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In View of the Climate Crisis

Iceland's Strategy on
Adaptation to Climate
Change

Government Offices of Iceland

The Ministry for the Environment and Natural Resources.

Iceland's Strategy on Adaptation to Climate Change

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Preface by the Minister for the Environment and Natural Resources

This is the first Icelandic governmental strategy for adapting our society to climate change. A comprehensive approach to climate issues entails both taking mitigating measures to reduce emissions and increase carbon sequestration and taking measures to adapt society to the inevitable changes about to come. The more successful we are in doing the former, the more the need for the latter will diminish, but both must be addressed.



We are already experiencing the impacts of climate change. In Iceland, we foresee more intense precipitation, more frequent periods of draughts, rising sea levels and the disruption of the ecosystems in the ocean as a result of a rise in its temperature and its acidification. These impacts are serious, and the consequences will not necessarily appear immediately or rapidly. Nevertheless, we have to be prepared for them. We must develop actions to mitigate the consequences of climate change on society and thus minimise the need for emergency responses to climate catastrophes. I will mention, as an example, that wetlands near the sea can reduce the risk of flooding and climate-based planning can minimise the likelihood of damage from mudslides. In Iceland, we have a solid civil protection system but we must take care to ensure that it will be prepared to deal with the escalation of natural hazards because of climate change.

In 2019, Althingi passed my bill to amend the Climate Change Act that provided for a plan on the adaptation of Icelandic society to climate change. This strategy is the first step towards this goal, since a clear strategy is a necessary foundation for making a plan and deciding what measures will be taken.

The consequences of climate change affect nearly all aspects of society and adaptation is therefore an extremely broad challenge. This strategy sets out the core values and goals of adaptation and the goals for the main policy areas. It is based on a white paper on adaptation which was prepared on the basis of extensive consultations with stakeholders and the public, led by a working group I appointed in 2020.

Adaptation measures will never be better than the knowledge they are based on. That is why I have placed an emphasis on the promotion of fundamental research and monitoring of the impact factors of climate change in Iceland, with increased financial contributions in recent years, e.g. for increased

monitoring of ocean acidification and the receding of glaciers. Adaptation measures can be costly and the premises for decision-making must be clear. The development of measures must go hand in hand with defining the responsibility of different actors in society. We also need to consider the mitigation and adaptation co-benefits since, when they are successful, they can be mutually supportive. Wetland restoration, for example, reduces emissions while increasing the resilience of nature and the surrounding communities, including against flooding.

In my opinion, a key element is that the adaptation of society to climate change will be just. We must make every effort so that vulnerable groups will not be hit harder by the changes that are made, and also to always make social justice a guiding principle. This new strategy puts an emphasis on the participation of the public and an extensive collaboration with stakeholders. Local governments and businesses, for example, play a vital role in the shaping of adaptation measures.

Adaptation is a long-term project and adaptation measures will be under continuous review. The newly appointed scientific committee and the establishment of a special National Knowledge Centre on Climate Change Adaptation at the Icelandic Met Office are intended to accumulate and integrate knowledge on the basis of research, monitoring and forecasting and thus provide society with professional guidance in facing the challenges of adaptation.

In recent years there has been a considerable increase in awareness of climate issues that was long overdue. I am convinced that together we will be able to reduce the impacts of climate change, adapt to a different reality and set a good example internationally. Climate issues are a task for the whole of society, where the contribution of each and every one: the government, businesses and the public, makes a difference and no one can be left behind on this journey. I sincerely thank all of those who contributed to the white paper and this strategy.



1. Preface

It is important for Icelandic society, in parallel to working to reduce greenhouse gas emissions, to be prepared for the dangers stemming from the impacts of climate change and their consequences.

This is the first Icelandic governmental strategy for adaptation to climate change. It builds on a white paper produced by a working group that was appointed by the Minister for the Environment and Natural Resources in 2020, on the basis of reports by the scientific committee on climate change, a discussion paper of the Icelandic Climate Council “Preparing for a Changed World” and similar strategies made by other States. The white paper was submitted for open consultation on the Government Offices consultation portal in June 2021 and the Ministry for the Environment and Natural Resources finalised the strategy after taking into consideration the comments received, and in close dialogue with the working group. All of the material above is cited for a more detailed discussion on the subject and the goals below.

