



The Scottish Parliament  
Pàrlamaid na h-Alba

**Report of the Visit by the Scottish Parliament Delegation to  
the Althingi and Arctic Circle Assembly, Reykjavik, Iceland**

**12 – 16 October 2022**

## Introduction

1. This is the report of the visit by the Scottish Parliament delegation to Reykjavik, Iceland from 12 to 16 October 2022 for bilateral discussions in the Parliament of Iceland (Althingi) and participation in the annual Arctic Circle Assembly. The delegation comprised of:

- Liam McArthur MSP, Deputy Presiding Officer of the Scottish Parliament;
- Fiona Hyslop MSP, Deputy Convener of the Net Zero, Energy and Transport (NZET) Committee; and
- Mark Ruskell MSP, Member of the NZET Committee

The delegation was accompanied by Pater McGrath, Clerk to the NZET Committee, and Steven Bell from the International Relations Office

2. The purpose of the visit was fourfold: to discuss opportunities for future collaboration between the Scottish and Icelandic Parliaments on areas of mutual interest, both policy and corporate, with the Speaker of the Althingi; to discuss with members of the Althingi's Environment and Communications (EC) Committee policy issues which fall under the remits of the EC and NZET Committees; to attend the annual Arctic Circle Assembly and; to further strengthen the friendship between both parliaments.

3. As with all Presiding Officer and Deputy Presiding Officer led outward visits, it sought to meet the aims of the [International Strategy](#), namely:

- to promote the Scottish Parliament, its practices and processes as an open, accessible and participative legislature amongst other parliaments and international organisations
- develop the Parliament's reputation, skills, knowledge and abilities, through this work and its relations with other legislatures and organisations, to represent the people of Scotland in holding the Scottish Government and public bodies to account
- enhance the Scottish Parliament's institutional and international reputation through meetings with other parliamentarians and policy makers; and
- support and promote, through the Scottish Parliament's participation, activities which could bring wider economic benefit and added value to Scotland

4. The delegation wishes to put on record their sincere thanks to all those who gave up their time to meet with them during what was both a busy sitting period at the Althingi and Arctic Circle Assembly. They would particularly like to pay thanks to the Speaker of the Althingi, Mr Birgir Ármannsson MP, and the Chairman of the Arctic Circle Assembly and Former President of Iceland, Ólafur Ragnar Grímsson, in addition to all Nordic Ministers and Members of Parliament who met with them.

## Background

5. The annual Arctic Circle Assembly is the largest annual international gathering on the Arctic, attended by more than 2,000 participants including Heads of State and Governments, Ministers, Members of Parliaments, officials, scientists, business leaders, activists, NGO's, academics and others from over 60 countries.
6. The topics of focus include climate change and its effects on the Arctic region, sea melt and extreme weather, security and sustainable development in the Arctic, fisheries and ecosystem management, energy security, indigenous rights, shipping and transportation infrastructure, Arctic resources, and tourism.
7. The stated mission of the Arctic Circle is *"to facilitate dialogue and build relationships to address rapid changes in the Arctic" and "strengthen the decision-making process by bringing together as many international partners as possible to interact under one large 'open tent'"*.
8. The organisation was established in response to issues facing the Arctic as a result of climate change as well as the growing international interest in the region. With the opening of shipping lanes and other economic activity in the Arctic, the organisation says the region *"is moving to centre stage and is playing a significant role in issues such as globalisation, economic development, energy exploration, environmental protection and international security."*
9. The Chairman of the Arctic Circle and former President of Iceland, H.E. Ólafur Ragnar Grímsson, visited the Scottish Parliament in 2017 and 2018. During these visits he discussed the work and role of the Arctic Circle Assembly with former Presiding Officer Ken Macintosh and encouraged MSP participation in the annual Assembly.
10. The Scottish Parliament's initial involvement in the Arctic Circle Assembly took place in 2018 and was a result of the invitation extended by President Grimsson at his meeting with the (then) Presiding Officer. This initial involvement by the former Convener plus one Member of the Environment, Climate Change and Land Reform (ECCLR) Committee was seen as a pilot scoping exercise for the Parliament. Feedback from the visit was extremely positive and, as a result, a second parliamentary delegation took part the following year, once again led by the former ECCLR Convener, Gillian Martin MSP, and Deputy Convener Finlay Carson MSP.
11. Building on the inaugural visit, the 2019 delegation was accompanied by a SPICe environment and climate change subject specialist and Professor Elisa Morgera, Global Environment Law and Co-Director, Strathclyde Centre for Environmental Law and Governance, University of Strathclyde, and delivered a breakout session entitled, "A Scottish Perspective on Climate Change, Climate Justice and Human Rights".
12. Involvement in the annual Assembly was suspended in 2020 and 2021 due to the COVID pandemic and associated travel restrictions. This hiatus resulted in a break in

momentum with the Parliament's involvement at the Assembly. The participation of the Deputy Presiding Officer at this year's Assembly, the first of the new Session and the first at Presiding Officer level, signals the Parliament's commitment to engagement with the Arctic Circle Assembly and the wider Nordic region.

