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Nordic Sustainable Infrastructure Webinar

*Current state of sustainability in infrastructure
in Iceland*

Alexandra Kjeld

Vice-chair of GBC Iceland and
consultant, EFLA Consulting Engineers



Október 2019

Transportation Plan 2020 - 2034



Samgönguáætlun 2020–2034

- Support for Transportation Plan of Capital Area
- Air transport plan
- Tunnel plan
- Public transport plan
- Climate goals

Stjórnarráð Íslands
Samgöngu- og sveitarstjórnarráðuneytið



A Sustainable Energy Future

An Energy Policy to the year 2050



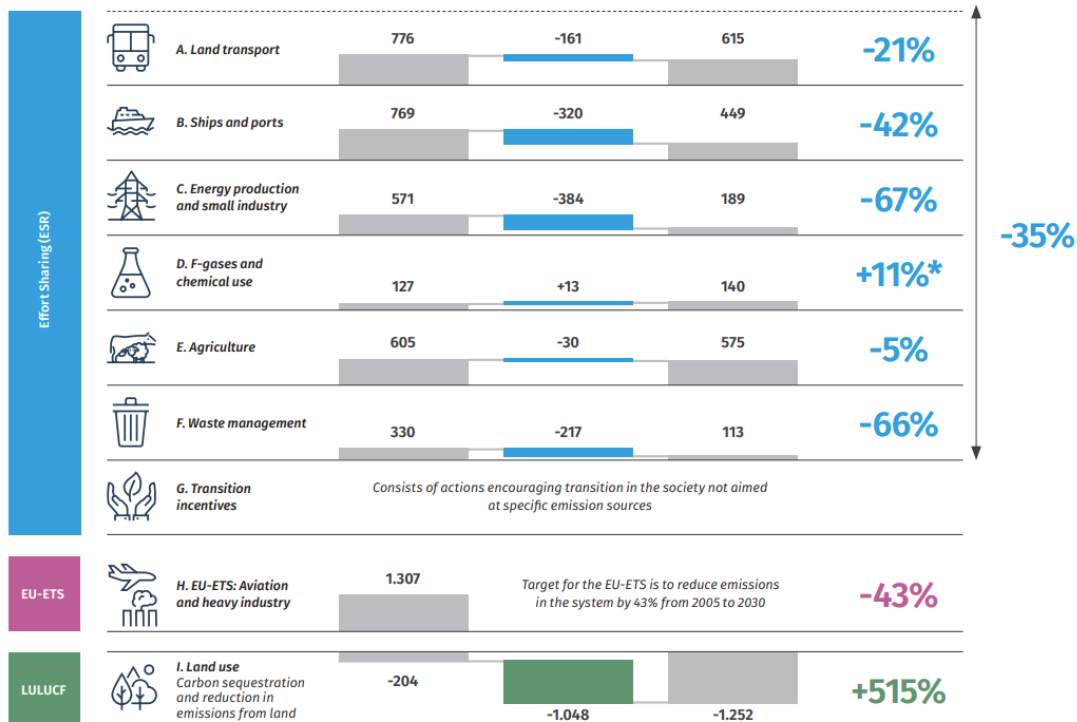
Government of Iceland
Ministry of Industries and Innovation



The Icelandic government has set a target of **55% reduction** in GHG emission in 2030 relative to 1990 + carbon neutrality by 2040

