

City of Reykjavik Climate Action Plan for 2021-2025



REYKJAVÍK
CARBON NEUTRAL
2040





City of Reykjavik Climate Action Plan for 2021–2025



City of Reykjavik

February 2021



Climate-friendly Reykjavik

This winter Reykjavik residents had the least snowy season in the past 100 years. Meanwhile other inhabitants of the country had to struggle with heavy snowstorms, landslides and avalanches. Changes in weather and all kinds of weather extremes are noticeable around the world and Iceland is no exception. The earth has been warming since the industrial revolution and this process will continue unless we change policy.

There has been a wide-ranging and necessary awakening in the past decades and states and cities of the world have agreed to roll back the man-made climate change. Reykjavik is no exception since cities play a key role in the fight against the climate crisis threat.

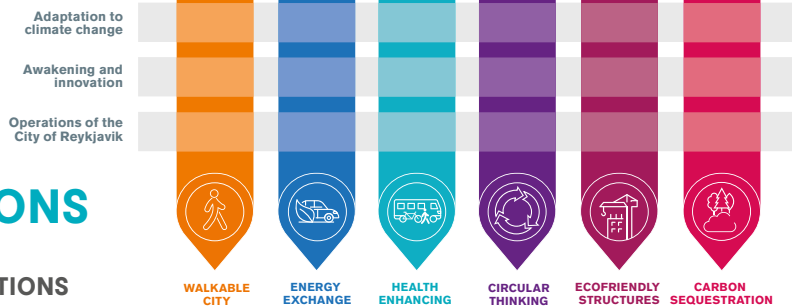
Although Reykjavik is neither large nor populous in an international context and emissions are considerably lower here than in many places, nevertheless we have a duty to support the international commitments of Iceland and the objectives of the Paris Agreement. It is a fact that large industrialised states with strong infrastructures release the greatest quantities of greenhouse gases and this affects the poorest countries with weak infrastructures the most. It is therefore our responsibility that we do everything we can to reach carbon neutrality by 2040.

Actions taken as this new decade unfolds will decide what our future will look like. A new Climate Action Plan and the City of Reykjavik's climate strategy will be our roadmap over the next five years on our way to less emissions and carbon neutrality. There are many issues that have to be dealt with and the tasks are going to be extensive, diverse and radical. I have no doubt that we will be able to achieve this common task because Reykjavik is well endowed with know-how, skills and will.

We humans are nothing without nature and without us nature would fare significantly better. However, it is long overdue that we live in harmony with our natural/biological environment. The conservation of nature and environmental protection are interwoven with the battle for better living conditions for people and other living beings. The fight against the climate crisis is therefore driven by the thirst to live and by affection as well as by the ideology about an unpolluted and viable existence. It is my sincere conviction that the roadmap presented here shows us the way in the right direction, in the direction of a more environmentally friendly and safer city in a world which is fast on its way to recovery.

Líf Magneudóttir

Chairman of Committee of Environment and Public Health



15 ACTIONS

PRINCIPAL ACTIONS

REDUCTION TARGETS FOR 2030

| | | |
|---|---|--|
| <p>WALKABLE CITY</p> | <p>1 15 minute district Through the process of district planning, renewal of urban centres and investments in infrastructure, the City's districts will become more pedestrian-friendly and the access to green areas, outdoors-activities and services will be ensured within a radius of fifteen minutes' walk or on bicycle.</p> | |
| <p>ENERGY EXCHANGE</p> | <p>2 Green city development The city's future development will all be within it's defined urban growth limit line and 80% of housing development will be located within convenient distance from the new BusRapid Transport system, Borgarlínan.</p> <p>3 Energy exchange everywhere A comprehensive plan to be drawn up and carried out for energy exchange infrastructure for private cars with charging stations in the city districts, for commercial cars, trucks, for public transport systems, in the ports and at sea.</p> | <p>In total approx. 170,000 tonnes</p> |
| <p>HEALTH ENHANCING COMMUTES</p> | <p>4 World class cycling city A revised cycling plan is to set goals with the aim that Reykjavik becomes a world class cycling city.</p> <p>5 Borgarlína (Cityline) and improved public transportation Improved as well as efficient public transportation and the compaction of the city are to play a key role in attaining the goals for changes in travel behaviour. Further climate goals will be defined for the transportation agreement between the state and the association of metropolitan area communities (SSH).</p> | |
| <p>CIRCULAR THINKING</p> | <p>6 Zero waste A comprehensive action plan to be developed for recirculation and recycling in order to support a more sustainable treatment of waste.</p> <p>7 Green food policy The City's food policy to be implemented and cooperation to be organised involving green agriculture in Kjalarnes.</p> | <p>54,000 tonnes</p> |
| <p>ECOFRIENDLY STRUCTURES</p> | <p>8 Green construction industry Cooperation to be organised with businesses and industry for a greener construction industry.</p> | <p>Construction industry having attained carbon neutrality</p> |
| <p>CARBON SEQUESTRATION</p> | <p>9 Turn CO₂ into stone Know-how and solutions by OR and Carbfix are to be developed for the sequestration of carbon dioxide, and as the case may be of other greenhouse gases in partnership with universities and enterprises that are heavy emitters.</p> <p>10 Reclamation of wetlands to be increased according to a special plan.</p> <p>11 Reykjavik climate forests Climate forests to be promoted in collaboration with the Reykjavik Forestry society (Skógræktarfélag Reykjavíkur), and a forestry plan be presented.</p> | <p>22,000 for carbon neutral energy production</p> <p>45,00 tonnes because of land use</p> |
| <p>SUPPORT-ACTIONS that have mutual points of contact in new city districts and when renovating the older systems.</p> | <p>12 Operations of the City of Reykjavik Fossil fuel free by 2025 Cars and equipment powered by fossil fuels will not be procured by the city as of 2021 and the cars and equipment that is already possessed will be replaced before the year 2025. (-800 tonnes)</p> <p>13 Adaptation to climate change Blue-green surface water solutions New thinking in the application of utility systems with improved utilization of water and Blue-green surface water solutions to become the rule in new city districts and when renovating the older systems.</p> <p>14 Flood control installations to become recreational areas and parks Undertakings to be initiated for the reinforcement of flood control structures along the coastline where needed, aiming at nature based solutions, developing recreational areas, beach parks and facilities for ocean bathing at selected locations.</p> <p>Awakening and innovation</p> <p>15 Collaboration with business and industry Continue to cooperate with Festa, centre for social responsibility and businesses under the banner of the City of Reykjavik & Festa Climate climate declaration towards further results in all sections of the economy.</p> | |