## **Programme**

13. Over the course of three full days at the Arctic Circle Assembly, and one day at the Parliament of Iceland (Althingi), the delegation held nine bilateral meetings, including with the Speaker of the Althingi, Mr Birgir Ármannsson MP; the Chair and First Deputy Chair of the Althingi's Standing Committee on the Environment and Communication, Mr Vilhjálmur Árnason MP and Ms Thorbjörg Sigríður Gunnlaugsdóttir MP; the Chairman of the Arctic Circle Assembly and Former President of Iceland, H.E. Mr Ólafur Ragnar Grímsson; Iceland's Minister of Infrastructure, Mr Sigurður Ingi Jóhannsson MP; the Faroe Island's Minister of Foreign Affairs and Culture, H.E. Jenis av Rana; Iceland's Minister of the Environment, Energy and Climate, Mr Gudlaugur Thór Thórdarson MP; Ms Krístrún Frostadóttir, Member of the Althingi for the South Reykjavik constituency; Ms Birgitte Jourdan-Andersen, Partner, Schjødt; and Mr Oluver Gregerson, Managing Director of Ocean Rainforest.
14. In addition to nine bilateral meetings the delegation attended four plenary sessions and a total of sixteen breakout sessions on a variety of policy areas including, but not limited to, permafrost thaw and the effect on climate change modelling; climate "repair"; restoring biodiversity loss in the boreal zone (forest, wetlands, peatlands) and complimentary or conflict with climate change zones; hydrogen (and in particular green hydrogen); tidal energy and wind energy. The delegation also attended three evening networking events hosted by the Prime Minister & Foreign Minister of Iceland; the Scottish Government; and the Government of the Faroe Islands.

A copy of the visit programme is annexed to this report. The following summarises key issues discussed across the various bilateral meetings.



(L-R: Deputy Presiding Officer Liam McArthur MSP; Net Zero, Energy and Transport Committee (NZET) Deputy Convener, Fiona Hyslop MSP; and NZET Committee Member Mark Ruskell MSP, pictured outside the Althingi)

## **Bilateral discussions**

15. The Deputy Presiding Officer, accompanied by members of the delegation, paid a courtesy call on the Speaker of the Althingi, Mr Birgir Ármannsson MP. This meeting provided an opportunity for the Deputy Presiding Officer to convey a key message to the Speaker: that the Scottish Parliament would like to see its engagement with key European legislatures, of which Iceland is one, increase over the current Session.
16. The Deputy Presiding Officer also spoke of the strong historical and cultural ties between Scotland and the Nordic countries and how the wider region is of particular interest to the Scottish Parliament given that many devolved policy issues (environment, climate change, education, transport, post-COVID health challenges etc) are also priorities of the Nordic parliaments.
17. The Deputy Presiding Officer highlighted to the Speaker that our continued involvement in key conferences such as the Arctic Circle Assembly, as well as the Presiding Officer's attendance at the forthcoming meeting of the Nordic Council, were practical examples of our commitment to the region. The Deputy Presiding Officer also noted that this was further demonstrated by his own involvement in the 2022 Arctic Circle Assembly, the first at Presiding Officer level.
- 18. The Deputy Presiding Officer concluded by extending an invitation to the Speaker, on behalf of the Presiding Officer, to visit the Scottish Parliament to**

**continue discussions on greater co-operation between our two Parliaments. This invitation was accepted by the Speaker, with officials in both parliaments tasked with taking this forward.**

- 19. Speaker Ármannsson's office have subsequently been in touch with the International Relations Office, extending an invitation from the Speaker to the Presiding Officer to visit the Althingi in 2023. IRO officials to take forward.**



(Deputy Presiding Officer, Liam McArthur MSP, signing the Speaker's Visitor Book on behalf of the Scottish Parliament delegation.)