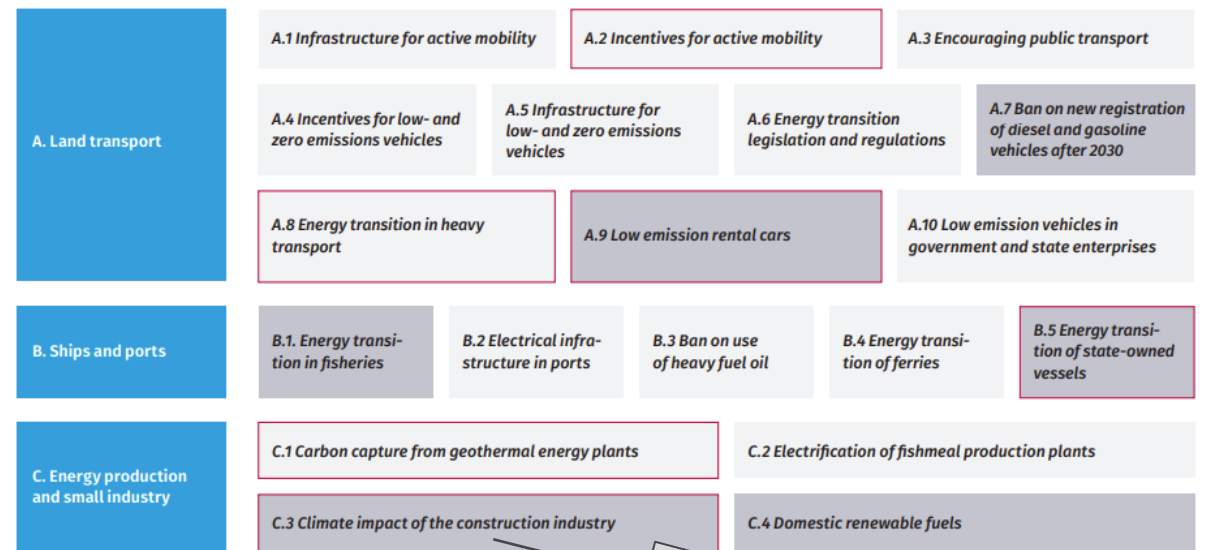
Iceland Climate Action Plan

Annual greenhouse gas emissions and carbon sequestration by category, 1000 tonnes of CO₂ equivalents



The Climate Action Plan includes a total of 48 actions, divided into three parts

Actions aiming to reduce emissions that fall under the EU Effort Sharing Regulation (ESR)¹



Roadmap to green construction 2030

Figure 2. Breakdown of greenhouse gas emissions and sequestration by category in the Action Plan.

Vegvísir að vistvænni
mannvirkjagerð 2030

I. hluti

Mat á kolefnislosun
frá íslenskum
byggingariðnaði



Vegvísir að vistvænni
mannvirkjagerð 2030

II. hluti

Markmið og
aðgerðaáætlun



Vegvísir að vistvænni
mannvirkjagerð 2030

III. hluti

Samantekt:
Losun, markmið
og aðgerðir



A Roadmap to green construction 2030 - Iceland

First roadmap of its kind, published
in 2022

Icelandic Sustainable
Constructions Roadmap to 2030

Part III

Summary:
Emissions, Goals,
and Actions



Total emissions of Icelandic buildings (without waste) in reference year and emission goal of 2030.

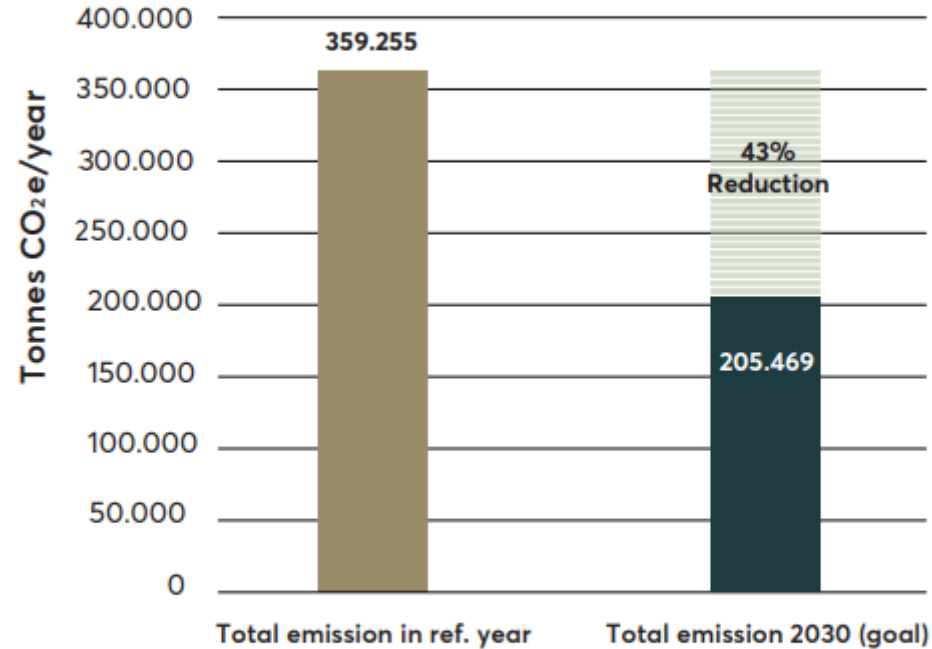


Figure 1: Total emissions of Icelandic buildings (without waste) in reference year and emission goal of 2030.