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INTRODUCTION

The serious consequences of climate change in the world are constantly appearing more clearly. Already at present there has been one degree centigrade human caused global warming from the start of the industrial revolution and it is considered to be very likely that there will be 1.5 degree centigrade warming between the years 2030 and 2052 if there is no change in the present emissions. Much points in the direction that this warming may increase up to 3–5°C.¹ The United Nations call for immediate action in order to maintain the global warming within 1.5 degrees centigrade in order to prevent disaster in all areas of human life, socially, environmentally and economically.² In Reykjavik the effect of climate change has already had repercussions with an accompanying strain on infrastructure.³

There are opportunities to respond and in general there is a call for action. Interest and concern regarding climate change has increased among the Icelandic population and this is presently number three on the list of challenges which the public thinks that Iceland is facing today. In 2018 63% of Icelanders had modified their behaviour over the previous 12 months in order to minimize their impact on environment and climate.⁴

This action plan covers the years 2021–2025 and has been implemented pursuant to the earlier action plan that was in effect until the end of 2020. The City of Reykjavik's climate policy was first formulated in 2009 and the city was the first municipality in Iceland that established such a policy. In connection with the Paris climate meeting in 2015 a decision was made to revise the city's policy where the policy was now directed towards carbon neutrality and a detailed action programme was proclaimed.

The direction was now set towards carbon neutrality and at the same time adaptation to climate change was added to the policy in 2016:

“The city of Reykjavik's goal is to become carbon neutral before the year 2040 and to adapt to climate change in an environmentally sound and human friendly manner. Actions will be revised in 2020 and then every 5 years after that in accordance with the Paris agreement 2015. The results will be measured every 2 years based on the status in the year 2015.”⁵

The actions that were set forth in 2016 were in part actions that could be found in the Reykjavik city Municipal Plan for 2010–2030, the city of Reykjavik Environmental and Resource policy, and in an Action Programme for waste management, but there were also other actions represented at the steering group meetings.

¹ <https://climateactiontracker.org/global/temperatures/>

² IPCC, 2018: Summary for policymakers <https://www.ipcc.ch/sr15/chapter/spm/>

³ Reykjavíkurborg og ALTA, 2017, Yfirlit yfir helstu áhættuþætti vegna loftslagsbreytinga í Reykjavík, leiðir til aðlögunar og staða mála https://reykjavik.is/sites/default/files/ahaettuthaettir_vegna_loftslagsbreytinga_i_reykjavik_-_skyrsla_0.pdf

⁴ <https://cdn.gallup.is/media/documents/umhverfiskonnun2018.pdf>

⁵ https://reykjavik.is/sites/default/files/loftslagsstefna_reykjavikurborgar_kolefnishlutleysi_2040_0.pdf



METHODOLOGY

Steering Group and personnel

The Climate Action plan of Reykjavik from 2016 states that the actions will be revised in 2020 and every five years following that. The City Commission for Environmental and Public Health agreed to revise the action programme and the city council representatives Líf Magneudóttir, Sigurborg Ósk Haraldsdóttir and Vigdís Hauksdóttir were appointed to a steering group for the revision of the Reykjavik climate action plan. Hrönn Hrafnisdóttir, specialist at the Department of Environment and Planning, and Þórhildur Ósk Halldórsdóttir, head of Reykjavik City Department of Finance and Risk Management, were employed by the steering group. In addition Jón Steinar Garðarsson Mýrdal, project manager for SPARCS at the City of Reykjavik, was also involved in the project and recommended the text for the report. Freyja Barkardóttir, specialist and an employee of the steering group for gender-based budgeting is the author of the text about gender equality evaluation.