20. Members of the delegation then attended a working lunch hosted by the Althingi Speaker, Mr Birgir Ármannsson MP. The Chair and First Deputy Chair of the Standing Committee on the Environment and Communication, Mr Vilhjálmur Árnason MP and Ms Thorbjörg Sigríður Gunnlaugsdóttir MP, respectively, also attended.
21. Discussion covered a wide range of recent political events, including recent legislation in both the Scottish and Icelandic parliaments, before turning to issues of general interest to both committees including wind energy (onshore and offshore) and its governance and oversight from the perspective of a parliamentary committee. The delegation also discussed issues around energy security as well as progress being made in both Scotland and Iceland towards Net Zero and the use, and development, of the hydrogen sector (and particularly green hydrogen) to achieve these goals.
22. Members of the delegation found these discussions to be particularly relevant and useful to the committees' interests and both they, and their Icelandic counterparts, agreed that further discussion would be beneficial.

23. **The Deputy Convener of the NZET Committee, on behalf of Committee Convener Edward Mountain MSP, extended an invitation to the Chair of the Environment and Communication Committee to pay an official visit to the Scottish Parliament to continue these discussions. A further meeting would also provide the NZET Committee an opportunity to explore additional areas of interest including the Althingi committee's experiences and views on the Icelandic state energy company; as well as building standards in Iceland (focussing on energy and insulation elements of them).**
24. **International Relations Office officials have since progressed this invitation by the NZET Deputy Convener and, following discussion with Althingi and NZET Committee Clerks, arranged a visit programme in the Scottish Parliament for members of the Environment and Communication Committee. In addition to a further meeting with members of the NZET Committee, the Icelandic delegation are currently exploring the possibility of visiting a Scottish windfarm and national park. NZET committee members have also been invited to join the committee on these site visits.**
25. The delegation held a further bilateral meeting at the Arctic Circle Assembly venue with Krístrún Frostadóttir, Member of the Althingi for the South Reykjavik constituency (Social Democratic Alliance Party), in her capacity as a member of the West Nordic Council. This meeting provided an opportunity for the delegation to be briefed on the current work programme and priorities of the West Nordic Council and outcomes from its recent discussions. These included the impact of tourism on local communities and the environment, particularly the cruise ship sector. Other examples included the development of green hydrogen ports in the North Atlantic as well as the management of pelagic stocks. Ms Frostadóttir also provided a brief background on the Council's history and role, as well of her own personal experience of being a member.
26. Ms Frostadóttir described the West Nordic Council as a good forum for regional issues and that it may be open to discussing further engagement with the Scottish Parliament. However, there would be practical considerations to take into account, including the fact that Danish is the working language of the Council. **IRO officials to explore future opportunities for co-operation with the West Nordic Council with counterparts in the WNC Secretariat including, but not limited to, a further meeting with all members of the WNC at a future Arctic Circle Assembly.**



(L-R: Krístrún Frostadóttir MP; Deputy Presiding Officer Liam McArthur MSP; NZET Deputy Convener, Fiona Hyslop MSP; and NZET Committee Member Mark Ruskell MSP)

27. The delegation then met with Iceland's Minister of Infrastructure, Mr Sigurður Ingi Jóhannsson MP, for a discussion on topics of particular interest to the NZET Committee. These included decarbonising transport, including public transport; electric car charging point infrastructure; and planning frameworks (in relation to wind energy).
28. The Minister informed the delegation of current plans being looked at by both the Icelandic Government and Althingi on a planning framework for wind energy. He advised that wind currently generates only 2.5MW so there is enormous potential in this sector. One area they are exploring is the marriage of onshore wind developments with hydro schemes to maximise efficiency.
29. The Government is also looking to cut out diesel and switch to hydrogen or electricity, where possible. Ships and aeroplanes will need to look at green hydrogen options in future, particularly if Iceland wants to maintain its image as a destination for 'green tourism'. The Minister remarked that it made sense for countries in the region to agree a common policy on matters like green fuel requirements (since many of the cruise ships make stops in all areas) and that the West Nordic Council is a good forum for such discussions and reaching agreement. A public discussion over the use of green hydrogen is currently in its infancy in Iceland, however.
30. Further to above, the Minister advised that there had been a phenomenal tourism boom in Iceland and, following a dip during the pandemic, close to 2 million visitors now visiting Iceland annually. The numbers have created some issues but the Minister said that Iceland was not anywhere near "full" yet. He acknowledged that there is further work to be done on promoting green tourism.