A Roadmap to green construction 2030 - Iceland

- An estimate of the annual **emissions** from the building sector (A1-A5 and B4-B6)
- **Targets** to reduce emissions
- **Action plan** to achieve targets

1. Building materials	1.1. Chapter on concrete in building regulation reviewed	1.2. Research of eco-friendly building materials	1.3. Initiative on correct storing and handling of building materials	1.4. Databank for ecological and climatic effects of building materials	1.5. Development of process of wood products	1.6. Development in eco-friendly concrete		
2. Construction stage	2.1. Composition analysis of industrial machinery fleet for constructions	2.2. Further information gathered on industrial machinery fleet	2.3. Discussions about energy transition in industrial machinery	2.4. Reward system in Reykjavik for eco-friendly energy sources on construction sites	2.5. Concepts about environmental impact at construction sites defined	2.6. Conversation on secure energy infrastructure from the beg. of constructions	2.7. Check new industrial machinery fuelled by oil	
3. Use stage	3.1. Information on actual consumption of heat, electricity and water	3.2. Coordinated energy calculations published and classification of energy efficiency	3.3. Requirement of energy calculations	3.4. Education on energy savings in buildings	3.5. Requirement of atmospheric density tests activated	3.6. Instructions on the design of heating, cooling and air conditioning systems	3.7. Research of energy utilisation of older buildings	
	3.8. Coordinated calculations of heat- and moisture fluctuation published	3.9. Check requirements* for controlled ventilation systems with heat recycling	3.10. Requirement of energy efficiency of new buildings	3.11. Policy on eco-friendly maintenance of public buildings	3.12. Activate the "House Manual" in the Building registry	3.13. Instructions for eco-friendly maintenance		
4. End of lifetime / Circular economy	4.1. Marketplace for soil and mineral products (Mölandur)	4.2. Research and instruction on utilisation of building waste	4.3. Promotional effort for new recycling requirements for building waste	4.4. Accessible areas for used building materials	4.5. Report of designers on maximum utilisation of building materials	4.6. Permits for demolition registered in the Building registry		
	4.7. Actual figures on building waste returned	4.8. Regulatory framework for construction reviewed with regards to circular economy	4.9. Instructions for recycling and reusing building materials	4.10. Instructions for responsible demolition	4.11. Emphasis on construction in the project Together against waste			
5.1. Life-cycle assessment	5.1.1. Emissions of The Icelandic Road Administration constructions evaluated with source analysis	5.1.2. LCA on BREEAM-certified new buildings of Reykjavik Municipality	5.1.3. Coordinated LCA-methodology of buildings published	5.1.4. Educational materials on LCA for buildings	5.1.5. Requirements for carbon footprint calculations (LCA) in public projects	5.1.6. Baseline criteria for carbon footprint of different building categories defined		
	5.1.7. Carbon neutral building for Icelandic conditions defined	5.1.8. Baseline criteria for carbon footprint of different building categories updated	5.1.9. Requirements for carbon footprint calculations (LCA) in general market	5.1.10. Requirement that the carbon footprint of public projects is 30% lower than the baseline (limit value)	5.1.11. Requirement that the carbon footprint of general projects is 30% lower than the baseline (limit value).	5.1.12. Baseline criteria for carbon footprint of all projects updated and lowered		
5.2. Environmental certifications	5.2.1. Financial and environmental benefits of environmental certifications	5.2.2. Instructions on Nordic Swan Ecolabel criteria	5.2.3. Environmentally certified buildings in the Building registry	5.2.4. More environmentally certified buildings in Reykjavik	5.2.5. Professional courses on certification systems	5.2.6. Education for municipalities about certifications	5.2.7. Education for suppliers about certifications	5.2.8. Adjust certification systems to Icelandic conditions
5.3. Eco-friendly urban areas	5.3.1. Existing infrastructure in Reykjavik used together	5.3.2. Instructions on planning of 20 minute towns and neighbourhoods	5.3.3. Manual on organisation and design around the circular economy	5.3.4. National Planning Strategy 2015–2026 reviewed	5.3.5. Legislation on planning revised with respect to climate issues	5.3.6. Instructions and databank about climate-focused planning		
6. Incentives for transition	6.1. Proposal for the Ministry of Finance on public incentives for eco-friendly construction	6.2. Discussion within municipalities and others about green financial incentives	6.3. The green housing of the future in the City of Reykjavik	6.4. Instructions and samples of environmental criteria for public tenders	6.5. Environmentally friendly requirements and selection criteria for tenders conducted by the Government Property Agency			
	6.6. Loan supply of public financial institutions for eco-friendly building	6.7. Check coordinated criteria for green financing	6.8. Competition fund for construction industry (Askur)	6.9. Awards for eco-friendly construction (Græna skóflan)	6.10. Initiatives for eco-friendly steps within the construction industry			