The group took note of how the city of Vancouver had approved an emergency plan for climate affairs and action programme in order to follow up on that declaration.^{6,7}

The report was developed in accordance with a “guiding policy template for the subject and policy areas of the City of Reykjavik” and in accordance with rules for policies and policy setting plans of the City of Reykjavik.

The winter was hard and it affected the work of the group negatively. Major storm and bad weather placed restrictions on the meetings in the months of December and January. By the end of February COVID-19 was carried to the country with accompanying restrictions.

A total of 17 meetings were held.

Consultation

There is an increased appeal in society for increased consultation and more radical action in climate matters.

Therefore it was decided at the outset of work to seek ideas for action from the grass roots and from the public. There was also a special emphasis placed on input from professional and grass roots organisations in order to deepen the work and elicit as many voices as possible.

The public

Advertisements for ideas regarding actions in climate matters were published on the web, on radio and in newspapers during the period 15 November until 8 December 2019. A total of 200 ideas were received through the portal in addition to proposals that were received by the steering group by e-mail and at meetings. The consultant Berglind Sigmarsdóttir aided with the processing of the proposals that were received and a summary of this can be found in the annex.

The principal points of emphasis that could be summarised from the proposals received from the public were the following:⁸

1. Reduce car traffic – incentive plan / electric car sharing economy.
2. A better organised bus system, more routes and buses, free rides on buses.
3. Make cultivation/revegetation part of active school work.
4. Increase the supply of animal-free products in canteens.
5. The family park and zoo made into a modern and smart education and science centre.
6. Establish clearer rules and harmonise the waste sorting system in the capital area.
7. The ideas of a circular economy made a part of public tender processes for all construction contracts by the City.
8. A linkage of discounts to tax expenses for new construction if eco-friendly methods are used, discounts given after final assessment.

6 City of Vancouver, ADMINISTRATIVE REPORT Reportm Date: April 16, 2019 <https://council.vancouver.ca/20190424/documents/cfsc1.pdf>

7 City of Vancouver, Climate Emergency Response, <https://council.vancouver.ca/20190424/documents/cfsc1presentation.pdf>

8 See the annex by Berglind Sigmarsdóttir (in Icelandic only): “The results of an analysis for the revision of a climate action plan -- issues by the City of Reykjavik”

External stakeholders

One meeting was held with external stakeholders on 28 January 2020 in order to seek ideas for new actions regarding climate affairs. KPMG was the overall manager of the meeting and returned the results that can be found in the annex.

It should be stated that the intent was to hold the meeting in December and again in January but both of these meetings had to be cancelled due to weather. The main points of emphasis that came from the external stakeholders were as follows: ⁹

- Public transportation
- Energy/energy exchange
- Eco-friendly vehicles
- Planning decisions and construction projects
- Innovation
- Green areas
- Partnerships
- Change in attitude
- System of information delivery
- Uniform classification
- Minimizing food waste
- Reprocessing and recovery
- Risk management
- Education
- Responsible procurement
- Food policy

Processing by the Steering Group

The steering group made a culling of the proposals that were received and prioritised. The points of emphasis that emerged through the action were divided into nine categories; six primary goals and three categories that contravene all the goals and will be further discussed in the following.

Six main objectives



Three categories that are common themes in the main objectives

- Adaptation to climate change
- Awakening and innovation
- Operations of the City of Reykjavik

Draft discussed by the city committee of Environment and Health and by the City Council

Following discussions by the city Committee of Environment and Health by the City Council in January of 2021 the draft was sent to the stakeholders for comment. A press release was also sent out whereby all were invited to return comments on the draft. The comments were taken up for discussion at the meeting of the steering group and the text of the report was corrected and clarified where it was necessary in the opinion of the steering group.