(L-R: Deputy Presiding Officer Liam McArthur MSP; Iceland's Minister of Infrastructure, Mr Sigurður Ingi Jóhannsson MP; NZET Deputy Convener, Fiona Hyslop MSP; and NZET Committee Member Mark Ruskell MSP)

31. The Deputy Presiding Officer, accompanied by delegation members, paid a courtesy call on the Chairman of the Arctic Circle Assembly and Former President of Iceland, H.E. Mr Ólafur Ragnar Grímsson. The Deputy Presiding Officer used this opportunity to reaffirm the Parliament's commitment to the Arctic Circle Assembly and the opportunity it provides to engage with a broad range of stakeholders on devolved policy areas. The Deputy Presiding Officer highlighted that his attendance at this year's Assembly, the first at Presiding Officer level, was a signal of the importance the Parliament attaches to this relationship with the Assembly.
32. President Grímsson spoke of how pleased he was to have played a part in the Parliament's involvement in the Assembly and that Scotland, and the Scottish Parliament, is "*now firmly incorporated into international structures of cooperation and dialogue about the Arctic, through the Assembly*". He remarked that the Assembly seemed a "*good fit*" for Scotland as it is a non-political forum, with structures in place to allow participants to "*make what they want of it*", as exemplified by a Scottish Parliament committee delivering a presentation at the 2019 Assembly and all delegations using the opportunity to engage in direct, bilateral meetings with political and non-political stakeholders.
33. The President remarked that, in terms of future economic activities (particularly in relation to the green economy) the message should be to "look north". He spoke of the potential for a 'northern corridor' for freight shipping in the Atlantic. This could be used both for traditional freight shipping and for exploiting new technologies such as

green hydrogen. This corridor would stretch from Maine in the USA to Rotterdam or Hamburg, with Greenland, Iceland, the Faroe Islands, Norway and Scotland as stopping points along the way. He also spoke of the potential for Scotland having better flight links with both Reykjavik and Helsinki as this would enable the country to be “better plugged in” to two major hubs for transit to North America and East Asia, respectively.

34. President Grímsson spoke on how Iceland has become a hub for green adventure tourism, particularly among the younger generation, and that this has had a positive impact on Iceland’s economy and self-image. He remarked about the scope for Scotland to make more of this development by presenting itself as the next stop after Iceland (or vice-versa). The better flight links with Reykjavik (and Helsinki) mentioned above would help with this aim.

35. Finally, President Grímsson provided an overview of a new international hub which is being built in Reykjavik. This proposed new “Grímsson Centre” will be located in the grounds of the University of Iceland, alongside the Nordic Council’s ‘Nordic House’. He advised that the hub is being backed by the Icelandic Government and will be a non-political forum for research, discussion and informal diplomacy about the Arctic neighbourhood, particularly in relation to climate change. President Grímsson mentioned that *“there is space for Scotland there if it wants it and if Scottish partners want a lease to set up in the centre, they will have priority”*.

**36. International Relations Office to keep track of developments with the new centre and, upon closer to completion, to explore opportunity for a possible site visit, perhaps alongside attendance at a future Assembly. IRO officials to also pass on details of this new research hub to colleagues in SPICe.**



(L-R: NZET Committee Member Mark Ruskell MSP; NZET Deputy Convener Fiona Hyslop MSP; Chairman of the Arctic Circle Assembly and Former President of Iceland, H.E. Mr Ólafur Ragnar Grímsson; and Deputy Presiding Officer Liam McArthur MSP)

37. The delegation then met with the Minister of Foreign Affairs and Culture in the Faroe Islands, H.E. Jenis av Rana, for a discussion on the national energy security situation in the Faroe Islands; sustainable transport infrastructure for remote communities; the Faroe Islands journey to net zero and the funding of this transition.
38. The Minister provided an overview of the expansion of the tunnel networks in the Faroes in recent years. He highlighted the transformational nature of these projects connecting remote communities and islands. An example being a new tunnel which has cut travel times between one community and the capital, Tórshavn, from one hour to just eight minutes. He mentioned that the Government is of the view that these transport infrastructure improvements are crucial to securing the future and welfare of the islands as a whole; that it is about access to public services as well as economic progress. He noted that the longest tunnel is over 11km in length but that this may soon be surpassed.
39. The Minister also provided the delegation with an overview of the Faroe Islands new [Arctic Policy](#). He also remarked on the cooperative nature of bodies such as the West Nordic Council and the important role it plays in discussing (and helping to solve) issues of mutual interest and concern, particularly in relation to the environment, fishing rights and, following the Russian invasion of Ukraine, wider geopolitical issues.
40. The Minister concluded the meeting by inviting the committee to visit the Faroe Islands to continue discussions with him, Ministerial colleagues or other policy experts and officials. Given the potential for read-across in environmental, transport and marine policies, the Minister felt further dialogue would be useful. **International Relations Office to forward details of contacts in the Minister's office and Faroe Islands Government to NZET Committee clerks should they wish to consider a visit to Tórshavn on a future date.**



