and in other areas. It is becoming a widespread practice that the best structure for effective protected areas comprises a combination of top-down and bottom-up approaches; engagement of key stakeholders at all stages in the process of identification, designation and management; and recognition of the different levels of authority in devolved systems of administration of nature protection (Phillips, 2003; Lockwood et al., 2006). The experience from Iceland concurs with this approach.

- **Mechanisms to resolve conflicts between development and conservation**

The third approach is an innovative mechanism to resolve conflicts between nature conservation and natural resource utilization for energy development that have, as outlined earlier, caused heated debate in Iceland for decades. The key instrument is the Master Plan for Conservation of Nature and Utilization of Energy (I: *Rammaáætlun*[3]). The initiative for the plan originates from the debate sparked by the Laxá conflict in 1970. The initial work towards such an evaluation was undertaken by a committee of specialists from the Ministry of Industry, the National Power Company, the National Energy Authority and the Nature Conservation Council and was active during the 1970s to the 1990s (Bjornsson et al., 2012). The work of this collaborative committee, many discussions and various proposals led to the formal start of work under the auspices of the Master Plan in 1999. The initial objectives of the plan are outlined by

Thórhallsdóttir (2007a): 'i) to evaluate potential energy sources in hydropower and geothermal energy, ii) to classify them according to their attractiveness regarding energy capacity, economic gains, regional and social consequences, as well as the impact on the natural environment, cultural heritage, recreation and other land use, and iii) to rank them taking all these considerations into account'.

The work on the plan progressed in two subsequent phases with the outcome coming into full legal force in 2013 with a parliamentary resolution on the classification of a set of potential energy sites into either: '*utilization category*', '*hold category*' or '*conserve category*'. Under the Master Plan legislation, an independent scientific body is established with the responsibility to conduct a rigorous scientific assessment and examination of the various trade-offs for the individual proposed energy sites (Bjornsson et al., 2012). A significant element is that any development of proposed energy utilization of more than 10 MW is not permitted until it has been assessed under the Master Plan process. Development cannot proceed until after the land use of the site has been classified into the '*utilization*' category according to the Master Plan protocols and approval by the Icelandic Parliament, which has the final decision-making power. Development of the sites in the 'utilization' category is then subject to a formal environmental impact assessment. Areas that fall within the '*conserve*' category shall be protected from energy utilization under the Nature Conservation Act and within the government's formal protected area regime. The work on the Master Plan is now in its third phase and there is ongoing work to assess a large number of proposed areas for energy utilization that could be, according to the legislation, assigned to any of the three categories. The Master Plan has been a seminal conflict resolution instrument in order to resolve the challenging debates between nature conservation and energy development.

SOME IMPORTANT CHALLENGES FOR THE FUTURE

There are many challenges for the future, especially in relation to governance and expansion of protected areas, with the competing interests of tourism and the energy sector creating many tensions. In this paper, we highlight and present four different types of pertinent administrative and social/economic challenges. Obviously, this is not an exclusive list of challenges to the protected area estate of Iceland, which include those related to climate change, invasive alien species like *Lupinus nootkatensis* Donn ex Sims and *Anthriscus sylvestris* (L.) Hoffm. (Wasowicz et al., 2013), and pollution of some important protected lakes (Ramsar, 2013). Although the protected area challenges we discuss are specific to Iceland, these are likely to have resonance in other countries.

- **Advancing a systematic review of nature as a basis for developing the protected area network**

There is a need to advance knowledge about the representativeness of the Icelandic protected area estate, in relation to the whole range of natural features and processes. Although the overall terrestrial protected area cover in Iceland is comparably large, quantity does not necessarily equal quality of biodiversity and geodiversity conservation.

An important attempt to address representation of the protected areas has been made through the Nature Conservation Strategy (I: *Náttúruverndaráætlun*), manifested in the 1999 Nature Conservation Act. The strategy aims to establish a network of protected areas to assure the long-term survival of the most vulnerable and threatened species and habitats. The strategy has run in two phases from 2004 with a range of locations proposed as protected areas for conservation of important biotic, as well as abiotic, nature. The implementation has, however, been slow, especially as agreement with stakeholders has not been achieved on many of the proposed sites. The newly enacted Nature Conservation Act (November 2015) aims to restructure and strengthen the Nature Conservation Strategy, especially its means of implementation and the scientific arguments to support the conservation value.

The need to advance knowledge becomes even more apparent for the marine environments where there has been much less emphasis on site protection compared with the terrestrial areas. Iceland has relatively few marine protected areas compared to the natural assets known on its continental shelf, with the Breiðafjörður Conservation Area by far the largest.