⁹ See annex (Icelandic only): KPMG "Workshop on the City of Reykjavik climate Policy"

CARBON NEUTRALITY 2040

Carbon neutrality is a recent concept in the climate discussion. “Carbon neutrality means a condition where a balance has been achieved between the speed of emissions and capture caused by humans and the net release is therefore zero ... The Paris Agreement is driven by the goal to maintain global warming well within 2° centigrade and as little above 1.5°C as possible. This calls for global emissions to reach a maximum without further delay and will then decrease rapidly until carbon neutrality has been reached”¹⁰

In 2016 Reykjavik declared its goal to achieve carbon neutrality in the year 2040 and formulated a detailed action programme. The Icelandic government declared the same goal in 2017 in addition to other international commitments. The main challenge in order to achieve the goal to become carbon neutral in 2040 is to reduce emissions. It is discussed worldwide that emissions need to be reduced by half until the year 2030, and then be again reduced during the following decade^{10, 11}. Many different parties need to put in a helping hand. The action plan 2021–2025 reflects the wide-ranging approach and width of projects that is needed in order for transformation to take place towards a carbon neutral society



Methodology used when estimating greenhouse gas Emission (GHL)

When estimating greenhouse gas emissions, a methodology is used that follows the international standard Global Protocol for Community-Scale Greenhouse Gas Emission Inventories (GPC). The standard is under the auspices of GHG protocol that is the primary climate accounting manager for businesses and municipalities all around the world.¹² The City of Reykjavik declares the emission of greenhouse gasses on two levels. On the one hand it is Community-Scale Greenhouse Gas Emission Inventories and on the other hand emissions from own operations of the City.

¹⁰ The Climate Council's opinion on carbon neutrality
<https://www.stjornarradid.is/library/02-Rit--skyrslur-og-skrar/Samantekt%20Loftslagsr%C3%A1%C3%B0s%20um%20kolefnishlutleysi%20-%20Loka%C3%BAtg%C3%A1fa-%20Uppsett.pdf>

¹¹ IPCC, 2018

¹² See advisory material concerning the methodology for assessing emissions from cities on the GHG website:
<https://ghgprotocol.org/greenhouse-gas-protocol-accounting-reporting-standard-cities>

The community-scale emission applies to all emission from the society in the city: residents, companies, organisations, transport, land use and activities within the city. Emissions from the operation of the city relates e.g. to the operation of a car fleet, electricity use in housing owned by the city and waste from the operations.

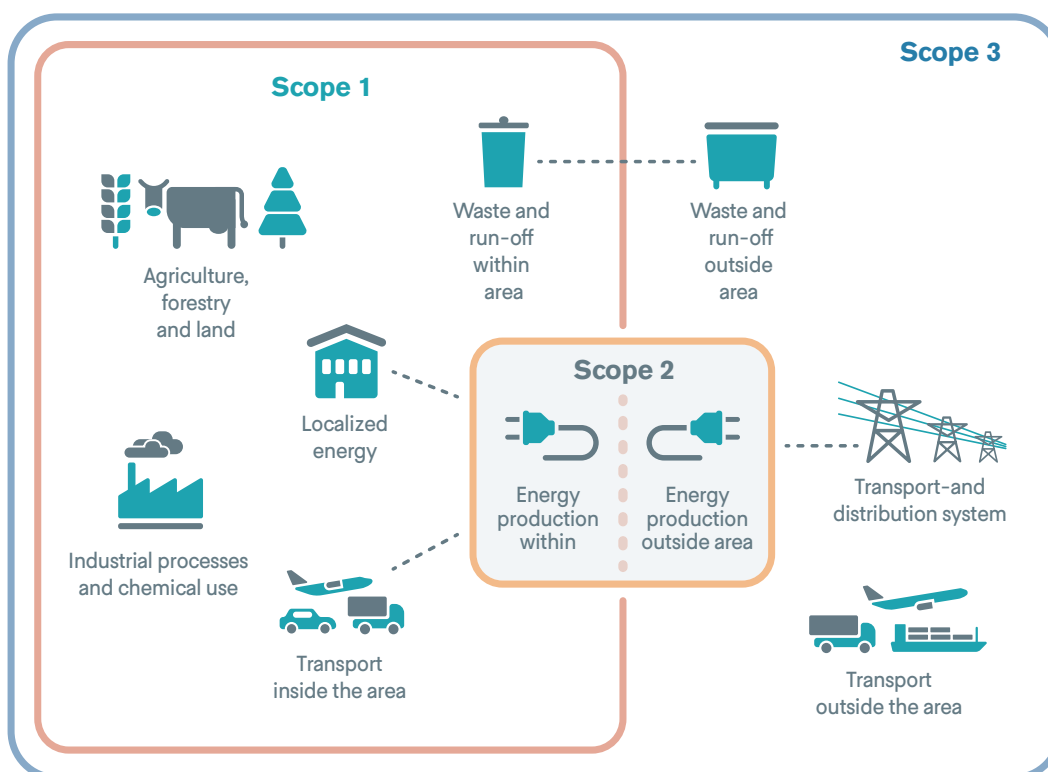
In both instances, when community scale evaluation and operational assessment is performed the emissions are divided into three different scopes.

Community-Scale Greenhouse emissions in Reykjavik

Emission sources for greenhouse gases are divided into scopes based on their origin and use. Scope 1 is the release of GHG from sources within city limits, e.g. because of traffic within the city limits. Scope 2 are GHG* emissions from electricity, heat, steam or cooling that is used within the city limits and is distributed in the form of utilities or distribution networks. Scope 3 are all other emissions of GHG outside the city limits which takes place because of activities that take place within the city limits, i.e. indirect emissions that take place in the upper end or in the lower end of the value chain.