(L-R: Deputy Presiding Officer Liam McArthur MSP; Minister of Foreign Affairs and Culture, Faroe Islands, H.E. Jenis av Rana; NZET Deputy Convener Fiona Hyslop MSP; and NZET Committee Member Mark Ruskell MSP)

41. The second day of the Assembly continued with a further bilateral meeting with Ms Birgitte Jourdan-Andersen, partner at Scandinavian law firm, Schjødt. Ms Jourdan-Andersen is a Norwegian lawyer with more than twenty years of experience in the field of national and European energy, environment and the law. She spent sixteen years in Brussels working for the EFTA Secretariat, the European Commission and the EFTA Surveillance Authority. While working for the EFTA Secretariat she negotiated on behalf of Iceland, Norway and Liechtenstein with the EU on all EEA relevant energy and state-aid acquis into the EEA Agreement.
42. As a political advisor to the Deputy General in DG Energy, Ms Jourdan-Andersen was also part of a team setting out energy policy and legislation at the highest European decision-making level. Her specialism is renewable energy, particularly green hydrogen, which she views as “the new oil and gas” with its potential in the north-east Atlantic, including Scotland, as “huge”.
43. Discussion focussed mainly on real-life consequences for the green hydrogen industry of the EU’s regulatory framework, in particular the renewable energy directive ([“RED II”](#)) which is no longer enforceable in the UK.
44. On the third and final day of the Assembly, NZET Committee Deputy Convener, Fiona Hyslop MSP, and her committee colleague Mark Ruskell MSP, held a bilateral meeting with Mr Oluver Gregerson, Managing Director and Co-Founder of Ocean Rainforest, a “blue growth” company which sells various kelp-based products globally. Mr Gregerson met with the first Scottish Parliament delegation at the Arctic Circle Assembly in 2018, of which Mark Ruskell MSP was a member, so this discussion was a useful opportunity to be briefed on developments in the company and the kelp sector more widely, since 2018.
45. Mr Gregerson advised that, since the establishment of his company in 2012, there have been many practical and regulatory challenges to development. Many of the practical challenges are linked to the tough marine environment (kelp thrives in cold ocean waters with strong currents). He advised that kelp is an easy grower and, unlike salmon, requires very little intervention once seeded. He remarked that, *“as kelp farming works in the Faroe Islands, it would surely be a success in northern Scotland too, given the similar marine environment”*.
46. He informed the delegation that the Faroe Islands government started with no template to regulate this new industry. The industry ‘piggybacked’ onto salmon farming, applying for a licence in areas where salmon farms had already been sited. He advised that the salmon industry did not directly object, given some potential symbiotic benefits in co-location.

47. Mr Gregerson did advise, however, that since 2019 there has been a separate permit system for kelp farming and that this new regulatory approach could be a good template for Scotland to follow. The establishment of a permit-based system was good, he said, as it *“stops the industry from becoming a wild west, giving protection to responsible players willing to take the financial risk”*. He also mentioned however that *“excessive red tape could strangle the industry and a light-touch approach seemed appropriate for such a clean industry”*.
48. The ninth and final bilateral meeting at the Assembly was with Iceland’s Minister of the Environment, Energy and Climate, Mr Gudlaugur Thór Thórdarson MP. Discussion topics included Iceland’s journey to net zero and how Iceland is funding the transition; the opportunities presented by the green hydrogen sector and the national energy situation in Iceland.
49. The Minister informed the delegation that the biggest debate in Iceland at present, in both Parliament and at grassroots level, is about onshore wind. He advised that Scotland is ahead of Iceland in this area and is one of the “case studies” that policy makers in Iceland want to look at in further detail.
50. The Minister advised that onshore wind policy is still being formulated but he was clear that any permitted windfarm must deliver community benefit and he was interested to learn more about how Scotland had implemented conditionality into its permissions systems. An overview of National Planning Framework (NPF) 4 was provided by delegation members to the Minister.
51. The Minister informed the delegation that any energy produced from onshore wind in Iceland would be used domestically only. There would be a reluctance on the part of Icelanders to allow the building of wind turbines, and the affect they would have on biodiversity, if the energy produced ended up being exported.
52. The Minister also advised that reforestation and wetland restoration is a key eco-priority in Iceland and that they have big ambitions for this area. He advised that there were pitfalls to be avoided such as creating the wrong sort of incentives to buy and sell land as part of a carbon trading system that might not be in the best interest of local communities. The Minister noted that this seemed like a further area where Scotland and Iceland could learn from each other.