Being a relatively large country with few inhabitants, Iceland has in general been struggling to allocate enough resources to provide detailed description and systematic review of its nature. This relates not only to mapping and assessing nature for conservation purposes, but also to most land use in general. The situation is slowly improving as information accumulates, but there is still a long way to go. An important initiative is the ongoing work to map species, habitat types and ecosystems in the country in accordance with common European frameworks. The Natura Ísland project, run by the

Icelandic Institute of Natural History (I: *Náttúrufræðistofnun Íslands*) has started to give new and greatly improved understanding of Icelandic nature in general and contributes to better understanding of its conservation value. However, a systematic approach to the inventory and evaluation of the geoheritage is currently lacking; this is needed given the outstanding geodiversity of Iceland, as highlighted in the 2015 ProGEO conference held in Reykjavik[4].

- **Dealing effectively with increasing visitor numbers**

As indicated earlier in this paper, nature-based tourism has been growing rapidly in Iceland. It is predicted to rise to 1.4 million in 2016 with a sharp seasonal peak during the summer months. This increase and its potential impacts are a major challenge to the protected area estate and the maintenance of Iceland's natural assets. Many protected areas and popular tourist destinations are now under serious threat of degradation and there is a further risk that the quality of the visitors' experience and enjoyment will diminish. An important factor for visitors' enjoyment is tranquillity, and this is bound to lessen with increased numbers of visitors at the same time in an area. Some of the sites might already be overwhelmed during peak days with individual visitors and package tours. However, if effectively planned, visitor management might create a great opportunity as experience of a protected area is now becoming a significant component of visitors' experience. This calls for far greater coordinated action by conservation and tourism interests. Emphasis needs to be on strengthening the institutional frameworks, organizational capacity, technical expertise and financial resources.

It is obvious that Iceland can draw lessons in this field from many other parts of the world, such as regulation of numbers, increased professional ranger presence, limiting and regulating visitor access in the most fragile parts, and improved footpath strategy and management. These are all issues that need urgent attention in order to halt degradation of protected areas conservation values.

- **Providing new mechanisms for financing protected areas**

Protected area management has been confronted with financial difficulties, not least related to rapidly growing visitor numbers. The bulk of the finance has come from the government, but there is increasing income from visitors, such as camping site fees and retail sales in visitor centres. The exponential growth in tourism has, however, created a major financial gap, especially for visitor infrastructure, such as footpaths and for development of ranger services. The government has partly met this with substantial additional funding, especially in 2015, but more is needed.

New ways to generate revenues to meet the gap in funding of protected areas are being considered. Since 2011, Iceland has applied a relatively low accommodation tax, with 40 per cent of the income going directly to protected areas but the remaining 60 per cent subject to competitive bidding, and the protected areas may not always be successful. There has also been an ongoing political debate on different measures to generate revenues for infrastructure and ranger services, such as increasing the accommodation tax, introducing site specific access fees, parking fees, concession fees, and also debate about introducing a general nature pass and entry/exit taxes for those visiting Iceland. Whatever mechanism is favoured, it is urgent to ensure early resolution and implementation, and to ensure that the resources raised are not siphoned off for other activities.

All of these challenges require, ultimately, public support to raise awareness of the need for progress to be made to ensure that the environmental value of the protected areas, the popular tourist destinations, will not diminish.

- **Organizational structures and coordination for effective protected areas management**

There are three government organizations that are mandated to govern protected areas. The general rule is that protected areas established according to the Nature Conservation Act, together with the Mývatn-Laxá area, are governed by the Environment Agency. The two national parks, established by specific law – Þingvellir National Park and Vatnajökull National Park, and the Breiðafjörður Conservation Area, have their own governance structures, independent from the Environment Agency. The reporting arrangements are also different. The Environment Agency and Vatnajökull National Park report to the Ministry for the Environment and Natural Resources, while Þingvellir National Park reports to the Prime Minister's office as the park is administered by a parliamentary committee. In addition, two other governmental organizations are mandated to govern land for specific purposes – the Soil Conservation Service and the Forest Service.

This relatively complex organizational structure brings challenges (Crofts, 2009). It creates a coordination challenge and a risk that knowledge of and capacity for conservation management becomes scattered. On the other hand, it also creates governance diversity, a topic much discussed at the World Parks Congress in Sydney

Þingvellir National Park and World Heritage Site for rifts associated with the separation of the North American and Eurasian tectonic plates and site of first democratic parliament denoted by the flagpole in the photograph © Roger Crofts

in 2014, being important as the protected area estate expands and its governance needs to cope with multiple stakeholders and different interests. One size cannot necessarily fit all.

The transformation brought about by expansion of nature-based tourism, as outlined in previous sections, calls for increased organizational capacity and a more integrated and coordinated approach to protected area governance. It is, therefore, likely that the organizational structure for effective management of protected areas in Iceland will evolve in the coming years.