The results are published as BASIC, BASIC+ and BASIC+ & Scope 3 for year 2019 in a table on page 12. Under BASIC only treatment of waste that comes under Scope 1 and 3 is taken into account, and transportation that comes under Scope 1 and energy use that comes under Scope 2. The model BASIC+ adds chemical use to this, industrial activity in addition to emissions from agriculture and land use and BASIC+ & Scope 3 adds other items that come under Scope 3. In a social climate accounting for Reykjavik in 2019 the first steps were taken to evaluate emissions in Scope 3.¹³

* GHG is short for Greenhouse gasses



¹³ Reykjavik City Climate Accounting 2019
https://reykjavik.is/sites/default/files/loftlagsbokhald_reykjavikurborgar_2019_final_x.pdf

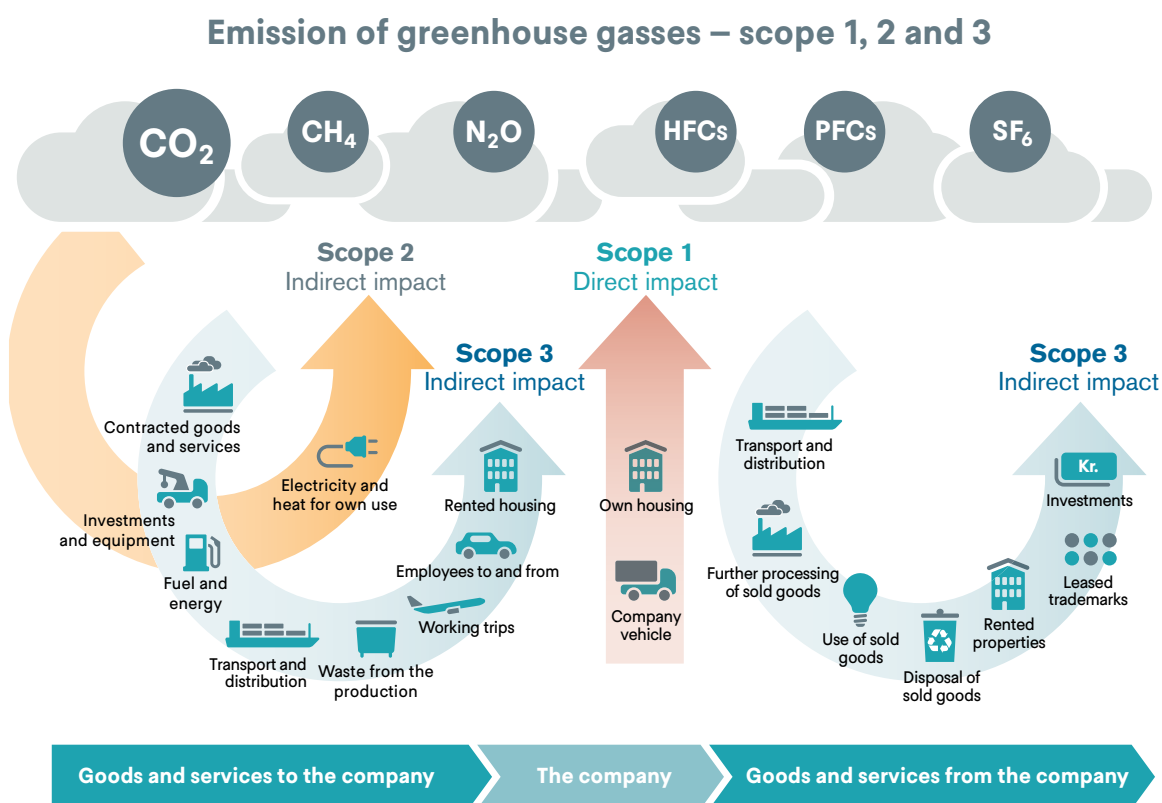
Emissions from Reykjavik City operations 2019

Scope 1 is emission of GHG caused by operations of the city, e.g. operation of gasoline, diesel oil or electrically driven cars. Scope 2 is emission of GHG caused by electricity that is used for city buildings.

Scope 3 is a totally different emission of GHG outside the operation of the city, waste is defined as part of Scope 3 where private parties manage waste collection from economic activity, and including the operation of the City of Reykjavik.¹⁴ The results for the years 2015–2019 are published on page 13.

Actions relating to the operation of the City of Reykjavik were part of the earlier action plan from 2016.