This strategy is the basis for the climate adaptation plan, as Article 5a of the Climate Change Act No 70/2012 provides that the Minister shall have such a plan prepared.

The strategy is structured in conformity with the structure of the white paper. First, the government’s vision for the future and the core values and goals of the strategy are addressed, followed by more specific goals for certain policy areas. Finally, goals for coordination, working procedures and general oversight and evaluation are established.

The government’s vision for the future is that the society and ecosystems of Iceland will have the resilience to face climate hazards and that adaptation to climate change will be a fixed part of policies and activities in the public sector, institutions and businesses, as well as a known issue among civil society organisations and the general public. Adaptation should be part of the government’s decision making, as well as those of appropriate sectors and industries, so that analyses and decisions take into account the climate risks and their consequences.

Examples of climate hazards for Iceland

Examples of impacts	Examples of consequences	Examples of societal impacts
The number of draught days may rise	More frequent vegetation and forest fires	Human lives in danger, burning of buildings
Increased precipitation intensity	Increased flood risk	Damages to structures and furnishings
Widespread rise in sea levels	Increased flood risk	Damages to structures, replanning of settlements
Diminished volume of glaciers	Changes in river beds	Damages to roads and bridges

A warmer climate	Spreading of invasive species	Increased danger of infectious diseases and a larger number of allergens
Permafrost thawing	Increased frequency of avalanches and landslides	Human life in danger, damage to structures
Acidification and warming of the ocean	Changes in marine ecosystems	Changed combination of catches, less income from seafood

From The Icelandic Climate Council’s 2020 report „Að búa sig undir breyttan heim“ (Preparing for a Changed World).

2. Core values

Adaptation measures and other work related to climate hazards shall be based on the following core values:

1. The best scientific knowledge and scenarios, monitoring and research of the impacts of climate change on society and nature;
2. short and long-term analyses and risk assessments, encompassing both direct and systematic or secondary risks due to the impacts of climate change;
3. definitions regarding risk management, where it is, *inter alia*, presumed that criteria for acceptable risks for society are determined in a transparent manner;
4. different scenarios where the worst case and social impacts of climate change are *inter alia* taken into account, especially for vulnerable groups;
5. analyses of financial and macroeconomic impacts;
6. knowledge of ecosystems, biological diversity and opportunities for their protection and ecological restoration;
7. the connection of climate hazards to social justice and public health;
8. systematic assessment of adaptation needs and reassessment of adaptation efforts;
9. participation of all stakeholders and the public, as well as international cooperation;
10. analyses of the synergies with mitigation measures.

3. Core goals

The core goals of the strategy are as follows:

1. For research, monitoring and general oversight and evaluation in relation to climate hazards to contribute to the knowledge of climate hazards within the community and that the implications for individuals, groups and institutions are clear.
2. For the community to have access to solid basic research on the social and natural aspects of Iceland and the necessary analyses of the different impact factors of climate change and the opportunities and risks they entail.
3. For the existing societal systems, ecosystems and processes that contribute to the adaptation to climate change to be known, strengthened and coordinated.
4. For there to exist a periodically updated national plan that gives a necessary overview of and follow-up to the adaptation measures.
5. For there to be room for different approaches to shape adaptation measures relating to the public, specific sectors, industries, municipalities or regions.
6. For all major governmental plans to be assessed in relation to adapting to climate change.
7. For the government goals to take into account the societal impacts of climate change, such as changes in the size of the population, residence patterns, employment opportunities and food production.
8. For efforts to adapt to climate change to be funded and for the measures to contribute to a just adaptation.
9. For the law and the regulatory framework to reflect the importance of adapting to climate change.
10. For fostering understanding of the importance of adapting to climate change among the public, which should be included in the adaptation work and be given access to the best available information on the subject.

A. Goals concerning natural hazards

A1 Planning and land use shall take account of the impacts of climate change in order to prevent the disruption of ecosystems, accidents, loss of human life and damage to property because of natural hazards.

A2 Research, regular measurements, monitoring and dissemination of information shall ensure the best available knowledge of the resilience of society and its infrastructure and of ecosystems against changes in natural hazards due to climate change.