CONCLUSIONS

This paper does not provide an exhaustive list of all challenges related to the protected area estate in Iceland. There remain a number of major challenges which need to be addressed to secure conservation values in the existing areas and to ensure that new ones are systematically added.

Our aim is to give a brief overview into some of Iceland's extensive work on protected area establishment, management and governance. Iceland is endowed with spectacular natural assets: features, processes and whole landscapes. It has built up a substantial protected area estate, starting with the first area in 1930, taking small steps after the Nature Conservation Act came into force in 1956, but not taking off until after 1970. Iceland now has around 20 per cent of its terrestrial area under formal protected area regimes. There are further plans to expand the area, especially under the new Nature Conservation Act and with a basis in the Master Plan for Conservation of Nature and Utilization of Energy. In addition to formal protection, there are also other statutory and non-statutory types of land based protection that have not yet been checked for conformity with the IUCN protected area definition, but might provide valuable additions.

Some of the societal challenges and transformations of recent decades discussed aid understanding of the development of the protected areas estate. The scale of nature in Iceland and the increase in popular public interest in the formal protection of nature brought about a significant change in approach from the later 1980s. Site protection has not been immune to the debate about the social impacts of conservation and a call for more socially inclusive approaches. There has been a demand for greater engagement by other stakeholders who felt excluded from the land they had rights to or lived next to by centralized approaches to nature protection.

Skógafoss Natural Monument: a classic Icelandic waterfall and an important tourist destination in south Iceland © Roger Crofts

Iceland has many interesting and innovative cases for policymakers and practitioners in protected area governance elsewhere. Of particular importance are the large scale conservation approach and co-management structures in Vatnajökull National Park and the establishment and logic behind the Master Plan for Conservation of Nature and Utilization of Energy. We argue that such structures can provide policymakers elsewhere with ideas on how to address conflicts and seek reconciliation of the different trade-offs between energy development and conservation.

The expansion of tourism is not only a key driver of the Icelandic national economy and provider of rural employment, it is imposing challenges and driving changes in park management and protected area governance in Iceland. This concurrently causes challenges to the protected area estate; how to effectively and sustainably manage this growing number, and how to tap successfully into the financial flows of the tourism sector for funding the much needed nature conservation investments to prohibit degradation of the fragile nature.

ENDNOTES

[1] We use Icelandic spelling for the individual site names. Further, we provide Icelandic translation for some of the terms used.

[2] The new nature conservation legislation entered into force while this paper was under revison. The new act allows for the designation of more categories of protected areas than the previous act, and aims partly to reflect the IUCN categories of protected areas.

[3] www.ramma.is

[4] www.progeo.com

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Þjórsárver Nature Reserve (Ramsar Site): key site for breeding of Pinked-footed geese (*Anser brachyrhynchus*) and surging Múlajökull glacier © Roger Crofts

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RESUMEN

Con un 20 por ciento de la superficie terrestre de Islandia protegida por mecanismos formales, en este estudio describimos la posición actual y analizamos algunos factores en la transición de los enfoques tradicionales a los actuales. Examinamos, asimismo, los elementos del desarrollo de las áreas protegidas de Islandia en las últimas décadas, especialmente los enfoques de conectividad en gran escala basados en el paisaje, estructuras de gobernanza innovadoras para involucrar a los actores locales, y nuevos mecanismos de resolución de conflictos entre la protección y el desarrollo. Se identifican algunos retos importantes para el futuro, incluyendo la necesidad de una revisión sistemática de la naturaleza como base para el desarrollo de la red de áreas protegidas, en relación con el número creciente de visitantes, el desarrollo de nuevos mecanismos para la financiación de las áreas protegidas y la mejora de la colaboración entre organizaciones en la gestión y gobernanza de las áreas protegidas.

RÉSUMÉ

Environ 20 % de la superficie de l'Islande fait partie d'un système d'aires protégées officielles. Le présent document examine la situation actuelle et certains facteurs liés à la transition entre l'approche traditionnelle et l'approche récente. Nous passons en revue le développement des aires protégées de l'Islande au cours de ces dernières décennies, en particulier les projets de connectivité de paysage à grande échelle, les structures innovantes de gouvernance qui engagent les parties prenantes locales, et les nouveaux mécanismes de règlement des conflits d'intérêts entre le développement économique et la protection de l'environnement. Des défis importants pour l'avenir sont identifiés, tels la nécessité d'un examen systématique de la nature comme base de développement du réseau d'aires protégées, le traitement du nombre grandissant de visiteurs, le développement de nouveaux mécanismes de financement des aires protégées et l'amélioration de la collaboration inter-organisationnelle dans la gestion et la gouvernance des aires protégées.