It should be mentioned that with the amendments to the climate act in 2019 there was an obligation placed on the local communities in Iceland that they should formulate a policy in climate affairs for the operations of the local community: „... The Policy shall include defined goals for contraction of emissions of GHG and the carbon offset of the operation including actions so that those goals will be attained,”¹⁵



Source: The Greenhouse Gas Protocol

¹⁴ You can find further information in Icelandic about the methodology relating to the calculation of emissions from operations on the Festa website (Icelandic only): <https://samfelagsabyrgd.is/verkefnnin/loftslagsmarkmid/>

¹⁵ <https://www.althingi.is/lagas/nuna/2012070.html> see Art. 5 para 1

CHALLENGES AND RISK FACTORS

Community-Scale Greenhouse Gas Emission Inventories in Reykjavik 2019

When looking to the factors that the City of Reykjavik is able to affect, emissions from transportations continues to be by far the largest proportion of community-scale emissions irrespective of which official calculations and methodology is used. When only looking at a simple carbon footprint transport is 82% of all emissions. When other factors are added to a regional carbon footprint in addition to the value chain the proportion is 64 % when other affects are included (Regional carbon footprint in addition to the value chain and the effect of other activities within city limits) the proportion is 54% of all emissions.

Community-scale emissions inventory in Reykjavik according to scope in 2019;

| Simple carbon footprint | CO ₂ t _{ig} | Proportion | Regional carbon footprint in addition to the value chain | CO ₂ t _{ig} | Proportion | Regional carbon footprint in addition to the value chain and the affect of other activities within the city limits | CO ₂ t _{ig} | Proportion |
|-------------------------|---------------------------------|------------|--|---------------------------------|------------|--|---------------------------------|------------|
| Transport | 340,921 | 82% | Transport | 340,921 | 64% | Transport | 340,921 | 54% |
| Waste | 54,524 | 13% | Waste | 54,524 | 10% | Waste | 54,524 | 9% |
| Energy use | 21,637 | 5% | Energy use | 21,637 | 4% | Energy use | 21,637 | 3% |
| | | | Agriculture | 3,510 | 1% | Agriculture | 3,510 | 1% |
| | | | Chemical processes and industry | 62,840 | 12% | Chemical processes and industry | 62,840 | 10% |
| | | | Land use | 45,421 | 9% | Land use | 45,421 | 7% |
| | | | | | | Manufacture of food products | 8,043 | 1% |
| | | | | | | Construction industry | 93,968 | 15% |
| Total | 417,082 | | Total | 528,853 | | Total | 630,864 | |

It is clear that contraction of emissions in Reykjavik will to a great extent need to come from road transport. In order to reduce emissions from road transport the number of driven kilometres needs to be reduced and to reduce emissions per driven kilometre. The goal of the City of Reykjavik is that in 2030 the proportion of trips that are made by car have been reduced to 58%¹⁶ from 73% which it was according to a travel habit survey that was made in 2017¹⁷. This reduction in proportion means however in reality that the number of car trips is going to remain more or less the same because of an expected population increase in the capital area¹⁸, and therefore it will not result in a reduction of emissions without a reduction in emissions per each driven kilometre.

The increase of eco-friendly vehicles has been quite fast in recent years and in 2020 about 19% of new registered cars either pure electric cars or plug-in hybrid cars PHEV. Nevertheless cars that are driving on fossil fuel on the street of the city and 48% of cars that were imported in 2020 are solely Diesel or gasoline fuelled¹⁹. If the intent is to reduce significantly traffic emissions then the number of eco-friendly vehicles needs to increase in the coming years and the number of vehicles that are fuelled by fossil fuels need to be decreased at record speed during the same time.

When looking towards 2040 and the goal of carbon neutrality it is clear that all sectors need to reduce emissions almost completely, including due to the use of fossil fuels, the creation of waste and because of energy use.

¹⁶ "City of Reykjavik climate policy", City of Reykjavik, 2016.

¹⁷ "Travels by the residents of Reykjavik. October–November 2017", Gallup, 2017.

¹⁸ "Capital area 2040, Traffic forecast for 2030 for changes in regional planning", VSÓ consulting, Association of municipalities in the Capital area, 2017.

¹⁹ Vehicle numbers from the Icelandic Transport Authority <http://bifreidatolur.samgongustofa.is>

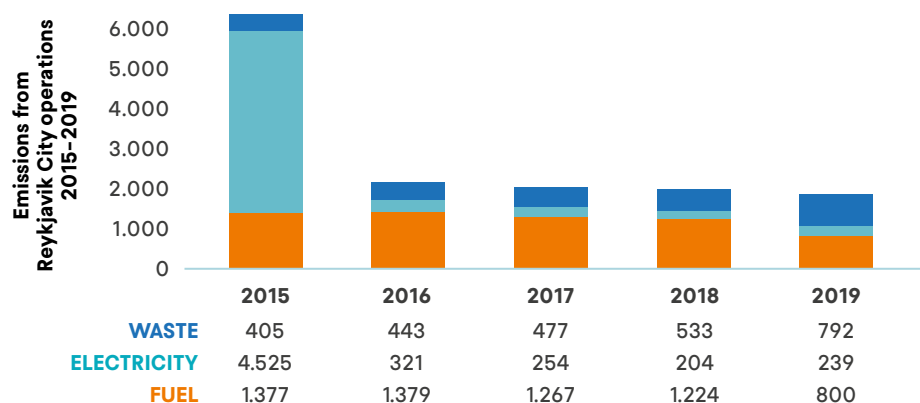
Emissions from Reykjavik City operations 2019