(L-R: NZET Deputy Convener Fiona Hyslop MSP; Iceland's Minister of the Environment, Energy and Climate, Mr Gudlaugur Thór Thórdarson MP; and NZET Committee Member Mark Ruskell MSP)

53. As highlighted previously, in addition to nine bilateral meetings held over the course of the Assembly proceedings, the delegation attended four plenary sessions and sixteen breakout sessions. Details of these sessions can be found in the Annex however, to summarise, the topics discussed during these sessions were: permafrost thaw and effect on climate change modelling; climate “repair”; restoring biodiversity loss in the boreal zone (forests, wetlands, peatlands) and complementarity or conflict with climate change zones; hydrogen (particularly green hydrogen); tidal energy; and wind energy.

54. **The delegation found these sessions to be very useful in enhancing and reaffirming their overall knowledge of subject matters which fall under the remit of the NZET Committee (and others).** Below is a summary of sessions attended by the delegation however it should be noted that, while the contributors were generally credentialled and experienced in their field, the arguments put forward, and the points summarised below (points 55 through 69), have not been “verified”.

*Permafrost thaw and effect on climate change modelling*

55. In the Arctic, where climate change appears to be occurring fastest, permafrost is melting at an alarming rate. This melting risks creating a negative feedback loop whereby thawing permafrost creates more carbon dioxide and methane being released from the soil which, in turn, creates more climate change (resulting in more permafrost thaw). It was highlighted during the session that this phenomenon is under-researched and scientists are still grappling with what this means. However, it does seem to indicate that the planet will heat up even more quickly than most current modelling (including UN modelling) suggests.

Climate “repair”

56. There were different views put forward on whether climate “repair” was even feasible. One presentation stated that viable technology was already available and could potentially be scaled up i.e. ‘whitening’ clouds to increase reflectiveness. Other views put forward stated that possible technical solutions were a distraction from the necessity of making hard, collective choices globally.

*Restoring biodiversity loss in the boreal zone (forests, wetlands, peatlands) and complementarity or conflict with climate change zones*

57. Net zero will not be achieved without carbon sequestration at scale in the boreal north, of which Scotland is an outpost. Boreal wetlands, peatlands and forests are effective carbon sinks. Reforestation carried out at scale is efficient and necessary to get to net zero, which requires governments to “think big” in establishing reforestation zones.

*Hydrogen*

58. Hydrogen, and particularly green hydrogen, was one of the most discussed topics. Speakers said the industry was in a growth spurt, with around 520 projects started or announced globally. Technological advances are making green hydrogen increasingly viable.
59. Green hydrogen is essential for the energy transition, especially for “harder to reach” areas: aviation and most shipping, cement, steel and fertilisers. It is complementary to battery storage of electricity, not a rival. Around one quarter of the world’s energy needs must be met by hydrogen once fossil fuels are eliminated (CEO of [Green Hydrogen Organisation](#)).
60. Green hydrogen has the potential to decentralise energy production, taking the load off the grid and enabling local supply. This makes national energy security more robust. However, blue hydrogen remains the lowest-cost method of hydrogen production and the method most capable of meeting the heavy demands of industry at present. Thanks to changes in global markets and advances in technology, production of green hydrogen is taking off: from almost zero at the end of the last decade to 100 million tonnes by 2030.
61. Many speakers referred to the potential for a switch to hydrogen to redraw the energy map with new nodes of economic activity and trade. The far north Atlantic / Arctic will contain clusters of these nodes.
62. Hydrogen is the best solution for decarbonising aviation. Shorter flights on smaller planes (40-60 seats) running on liquid hydrogen under a modular system are beginning to look economically and technologically viable. (Speaker from [Universal Hydrogen](#).)
63. Another example was a [major mining company](#) turning its entire fleet and transportation system to green hydrogen at its largest Australian site; using solar

power to drive electrolysis. This was as a prelude to making the entire company operations carbon neutral.