Status 2022

1. Byggingarefni	1.1. Steypukafli byggingarreglugerðar endurskoðaður	1.2. Rannsóknir á vistvænu byggingarefni	1.3. Átak um rétta geymslu og meðhöndlun byggingarvara	1.4. Gagnabanki um umhverfis- og loftslagsáhrif byggingarefna	1.5. Uppbygging á úrvinnslu skógarafurða	1.6. Þróun á loftslagsvænni steypu		
2. Framkvæmda-svæði	2.1. Greining á samsetningu vinnuvélaflotans	2.2. Betri upp-lysingar um vinnuvélaflotann	2.3. Samtal um orkuskipti á vinnuvélum	2.4. Umbunarkerfi í Rvk fyrir vistvæna orkugjafa á frkvsv.	2.5. Lykillugtök um umhverfisáhrif frkvs. skilgreind	2.6. Samtal um tryggja orkuinnviði frá upphafi framkv.	2.7. Fordæmi: Framkvæmda-svæðis án losuna	2.8. Skilgreining
3. Notkunartími mannvirkja	3.1. Upplýsingar um raunnotkun hita, rafmagns og vatns	3.2. Samræmdir orkuútreikningar og orkuflokkar bygginga	3.3. Krafa um orkuútreikninga	3.4. Fræðsla um orkusparnað í byggingum	3.5. Krafa um loftþéttleikapróf virkjuð	3.6. Leiðbeiningar um hönnun hita-, kæli- og loftræstikerfa	3.7. Rannsóknir á orkunýtingu eldri bygginga	
	3.8. Samræmdir varma- og rakafleðisútreikningar	3.9. Skoða kröfu um stýrð loftræstikerfi með varmaendurvinnslu	3.10. Krafa um orkunýtni nýbygginga	3.11. Stefna um vistvænt viðhald opinberra bygginga	3.12. Virkja Handbók hússins	3.13. Leiðbeiningar um vistvænt viðhald		
4. Lok líftíma / Hringrásarhagkerfið	4.1. Sölutorg fyrir jarðveg og jarðefni (Mölungur)	4.2. Rannsóknir og leiðb. um nýtingarmöguleika byggingarúrgangs	4.3. Kynningarátak um nýjar flokkunarkröfur byggingarúrgangs	4.4. Aðgengileg svæði undir notað byggingarefni	4.5. Greinargerð hönnuða um hámarksnýtingu byggingarefna	4.6. Levfi til niðurrifs skráð í Mannvirkjaskrá		
	4.7. Skil á rauntölum um magn byggingarúrgangs	4.8. Byggingarregluverk endurskoðað m.t.t. hringrásar	4.9. Leiðbeiningar um endurnýtingu byggingarefna	4.10. Leiðbeiningar um ábyrgt niðurrif	4.11. Áhersla á byggingastarfsemi í Saman gegn sóun			
5.1 Lífsferils-greiningar	5.1.1. Losun framkvæmda Vegagerðarinnar metin með uppsprettugreiningu	5.1.2. Lífsferilsgreiningar á BREEAM-vottuðum nýbyggingum Rvk-borgar	5.1.3. Samræmd aðferðafræði við gerð lífsferilsgreininga bygginga	5.1.4. Fræðsluefni um lífsferilsgreiningar	5.1.5. Skilyrði fyrir útreikninga á kolefnisspori opinberra verkefna	5.1.6. Grunnviðmið fyrir kolefnisspor ólíkra mannvirkjaflokka skilgreind		
	5.1.7. Kolefnisspor byggings fyrir íslenskar aðstæður skilgreind	5.1.8. Kolefnisspor byggings fyrir íslenskar aðstæður skilgreind	5.1.9. Skilyrði fyrir útreikninga kolefnisspori mannvirkja í byggjum á markaði	5.1.10. Krafa að kolefnisspor opinberra verkefna sé 30% lægra en grunnviðmið	5.1.11. Krafa að kolefnisspor almennt verkefna sé 30% lægra en grunnviðmið	5.1.12. Grunnviðmið fyrir kolefnisspor allra verkefna uppfaerd og lækkuð		
5.2 Umhverfis-vottun	5.2.1. Fjárhagslegur og umhverfislegur ávinningur vottana	5.2.2. Leiðbeiningar um Svansvottunarviðmið	5.2.3. Leiðbeiningar um Svansvottunarkerfi í Mannvirkjaskrá	5.2.4. Fleiri umhverfisvottuð mannvirki í RVK	5.2.5. Regluleg námskeið fyrir fagaðila um vottunarkerfi	5.2.6. Fræðsla til sveitarfélaga um vottanir	5.2.7. Fræðsla til birgja um vottanir	5.2.8. Aðlagða vottunarkerfi að ísl. aðstæðum
5.3 Loftslagsvæn byggð og landnotkun	5.3.1. Fyrirliggjandi innviðir í Reykjavík samnýttir	5.3.2. Leiðbeiningar um útfærslu 20 mínútna bæja og hverfa	5.3.3. Handbók um skipulag og hönnun í kringum hringrásarhagkerfið	5.3.4. Landsskipulagsstefna 2015–2026 endurskoðuð	5.3.5. Löggjöf um skipulag, rýnd m.t.t. til loftslagsmála	5.3.6. Leiðbeiningar og gagnabanki um loftslagsmiðað skipulag		
6. Hvatar til umskipta	6.1. Tillaga til fjármálaráðuneytis um opinbera hvata fyrir vistvæna mannvirkjagerð	6.2. Umræða meðal sveitarfélaga o.fl. um græna fjárhagslega hvata	6.3. Grænt húsnaði framtíðarinnar hjá Reykjavíkurborg	6.4. Leiðbeiningar og sýnidæmi um umhverfisskilyrði í opinber útboð	6.5. Umhverfisvænar kröfur og valforsendur í útboð á vegum FSRE			
	6.6. Lánaframboð opinb. fjármálast. til vistvænnar mannvirkjagerðar	6.7. Skoða samræmd viðmið fyrir græna fjármögnun	6.8. Samkeppnissjóður fyrir byggingariðnaðarinn (Askur)	6.9. Verðlaun fyrir vistvæna mannvirkjagerð (Græna skóflan)	6.10. Átaksverkefni um vistvæna skref innan byggingariðnaðarins			