Reykjavik City signed the City of Reykjavik and Festa's Declaration for Climate Change in 2015. This declaration embodied:

- decrease emissions of greenhouse gasses
- reduce the creation of waste
- measure the results and to publish regularly information about the status of the above factors

The first comprehensive measuring of the emission of greenhouse gasses was issued for the year 2015 and the methodology of the accounting is in accordance with the City of Reykjavik's climate goals and the green accounting of the Green steps by the City of Reykjavik. Environmental factors which the accounting covers is the fuel consumption (direct emissions, Scope 1), electricity (indirect emission, Scope 2) and waste/recycling (indirect emission, Scope 3).²⁰

Between the years 2015 and 2019 the emission from the use of fossil fuels was reduced by 577 tonnes. Emissions from electricity was reduced by 82 tonnes from 2016 and the emissions from waste had increased by 387 tonnes from 2015. The Net decrease for these three items is approx. 272 tonnes.



Numerical goals in the City of Reykjavik climate policy, that regard the operation of the City are carbon neutrality by 2040 and that the car fleet operated by the City is free from the emission of greenhouse gasses in 2025, but it is expected that the volume of waste and electricity consumption will remain the same.

The high percentage of electricity in the total emissions for the operation of the City of Reykjavik in 2015 is from the sale by ON of the guarantees of origin at that time. In accordance with Directive 2009/28/EB enterprises and institutions must follow the calculations from Orkustofnun (National Energy Authority) concerning emissions, but these calculations are based on the combination of the origin of electricity taking into account the sale of guarantees of origin out of the country.²¹ In other words enterprises and institutions may not maintain that their energy use is solely based on renewable energy resources unless an energy company does not sell guarantees of origin out of the country and receives a confirmation by a special declaration. Enterprises and institutions may however pay for the certificate of origin. Landsvirkjun, Orka náttúrunnar and HS orka have sold guarantees of origin at different prices against receiving fossil fuels or nuclear energy in return. The City of Reykjavik is a client of Orka náttúrunnar. Since 2016 Orka náttúrunnar has delivered guarantees of origin that accompany the sale of electricity to its clients with the exception of power-intensive industry without compensation.²²

The figures of electricity of the operations of the City of Reykjavik for the years 2016–2019 has therefore been certified and the calculations are lower than the reference year 2015 according to this.

²⁰ cfr. the methodology of Greenhouse gas protocol

²¹ Discussion based on: Hrafnhildur Bragadóttir, Birna S. Hallsdóttir (March 2016) Guarantees of origin in an Icelandic context. Report prepared for the Ministry of Industries and Innovation. Environice <https://www.atvinnuvegaraduneyti.is/media/2015/161018-Upprunaabyrgdir-i-islensku-samhengi.pdf>

²² <https://orkustofnun.is/media/upprunaabyrgdir/OS-Stodlud-yfirlýsing-2020-.pdf>

NEW FUTURE VISION AND MAIN OBJECTIVES

Concurrent with a new action plan there is a change in the wording of the future vision by the City of Reykjavik on climate issues:

“The city of Reykjavik’s goal is to become carbon neutral before the year 2040 and that the adaptation to climate change will take place in an environmentally sound and human friendly manner. Reykjavik City supports the goal of the Paris agreement to maintain global warming within 1.5°C. Actions will be revised in 2025 and then every 5 years after that in accordance with the Paris agreement 2015. The results will be measured at least once every year.”

The support for the Paris agreement is intensified, the wording concerning adaptation to climate change is slightly altered and instead of having the results measured every two years it is suggested that the evaluation be performed annually. Because of progress in the methodology of evaluation of the emission of greenhouse gasses and increased additional data the year of reference for emissions is to be 2019 rather than 2015.