A3 Hazard assessment and risk evaluation shall be regularly carried out and updated, where appropriate, for all natural hazards that can be expected in Iceland.

A4 The focus of civil protection shall reflect the increased danger posed by natural hazards due to the impacts of climate change.

A5 The state of ecosystems in the face of climate change shall be examined specifically as an aspect of the resilience of societies against natural hazards.

B. Goals concerning planning

B1 Challenges brought on by the consequences of climate change shall be taken into consideration when growth management plans are prepared.

B2 Local governments shall base their growth management planning on a targeted policy on the adaptation of the municipalities, communities and ecosystems to the consequences of climate change.

B3 Decisions as regards growth management planning shall be based on the best available information on the impacts of climate change, including an assessment of the local impacts on the natural environment and societal aspects and a hazard assessment in respect of climate-related natural hazards.

B4 Local governments shall be aware of the usefulness of green infrastructure, such as sustainable solutions for surface water and their implementation shall be a feasible option for them.

B5 The impacts of climate change shall be taken into account in marine and coastal planning.

B6 The environmental assessment of growth management plans shall include an assessment of the resilience of settlements, communities and ecosystems against the consequences of climate change.

B7 The secondary impacts of climate change on planning shall be recognised, for example with regard to community development, food production and different impacts on various groups within society.

B8 Laws and regulations on planning and environmental assessment shall reflect the goals of the government on adaptation to climate change.

B9 Other legislation covering civil engineering and the development of infrastructure shall reflect the government's goals on climate change adaptation, such as the Construction Act, the Building Regulation, Road Act, Electricity Act and the Act on the Development and Management of Sewage Systems.

B10 A position as to what kind of influence existing knowledge about the impacts of climate change should have on planning and decisions shall be included in legislation concerning regional development and land-use.

B11 Consultation on growth management planning shall include all relevant aspects with regard to adaptation and will contribute to the involvement of all those that have knowledge of the impacts of climate change on Icelandic society and ecosystems.

B12 Government employees and employees of local governments shall possess knowledge of the role of growth management planning in adaptation and the public and stakeholders shall be given information on the subject.

C. Goals concerning water and sewage

C1 The development of water and sewage systems shall take into account the impacts of climate change and the design criteria shall be harmonised.

C2 The roles, division of accountability and cooperation of private and public bodies as regards water supply, sewage systems and the control of surface water shall be laid out clearly in the legislation, for example as regards planning, development, design criteria, damages and research.

C3 Research and monitoring of water resources with regard to the impacts of climate change shall be conducted in a systematic, harmonised and comprehensive manner and the results shall be made public.

C4 Water suppliers shall be prepared to face increased danger of pollution, floods and landslides, for example by preparing floodways and areas that can absorb excess water.

C5 Water suppliers' internal controls and other quality systems shall be operational and take account of the impacts of climate change.

C6 Knowledge of the potential impacts of climate change on the performance of sewage systems shall be recognised.

C7 The financing of municipal sewage systems shall contribute to further development of the systems and their adaptation to the impacts of climate change.

D. Goals concerning energy

D1 The distribution and transmission grid for electricity shall be made resilient against disasters and protected against the impacts of climate change, for example changes in vegetation, avalanches and landslides and other natural disasters.

D2 Knowledge shall be available about the impacts of draughts and warming on particular components of the electricity system, for example the need for reservoirs and distribution channels as the glaciers are receding, as well as the coproduction of wind and hydro power.

D3 The extent of the need for protection against flooding and the development of reserve power and isolated areas of reserve power that can maintain power in case of a disruption of connections to other parts of the country shall be known.

D4 The scale of the energy transition and its consequences for the electricity system shall be recognised.

D5 The impacts of climate change on the distribution networks shall be identified.

D6 Public administration shall see to it that the development of infrastructure is in line with the risks and the resilience against disasters.

E. Goals concerning transport

E1 Regular measurements and monitoring of conditions shall be conducted in places where the transport infrastructure is sensitive to the impacts of climate change, such as changes in temperature, wind, sea-levels and floods.

E2 The impacts and consequences of climate change on the development, maintenance and operation of the transport system shall be identified, i.e. for roads, airports and ports.

