1. Government vision for science and innovation through 2035

Science and innovation are driving forces that underpin prosperity, social well-being and economic competitiveness, and value creation. Science, innovation, and technological advancement are keys to successful protection of the environment.

Scientific knowledge forms the basis for valuable applications, driving innovation for sustainable, productive economic growth, stronger democracy and public services, improving the health, prosperity and the quality of life of citizens, and protecting the environment. *Science*, in the broadest sense of the term, includes all academic disciplines and other systematic attempts at enquiring into the natural world, the societies we have created, and our own place within both. Icelandic scientific research contributes to this shared human endeavour to enhance understanding and expand humanity's knowledge for the benefit of us all. *Innovation* is the introduction of new or significantly improved products, services, or processes, extending beyond *technology* to include areas like art, marketing, and organizational methods.

Iceland is a desirable location for top talent and internationally competitive research institutions and companies, and a place where they can carry out basic and applied research as well as innovation. Its educational system is strong and encourages students to engage in creative and critical thinking from a young age.

Key priorities in the Government's vision for science and innovation:

- By 2035, Iceland is characterised by a strong innovation and research environment where a diverse group of talented people work together to acquire and share knowledge. The guiding principles behind innovation and research activities are to create new opportunities and to build the skills needed to resolve social challenges over the long term. The aim is for research and innovation to make up 3.5% of the gross domestic product.
- By 2035, the Icelandic research and innovation environment is sufficiently well prepared to make strong contributions to the universal human goals of improving the health, prosperity, and living standards of the public and of protecting the environment, both with structured applied research in key fields and with public policies that support personal interest-driven basic research in all disciplines. An innovation-driven society and economy built on knowledge possesses scientific expertise and benefits from the skills and knowledge creation of leading scientists and entrepreneurs worldwide.
- By 2035, Iceland has an outstanding educational system that fosters curiosity, creativity, and critical thinking among students from a young age. Inclusiveness is a guiding principle, with emphasis on making an appropriate education available throughout the whole country. The research and innovation environment creates fertile ground for ingenuity and entrepreneurial activities that are recognised in Iceland and internationally for their contribution to environmental protection, continued economic growth, greater equality, and a better quality of life.

2. Pillars and key objectives of the Icelandic Government's policy on science and innovation

The Government's policy on science and innovation is based on the following three pillars:

- Strong human resources
- Robust infrastructure and cooperation
- Reliable long-term funding

2.1 Strong human resources

Growing international competition calls for strong personnel with the competence to adapt to rapid technological changes and use them to develop new solutions to the challenges facing modern society.

In order to strengthen Iceland's knowledge society and bolster the country's competitiveness, it is vital to do the following:

1. Increase the general public's engagement and participation in science and innovation in order to support recognition of the societal importance of the fields

Widespread public support for prioritising government spending on education and research is an important factor in ensuring long-term success in science and innovation. Such support is based on a general understanding of the role of science and innovation and its importance for a prosperous society. Effective long-term science and innovation policy relies on the general public's engagement in science. This public support hinges on a widespread comprehension of the mechanisms of science and innovation and their significance in building a thriving society. Therefore, a prerequisite for any effective, enduring science and innovation policy is ensuring that the general public not only understands these concepts but is also encouraged to actively participate in them throughout the country.

2. Support for education at all levels in order to meet ever-changing social and economic requirements

A strong emphasis on high quality primary education to enable future generations to develop and strengthen society is an ongoing task. Iceland provides an educational foundation that is globally competitive and specifically encourages creative work, critical thinking and fast following of technological advancements. These elements are critical for the participation in scientific and innovative fields and enable the future generations to successfully operate on the international stage. Investment in continuing education is an important way to capture and

apply fast moving technological advancements in the interest of an evolving society and economy, especially given the growing impact of artificial intelligence (AI). In a continually changing environment, it is important to expand the training and continuing education options offered in all segments of the economy. Further education is not only an individual choice; it is also necessary in order to respond to rapid technological changes. As a result, emphasis on further education creates increased opportunities for individuals and contributes to economic advances and the society's shock tolerance. To support a thriving and sustainable society, it is important to prioritise continuing and lifelong education.