64. In shipping, it remains hard to make green hydrogen viable. Green methane is the better bet for now, although its carbon footprint is greater. Ideally, it will be viewed in hindsight as a transitional source. However, the Faroe Islands' ambition is to have half of its fishing fleet running on green ammonia (stored hydrogen) by 2040.
65. Different views on the "hydrogen ladder" (ie the view that policies should prioritise hydrogen use for harder to reach areas). Speakers tended to agree that green hydrogen was better placed in some areas than others. Battery storage of electricity was described as complementary to hydrogen, not a rival technology. The European Investment Bank has put money into supporting hydrogen-powered cars, indicating that it has not "picked a side" in terms of hydrogen or electric cars. One view was that talk of the hydrogen ladder was a deliberate tactic to make green hydrogen seem complicated and put people off. Provided carbon levies provide a level playing field, the market should find its own solution.

#### *Tidal energy*

66. There was a presentation on tidal energy in the Faroe Islands, where the [Dragon tidal power plant](#) has recently opened and is delivering electricity into the grid. One of the key benefits of tidal power as part of a renewable energy mix is that, unlike wind or solar, it is essentially constant rather than seasonal.

#### *Wind energy*

67. There were views that the UK, and Scotland in particular, are recognised leaders in wind energy, especially offshore wind along the North Sea, where we now have some of the world's largest turbines, including floating turbines. Offshore wind technology is developing at pace, with new technological solutions being found all the time. However, the potential of the North Atlantic, one of the windiest zones on earth, remains enormous. Large offshore floating islands or "barges" are increasingly a viable option.
68. In wind energy, as in energy generally, the LCOE (levelised cost of energy) model is the traditional model for calculating the viability of a product. In essence, the challenge for the industry is to maximise efficiency but maintain safety. However, LCOE is becoming an increasingly poor guide. It does not take account of externalities such as geopolitics (e.g. Russia's war in Ukraine.)
69. As offshore wind energy scales up, conflicts between offshore wind developments and other uses of the sea will become increasingly unavoidable, as will "wind versus biodiversity" views in some cases. We are still assessing the extent to which scaled-up offshore wind production has negative consequences for biodiversity (eg noise and electromagnetic disturbance.)



## Conclusions

70. As the largest annual international gathering on the Arctic, the Assembly provides a unique opportunity to attend a number of workshops and discussions on topics of direct relevance to Scottish Parliament committees.
71. Just as importantly, however, is the opportunity this annual gathering of Ministers, parliamentarians, NGOs, academics etc provides to hold bi-lateral meetings on subject matters of direct and topical relevance to members of the Scottish Parliament delegation, particularly those meetings at a political level.
72. The Scottish Parliament presence at, and involvement in, the annual Assembly is very much welcomed by the Chairman of the Arctic Circle Assembly, Icelandic Ministers and Icelandic parliamentarians and it is the view of the International Relations Office that participation in the Assembly enhances both the profile and reputation of the Scottish Parliament, particularly when combined with bilateral meetings in the Althingi.
73. It is recommended that participation in the annual Assembly continues during the current Session. Given the clear interest in Scotland and its approach to climate change and other policy areas by our international partners, it is recommended that a breakout session once again be included as part of any future Scottish Parliament participation at the Assembly.
74. While it is for the SPCB to approve the funding of such visits, the 2022 delegation believe that future participation by the Scottish Parliament should be supported. Further, given the breadth of issues discussed at the Assembly, there is scope to widen out participation to other committees (where there is a strong and justifiable business case). Officials in the International Relations Office have been invited to give further consideration to this.

## Annex: Programme

### Tuesday 11 October 2022

- Depart Edinburgh
- Arrive London Luton (overnight Luton airport hotel)

### Wednesday 12 October 2022

- Depart London Luton
- Arrive Keflavik
- Tour of Althingi, Mr Jörundur Kristjánsson, Director of the Speaker's Office
- Bilateral Meeting 1: Speaker of the Althingi, Mr Birgir Ármannsson MP
- Bilateral Meeting 2: Working lunch hosted by the Speaker of the Althingi, Mr Birgir Ármannsson MP and attended by the Chair of the Standing Committee on the

Environment and Communication, Mr. Vilhjálmur Árnason, and 1st Deputy Chair, Ms. Thorbjörg Sigríður Gunnlaugsdóttir