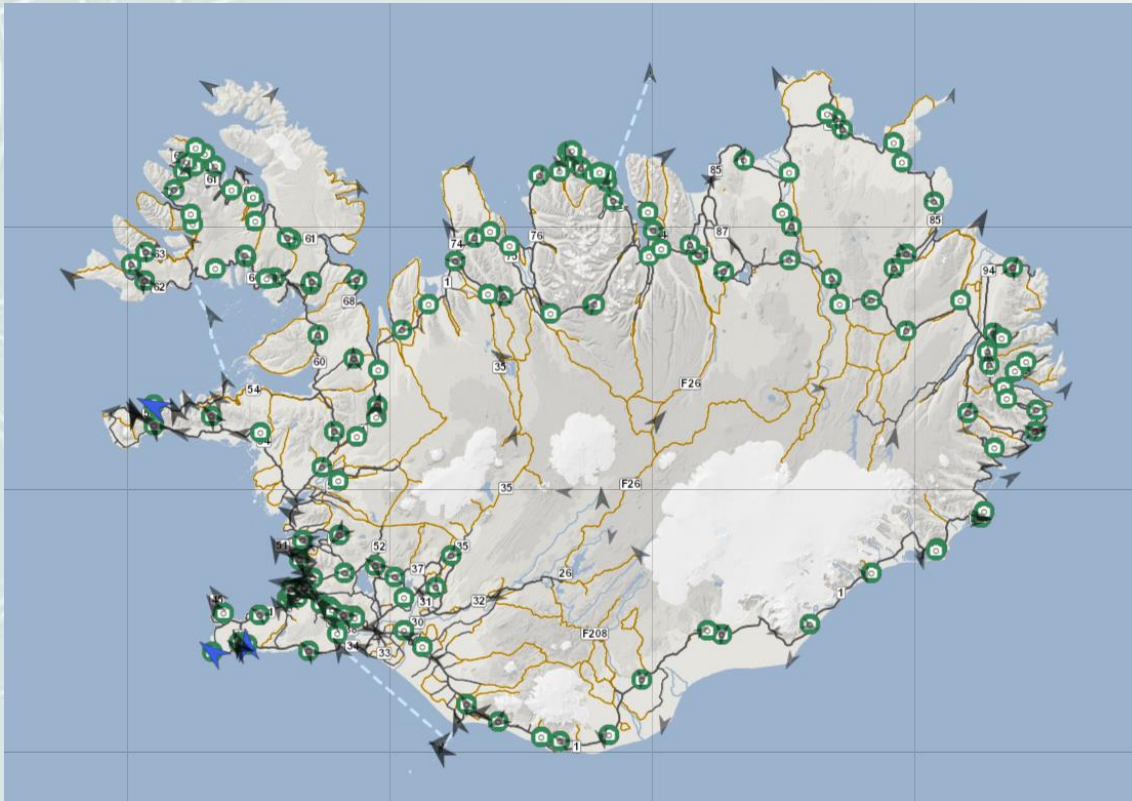
Status 2023

Mapping emissions from construction products of Iceland Road Administration





The Icelandic Road and Coastal Administration



- Research Fund
- **Balance of earthwork**
- **Reuse of materials**
- **Recycling of asphalt**