3. Attract and retain world-class scientific talent

In order to maintain a competitive advantage, Iceland must attract and retain top-quality scientific personnel. Universities and innovation companies promote increased economic growth through successful research and development, but have difficulty offering scientists competitive terms of employment. Systematically promoting the quality of life in Iceland, subsidising experts' expenses for moving to the country, and strengthening international education are important ways to attract international experts to the country. By cultivating a culture of innovation and cooperation, Iceland can create a name for itself as a leading centre of outstanding scientific and entrepreneurial work.

4. Support the work of young scientists and talented individuals

In a small society like Iceland, it is of vital importance that specialised employees fill positions in as many knowledge sectors as possible. This makes it even more essential to bolster the support environment for young, talented people in the knowledge community. It is important to adopt a wide range of measures to attract and support talented young people who will contribute to sustainable and flourishing knowledge sectors and will make a difference in Iceland and abroad. Offering employment contracts with the scope and funding needed to initiate research projects and start a career makes it possible to attract and retain young outstanding talents.

5. Increase the number of globally competitive STEM graduates

Knowledge in science, technology, engineering and mathematics (STEM) lays the foundation for innovation and technological development. By increasing the number of graduates from STEM programmes, Iceland can make a greater contribution to scientific discoveries, technological advances, and innovation. There is a strong demand for STEM graduates in many segments of the economy, including the tech and healthcare sectors. By increasing the number

of globally competitive STEM graduates, Iceland can respond to a growing demand for professionally educated experts. Many of the most complex tasks facing society, such as climate change, healthcare issues, and energy sustainability require innovative and original solutions and cross-disciplinary cooperation. On the whole, investment in high quality STEM education and in cooperation between STEM fields and the healthcare, humanities, arts, and social sciences can bring a wide range of benefits for the economy, the innovation environment, and Iceland's international competitiveness.

2.2 Robust infrastructure and collaboration

Robust scientific work, based on strong universities, research institutions, and extensive national and international collaboration, along with open research, technology, and data infrastructure, is essential for science and innovation, as it fosters new knowledge, technological development, and improved utilisation of information. Data-driven decision-making and policy development are also necessary prerequisites for continuous improvement in public administration. Furthermore, competitive infrastructure attracts research funding and skilled individuals, thereby enhancing international competitiveness.

To strengthen infrastructure and collaboration, it is important to:

1. Ensure that research infrastructure facilitates cross-disciplinary knowledge and is a foundation for outstanding performance

Advancements in science depend on ready access to robust and reliable research infrastructure. The cooperation between different parties should be strengthened to make such infrastructure available across academic disciplines, whether public or private, and irrespective of location. Furthermore, technological developments must be monitored so as to ensure that the research infrastructure is internationally competitive. In the instance of extensive or highly specialised infrastructure, it is important to seek international cooperation; i.e., in the Nordic region or in Europe. A multidisciplinary approach is a prerequisite for long-term success in science, and it would be desirable to build up research work that extends across scientific boundaries and encourages wide-ranging cooperation.

2. Promote effective collaboration between the scientific community and the business economy to lay foundations for new opportunities and growth

Effective collaboration between the scientific and business communities is a prerequisite for its being possible to face complex challenges and promote innovation and economic growth. Expertise and highly developed technology foster productivity and stimulate both value creation and job creation. In a small

society like Iceland, both the scientific community and the business economy benefit from having ready access to specialised tools and equipment that can lead to advances that might not be possible otherwise. Transparency and trust are key factors in collaboration among different parties. It is important to have a shared policy on investment and development of research infrastructure, and on joint utilisation of facilities and equipment – a road map – in place at all times. Furthermore, it is important to ensure that there is adequate flexibility within the scientific community for the pursuit of personal interest-driven basic research alongside applied target-driven research.