E3 During the implementation of adaptation measures, institutions and bodies involved in the planning, construction or servicing of transport infrastructures shall consult with those that are working on similar infrastructures for the local governments, such as sewage and surface water systems.

F. Goals concerning the private sector

F1 The secondary impacts of climate change on the private sector shall be identified.

F2 The responsibilities of individual sub-sectors shall be clear and the private sector should take an active part in analyses and solutions.

F3 The private sector should adapt its activities, analyses and accounting to the increased and new risks entailed by climate change.

F4 Financial incentives and a system of grants shall be used to encourage research and innovation by businesses in relation to the adaptation to climate change.

G. Goals concerning fisheries and marine fish farming

G1 The monitoring of environmental aspects and basic research on the impacts of climate change on different marine organisms shall be optimised.

G2 A regular assessment of the socio-economic impacts of possible changes in fisheries and fish farming shall be made, e.g. on the need for adaptation and planning.

G3 Businesses, institutions and bodies that are involved in fisheries and fish farming should work together on the monitoring and analysis of the sector's need for adaptation.

H. Goals concerning agriculture

H1 The impacts of climate change on Icelandic agriculture shall be examined and assessed in a comprehensive manner, including in relation to food security and food safety.

H2 Measures shall be taken to prepare the agriculture sector for possible changes in weather patterns.

H3 Secondary impacts on the agriculture sector shall be identified in light of its dependency on imported resources.

I. Goals concerning tourism

I1 A strategy shall be in place on the analysis and monitoring of various consequences of climate change on tourism in Iceland and the division of accountabilities shall be defined.

I2 The systemic risks for the tourism sector due to the impacts of climate change within other sectors or abroad shall be identified.

I3 Risk assessments and risk criteria for Iceland shall be in place for the various impacts of climate change related to tourism, such as global travel behaviour, the opening-up of shipping routes in the Arctic Region, and Iceland's landscape and tourism related infrastructures.

I4 Adaptation to climate change shall be part of the policy on tourism as well as other policy-making relating to tourism.

I5 Different parties shall work together to integrate climate change adaptation into the policy on tourism, and travel service providers and tourist destinations shall take account of the subject in planning, where appropriate.

J. Goals concerning insurance and financial activities

J1 Research on the ability of insurance undertakings, banks and pension funds to handle the risks of climate change shall be enhanced and serve as a knowledge base for the best ways to use insurance and finances to manage such risks.

J2 Measures taken by domestic insurance and financial undertakings are to be transparent when it comes to climate change adaptation as well as the reporting of financial bodies concerning climate-related risks to asset and loan portfolios.

J3 The legislation on insurance against natural hazards and adaptation to climate change shall be reviewed, especially in relation to flood risks and vegetation and forest fires.

J4 Insurance and financial companies are to have good knowledge of climate risks to ensure that their decision-making as regards loans and/or investments will take into account the impacts of climate change.

J5 Data from insurance companies, both The Natural Catastrophe Insurance of Iceland and private insurance companies, are to be utilised as best as possible for national planning and the revision of building regulations.

J6 The public should know the dangers posed by climate change, use preventive measures because of them and know what insurance coverage is compulsory and what coverage is available from private insurance undertakings.

J7 Insurance and financial institutions should participate in useful and active dialogue and consultation with the ministries, local governments and regulatory bodies that are involved in this policy area, as regards climate change adaptation and methods to forestall damages, lessen or remedy their consequences.

J8 The division of duties in connection with climate related disasters shall be in conformity with the United Nations Sendai Framework and Sustainable Development Goal 11.B.

K. Goals concerning public health

K1 The state of knowledge about the connections between climate change, the condition of ecosystems, health (including mental health) and related impact aspects in Icelandic context shall be at its best and shall be maintained.

K2 The needs of vulnerable groups shall be attended to in order to counter health inequalities because of climate change.

K3 Indicators for climate and public health shall be defined and appropriate measures taken to publish and review them periodically.

K4 The lessons learned during the COVID-19 pandemic and responses to it shall be taken into consideration as regards adaptation measures in relation to climate matters.