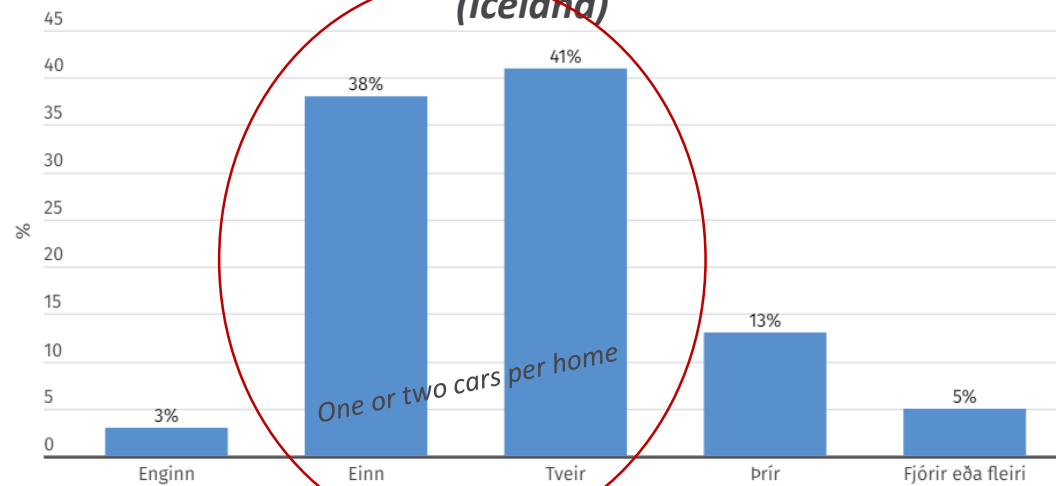
In progress:

- GHG emissions mapping
 - IRCA Projects and activities
 - Transportation Plan
 - Green procurement

Some of the challenges in Iceland

Hvað eru margir bílar á heimilinu
Landið allt

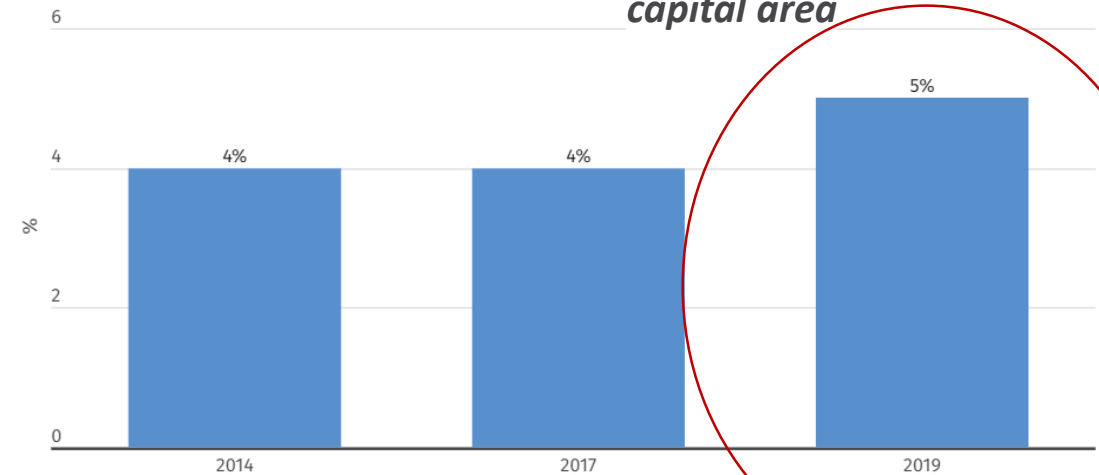
*How many cars are at the home?
(Iceland)*



Heimild: Ferðavenjukönnun samgönguráðs og SSH, 2019

Hvernig fórst þú/fór barnið þitt í ferðina?
Höfuðborgarsvæðið - sem farþegi í strætisvagni

*Bus travelers in the
capital area*



Heimild: Ferðavenjukönnun samgönguráðs og SSH, 2019

September 2019

Nýir tímar í samgöngum á höfuðborgarsvæðinu

Sáttmáli ríkis og sex sveitarfélaga um uppbyggingu fyrir fjölbreyttar samgöngur.



GRÆNNI
BYGGÐ
GREEN BUILDING
COUNCIL ICELAND

EFLA

„Samgöngusáttmáli“



A 15-year Transportation Infrastructure Plan for the capital area

- An Agreement signed in 2019 by state and municipalities of the capital area
- Planning and financing of infrastructure development for diverse transportation
- **Borgarlína – City Line**
- **New roads and bridges**
- Bike and pedestrian lanes



Oft var þörf, en nú er nauðsyn

„Where there was need, now there is necessity“

Particulate matter and greenhouse gas emissions have increased significantly

Traffic on roads in the capital area has increased significantly

Simultaneous decrease of budget for road construction and development of transportation system

If business as usual, traffic will increase by 40% in the next 15 years with increased delays