3. Support active collaboration between academic fields

Collaboration between disciplines often creates a new and innovative platform for research and development, which positively impacts society. This is especially true for the arts and sciences, where cooperation can enrich both fields and increase value creation. Institutional and systemic barriers between academic fields often hinder effective collaboration. It is therefore important that public policy supports efforts to reduce such barriers, for example, through incentives for interdisciplinary research and innovation.

4. International collaboration

Given the small size of the scientific and innovation community in Iceland, the country must continually work to strengthen and secure its position on the international stage. It is especially important to build international collaboration and connections through Nordic cooperation programmes and EU programmes. Participation in such programmes should be viewed as an effective investment.

2.3 Reliable long-term funding

Reliable funding is the foundation for stability and predictability, which are prerequisites for long-term success and sustained progress in research, science, and innovation. Predictability and secure funding provide scientists and entrepreneurs with long-term security, facilitating the planning of international collaborations and long-term projects. Prioritising these factors enables the establishment and assurance of sustainable growth in competitive and reliable scientific and innovation work, creating lasting benefits for society.

In order to bring this about, it is vital to do the following:

1. Support scientists and entrepreneurs in being at the forefront internationally through strong domestic competitive funds

Strong domestic science and innovation funds are a prerequisite for a knowledge environment, and they provide young scientists with the opportunity to develop disciplined scientific work habits. Competitive funds that provide research grants based on quality assessments also provide important support for domestic basic research. Such research enhances understanding of new ideas, can lead to ground-breaking discoveries and technological advancements, and foster economic growth and better living standards. It is important for Iceland's international competitiveness to invest in domestic research funds. Such investment not only fosters high-quality research; it also increases the possibility of international grants and international cooperation, which bolsters both the visibility and the utility value of the research findings. By strengthening domestic competitive funds, Iceland can contribute to a scientific and research environment that is on a par with the best in the world, with national and international importance.

2. Drive innovation through private sector investment

Reaching the goal of 3.5% of GDP being allocated to R&D should be driven by government policy aimed at increased investments from private sector, foreign direct investment. Iceland has developed a strong, effective R&D reimbursement system that incentivises companies to invest more heavily in innovation. It is vital to develop this system still further and provide more funding options for companies, thereby driving the ideology of private sector entrepreneurship and innovation and driving economic growth and international competitiveness.

3. Use social challenges as catalysts for innovation and opportunities for sustainable growth

Responding to social, environmental, and climate challenges requires original solutions. Both the strain that modern society puts on nature and the increased consequences of natural disasters highlight the need for action, as is reflected in the UN Sustainable Development Goals. Investing in research and eco-friendly industry can result in solutions that mitigate the impact of environmental and social challenges, as well as creating jobs and fostering sustainable growth. Iceland's high educational level and abundant natural resources give the country an opportunity to be an international leader, with emphasis on equal rights and entrepreneurship and on transforming social challenges into opportunities for innovation and economic development.

4. Emphasise fields where conditions in Iceland contribute to outstanding proficiency and progress

Iceland's geographical location, unique geological history, and unusual environment, together with its strong infrastructure, create particularly favourable conditions for scientific research, education, and innovation in certain fields. A rich environment provides abundant opportunities for sustainable development, innovation, and interdisciplinary collaboration between academic fields and industries. Iceland offers innumerable opportunities to be at the forefront of research in various fields, such as green renewable energy, geology, climate science and glaciology, Icelandic studies, genetics, health technology, and sustainable fishing. These unique Icelandic conditions are open to the wider world, and they promote international cooperation and knowledge sharing, which is of benefit to Iceland's society, economy, and environment.

In short: With the support of public and societal backing, science and innovation will, more than ever, be the main drivers of a strong and resilient Icelandic society and economy. Sound policy-making and long-term investment in science and innovation contribute to a prosperous society, capable of being at the forefront in international comparison.