L. Goals concerning national interests, the labour market and social infrastructure

- L1** The impacts of climate change on Icelandic society and national interests shall be identified and societal infrastructure and the industry sectors shall be made resilient against them.
- L2** The short and long term impacts of climate change on economical and monetary issues, the Treasury’s standing and the finances of local governments shall be identified.
- L3** The impacts and consequences of climate change for the labour market, occupational composition and income security of workers shall be identified and the infrastructure and support mechanisms should have the capacity to adapt.
- L4** The impacts on groups that are economically and socially vulnerable and those that are especially vulnerable to certain aspects of the impacts of climate change, such as natural disasters, shall be identified and social support mechanisms shall have the capacity to meet them.
- L5** The potential impacts of climate change on migration, into the country and domestically, shall be identified.
- L6** Icelandic development cooperation should reflect, as well as possible, the current development goals regarding the adaptability of communities to climate change impacts.
- L7** Secondary impacts of the consequences of climate change abroad, and other systemic risks to national interests, shall be identified.

M. Goals for the coordination of research and information

- M1** Research shall be conducted on the impacts of climate change on natural factors and communities and, regardless of whether the research is carried out by universities, research institutions, government agencies or businesses, care shall be taken to consult the bodies concerned in order to prevent duplication or that information cannot be used.
- M2** Bodies conducting research on ways to adapt to climate change or working on innovation or making materials or technology that will be useful in planning or implementation of adaptation measures, should do so in partnership with each other.
- M3** The public, institutions, local governments, businesses and others that benefit from adaptation to climate change shall have access to the best available information and scenarios on the impacts of climate change in Iceland and within the Icelandic context, for example by operating a web portal on the subject.

M4 The role of research institutions, government bodies and other research bodies shall be comprehensively identified as regards teaching, education, research and their dissemination of issues regarding knowledge about the impacts of climate change in Iceland, and ways to adapt to them.

M5 Work in the field of social sciences, humanities and arts shall be part of the essential creation of knowledge for the adaptation to climate change that not only calls for technological change but also, especially, changes in human behaviour.

N. Goals for the coordination of efforts to elaborate and implement measures and general goals across societal structures

N1 The public, NGOs, authorities and businesses shall have an understanding of adaptation efforts and be involved in it in cooperation with the local governments nearest to them.

N2 The organisation of adaptation efforts shall reflect the important role of local governments.

N3 Adaptation measures shall safeguard ecosystems and promote their diversity and also place an emphasis on nature-based solutions, such as green infrastructure, when shaping the measures.

N4 When adaptation measures are designed, account shall be taken of the secondary impacts of climate change, for example impacts abroad which may affect the field or sector that is the subject of planning.

N5 When establishing plans for adaptation, consideration shall be given to whether certain groups are particularly vulnerable financially or socially to the disruption of ecosystems and communities caused by climate change or measures in response thereof.

N6 The preparation of an adaptation plan shall contribute to the coordination and integration of government programmes that may relate to the subject.

N7 Different bodies that are involved in adaptation efforts shall have a harmonised understanding of its goals.

N8 There should be a cooperation forum for disseminating knowledge and shaping measures for the adaptation to climate change, which can be beneficial for all of society.

N9 Decisions, laws and regulations shall clearly reflect the division of accountability and the institutional structure for adaptation work and the ones covering risks and challenges because of climate change shall be harmonised.

O. Goals for planning, status assessment and general oversight and evaluation of adaptation efforts

O1 The government shall provide an overview of the adaptation measures to the impacts of climate change through a regular and comprehensive plan.

O2 Planning for adaptation shall be conducted across a wide range of sectors, industries and policy areas that are vulnerable to the consequences of climate change.

O3 Adaptation measures should be monitored and evaluated on the basis of diverse criteria and the results should inform further decision making on adaptation efforts.

Climate change adaptation and the Sustainable Development Goals



Policy-making for the adaptation to climate change takes the UN Sustainable Development Goals into consideration. Climate change adaptation is specifically featured under Goal 13, on Climate Action, but climate issues are in fact so intertwined with the Sustainable Development Goals that more or less all of them are connected to adaptation efforts and climate resilient development in one way or another. The UN Sustainable Development Goals were adopted by the representatives of all the UN Member States in September 2015, Iceland included. The Sustainable Development Goals are multifaceted and ambitious and demand the participation and cooperation of different stakeholders – just like the climate issues.

From the white paper on the adaptation to climate change.