Important to speed up infrastructure development in the capital area





Climate issue priorities

Reykjavik Energy Group

- Achieve carbon neutrality by 2030
- Increase capture and sequestration of carbon dioxide, domestically and globally.
- Motivate energy exchange in the transport sector.
- Develop measures and strengthen the resilience of utility systems and power plants to adapt to climate change



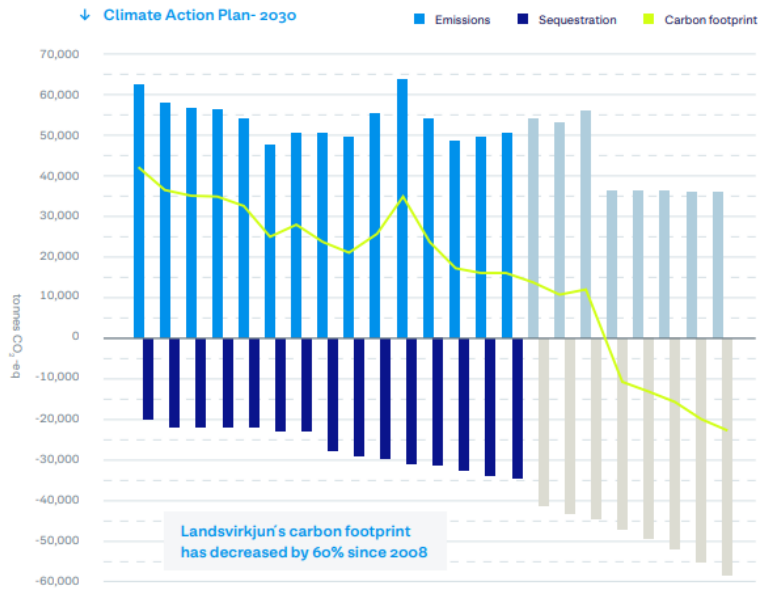


Environmental priorities

Reykjavik Energy Group

- Water protection and safe drinking water for the future.
- More sustainable management of low- and high temperature geothermal resources.
- Zero carbon footprint in water distribution, electricity supply, district heating, sewerage systems, and fibre network connections.
- Restoration of biodiversity and ecosystems where possible.
- Green loans and green funding.

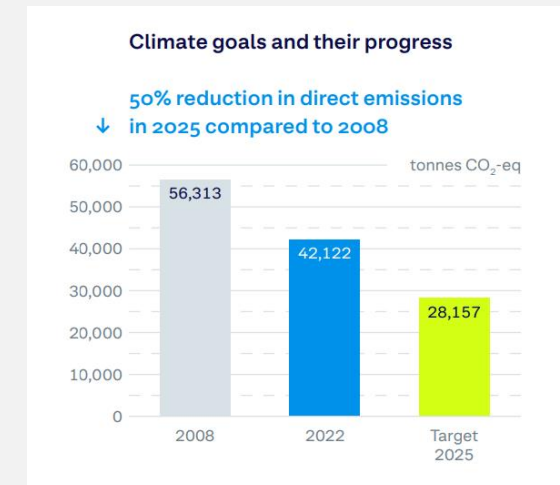




Electricity generation

Iceland's largest utility

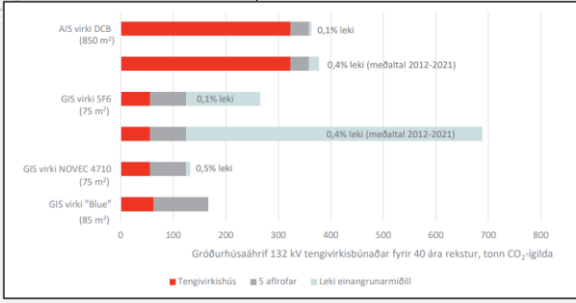
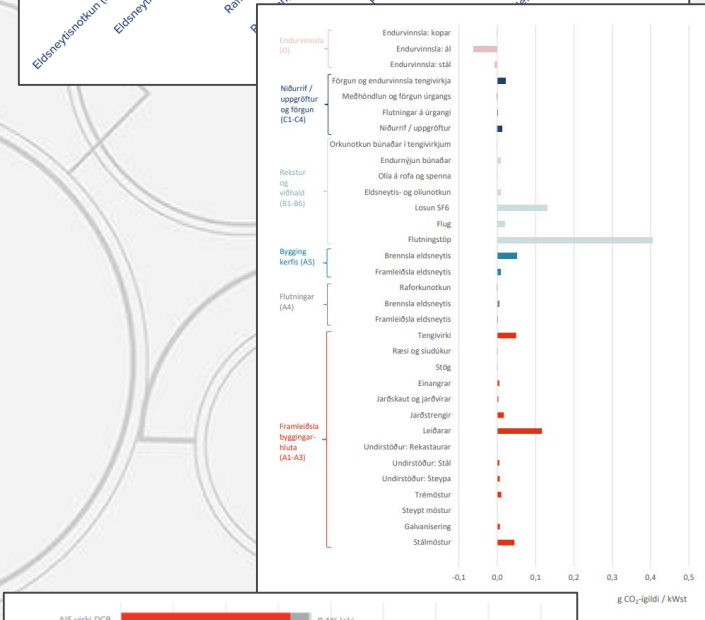
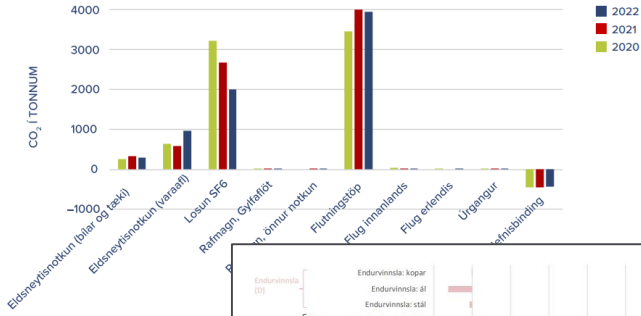
- Utilisation of hydropower, geothermal power and wind
- Ambitious aim of carbon neutrality 2025
- Action plan until 2030
- Internal carbon prices