### **Thursday 13 October 2022**

- Breakout Session 1: Permafrost Pathways: Connecting Science, People & Policy for Arctic Justice & Climate (Organised by: Woodwell Climate Research Center, USA; the Arctic Initiative at Harvard Kennedy School, USA; Alaska Institute for Justice, USA)
- Breakout Session 2: On Thinning Ice: Geopolitics, Climate Crisis & Utilization of Resources (Organised by: The Global Arctic Mission Council of Arctic Circle)
- Breakout Session 3: The North Atlantic Ocean: Cooperation in the West Nordic Region (Organised by the West Nordic Council)
- Bilateral Meeting 3: Kristrún Frostadóttir, Member of the Althingi for the South Reykjavik constituency
- Plenary Session 1: Welcome Speeches; EU Arctic Policy and New Dynamics in the Arctic
- Plenary Session 2: The US Arctic Vision; the New Arctic Policy of the Faroe Islands; the New Arctic Policy of India; Updated UK Arctic Strategy; Harvard in the Arctic; Scotland in the Arctic; the Arctic Circle Japan Forum
- Bilateral Meeting 4: Iceland's Minister of Infrastructure, Mr Sigurður Ingi Jóhannsson
- Breakout Session 4: Thinking Strategically About the Arctic: The European Union's Arctic Policy (Organised by: Regional Programme Nordic Countries, Konrad Adenauer Stiftung, Germany; Fridtjof Nansen Institute, Norway)
- Breakout Session 5: The Development of Green Hydrogen: Projects Status & Challenges (Organised by: Fortescue Future Industries, Australia)
- Parliamentary Network: Discussion Between Present and Former Members of Parliament (Initiated in Cooperation with Parliamentarians from the West Nordic Countries)
- Welcome Reception: Hosted by the Prime Minister of Iceland & the Foreign Minister of Iceland
- Scottish Government Networking Event

### **Friday 14 October 2022**

- Breakout Session 6: Diverse Blue Economies in the Arctic – How to Define & Discuss (Organised by: High North Center for Business and Governance, Nord University, Norway)
- Breakout Session 7: Funding of Green Hydrogen (Organised by: Fortescue Future Industries, Australia)
- Breakout Session 8: Melting Ice & Changing Fisheries – Future of Arctic Ecosystems & Local Societies (Organised by: Section for Oceans and Arctic, Technical University of Denmark)
- Bilateral Meeting 5: Chairman of the Arctic Circle Assembly and Former President of Iceland, Ólafur Ragnar Grímsson

- Bilateral Meeting 6: H.E. Jenis av Rana, Minister of Foreign Affairs and Culture, Faroe Islands
- Bilateral Meeting 7: Birgitte Jourdan-Andersen, Partner, Schjødt
- Breakout Session 9: Rural Northern Wellbeing – Research Innovations and Implementation (Organised by Scottish Government; National Research Council of Canada)
- Breakout Session 10: Strengthening Bilateral Cooperation of the Arctic States: Norway and Iceland (Organised by: Icelandic Ministry for Foreign Affairs; the Royal Norwegian Embassy, Norway)
- Breakout Session 11: Ocean Energy: A vital Future Source (Organised by: NORA Noratlantisk Samarbejde, Faroe Islands; Faroese Environment Agency; Nordic Energy Research, Norway)
- Breakout Session 12: People, Arts & Culture: The Driving Forces of Development in the Arctic (Organised by: The Canada Council for the Arts, Arctic Arts Summit, Canada)
- Breakout Session 13: Polar Law: The Just Transition to Low-Carbon Economies in the Arctic & Beyond (Organised by: University of Akureyri, Iceland; University of Aberdeen)

### **Saturday 15 October 2022**

- Depart Keflavik\*
- Arrive Edinburgh\*
- *\*Deputy Presiding Officer only*
- Breakout Session 14: Whose Ice Is It? A 10 Year Protection Moratorium (Organised by: GlobalChoices, UK)
- Breakout Session 15: Collaborative Online International Learning & Biodiversity Education Across the Arctic Circle (Organised by: Robert Gordon University, Edinburgh; University of Southern Maine, USA; University of Eastern Finland)
- Breakout Session 16: Tackling Biodiversity Loss and Climate Change Together in the Arctic and Beyond (Organised by: Fluglavernd/Birdlife, Iceland; RSPB Scotland)
- Plenary Session 3: Green Hydrogen; The Third Pole Process; Speech by the Winner of the Frederik Paulsen Arctic Academic Action Award
- Bilateral Meeting 8: Oluver Gregerson, Ocean Rainforest
- Bilateral Meeting 9: Iceland's Minister of the Environment, Energy and Climate, Mr Gudlaugur Thór Thórdarson
- Plenary Session 4: Global Renewable Energy Transformation: Urban Solutions for the Climate
- Networking event: hosted by the Government of the Faroe Islands

### **Sunday 16 October 2022**

- Depart Keflavik
- Arrive Edinburgh