Kolefnissporið

Einn af lykilmælikvörðum okkar er kolefnislosun. Mælikvarðar og markmið hafa verið sett til að fylgjast með þróun losunar og höfum við sett okkur markmið um kolefnishlutleysi árið 2030.

Uppgefnar tölur á myndinni eru rekinar á þá GHG protocol. Fyrir Flutningstöp er losunin rekin á þá nokkun á staðbundinni nálgun (i.e. local based) á losun vegna orkuskiptanna en líkilega söluverðin er 103 g/kWh. Haldstærur fyrir Flutningstöp með við markaðslögu nálgun (i.e. market based) á losun vegna orkuskiptanna, sem hefur verið sölu af uppunnaðbygðum 2022 eru 163.84 CO₂ en losunartölur er 269 tonn g/kWh.



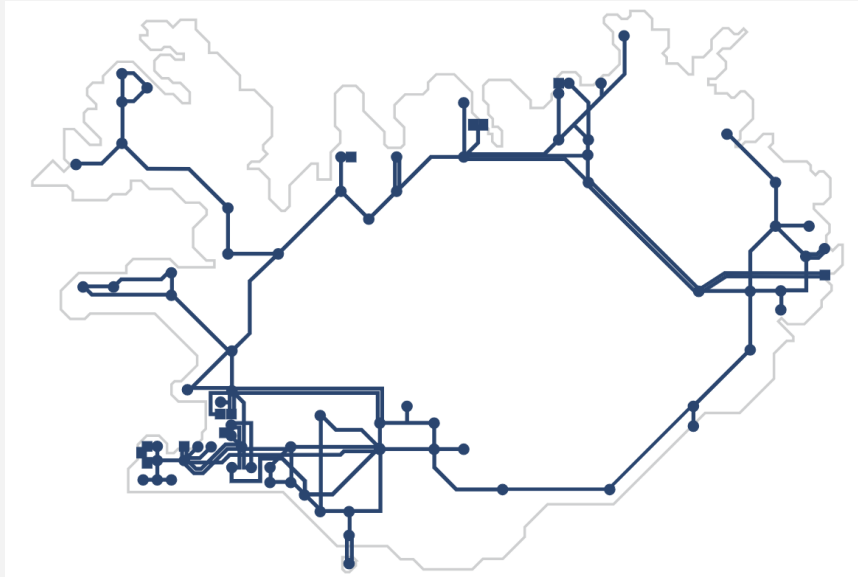
LANDSNET



The transmission system operator

Environmental priorities

- Climate action plan with KPIs
- Goal of carbon neutrality 2030
- Identifying environmental risks
- Environmental Management System ISO 14001
- LCA knowledge of system, used for decision making and planning



In summary

Current state of sustainability in infrastructure in Iceland

Very different ambition levels between key infrastructure players in Iceland

- Building infrastructure – fast progress
- Energy infrastructure – more prepared, but still ongoing work and many challenges ahead with energy transition
- Road, bridge, tunnel infrastructure – in progress, in need of targets
- Developing a more diverse and capable transportation system– heavy work ahead



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GREEN BUILDING
COUNCIL ICELAND



Alexandra Kjeld
Environmental Engineer M.Sc.

@ alk@efla.is
🌐 efla.is

Thank you!

www.graennibydd.is
gb@graennibydd.is