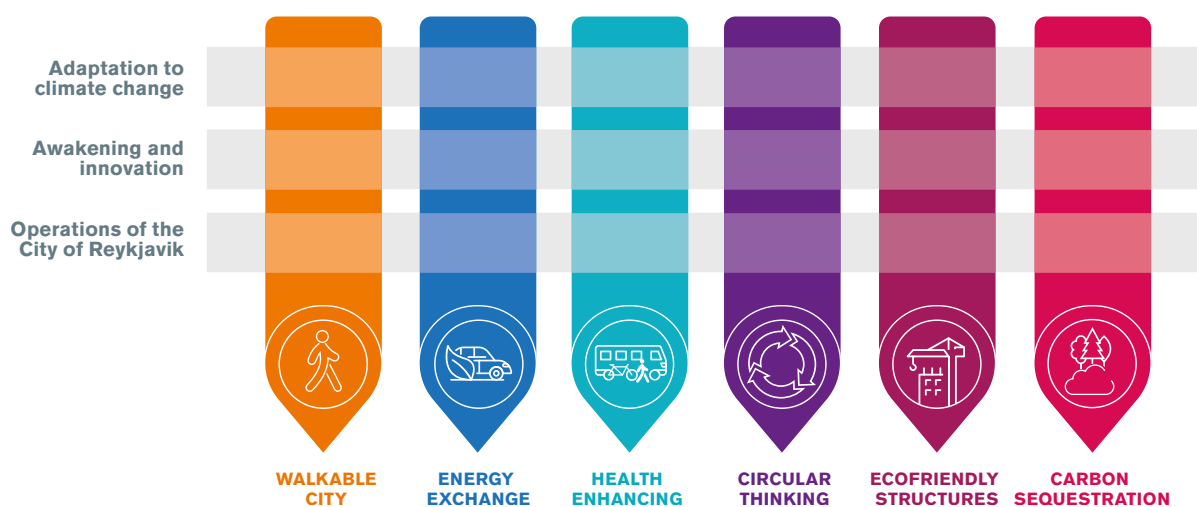
Main objectives and support factors

The main objectives for the next five years are six points of emphasis that are going to have the greatest impact in order for the goals to be achieved:

- Walkable city
- Energy exchange
- Health-promoting modes of travel
- Green structures
- Circular thinking
- Carbon sequestration

in addition to these six main goals there are several actions that must be directed towards all these factors and function as support to all the goals:

- Adaptation to climate change
- Awakening and innovation
- Operations of the City of Reykjavik



Main objectives

The biggest subject matter and the greatest opportunities to reduce the emission of greenhouse gasses are found in a change in transport. That is where the greatest amount of emissions comes from both geographically and in the operations of the city.

The first three issues of importance are therefore directly related to transport: a walkable city energy exchange and Health-promoting modes of travel.



Walkable city

A walkable city contains many types of service, access to outdoor areas and to public transport should be in walking distance from homes and/or workplace. That way the need for driving is reduced and it increases the access for all to a diverse city life.



Energy exchange

Energy exchange in vehicle transportation entail the reduction of emissions in transportation, road, ship and air traffic. Almost all emissions in Reykjavik can be traced to the use of cars powered by fossil fuels. The solution consists in reducing travel needs, to increase the proportion of modes of travel that on average have less or no emissions, and thirdly to increase the proportion of clean energy vehicles on the roads. It should be stated that in the government's action plan there is another interpretation of the words: "energy exchange".²³ In this action plan energy exchange is interpreted in the meaning that this may also consist in using own energy in order to commute between locations, to walk or cycle.



Health-promoting modes of travel

Vehicle energy exchange by themselves are not sufficient to obtain the goals of the Paris agreement. Energy exchange can also entail the use of own energy to commute between locations, walk or cycle. Health-promoting or active modes of travel entail various benefits besides the reduction of greenhouse gasses. The increased physical activity of the inhabitants improves public health and when the number of those who walk increases the safety of pedestrians and residents will increase.



Green structures

Green buildings are a new factor in the Climate action plan and it entails an extension of the carbon footprint that is being considered by the City of Reykjavik and is then moved in the direction towards a carbon footprint that is life-cycle assessed.²⁴ Until the present time the carbon footprint of structures and of the building industry has not been assessed but in this field there are opportunities to reduce emissions significantly, including by the use of environmentally friendly building materials and architecture.



Circular thinking

Circular thinking is about using resources more efficient and to reduce the creation of waste, i.e. how to introduce a new thinking in design and material handling so that resources are not being depleted and landfill disposals will become a thing of the past.²⁵ The ideology entails the reduction in the creation of waste, refuse, reduce, reuse, repurpose and recycle. Circular thinking also entails a change in production and consumption resulting in less environmental impact. i.e. different emphasis regarding food selection where a climate-friendly diet is also a human-friendly diet.²⁶



Carbon sequestration

Carbon sequestration is that factor that needs to support the emissions that will be impossible to reduce. Forestry entails carbon sequestration from the atmosphere, but a technological carbon sequestration from the atmosphere can also be employed, e.g. integration of Carbfix technical solutions with the so called air suction device technology. At the same time the Carbfix technology can be used to prevent the exhaust from energy and industrial production, as well as from waste. Reclamation of wetlands prevents the emission of greenhouse gasses from the soil. Many measures connected with carbon sequestration are the same or closely related to actions which are defined in the City of Reykjavik policy on biodiversity, and besides, these issues are closely related.

²³ Stjórnarráðið, 2020. <https://www.stjornarradid.is/library/02-Rit--skyrslur-og-skrar/Adgerdaaetlun%20i%20loftslagsmalum%20onnur%20utgafa.pdf>

²⁴ EFLA, 2020

²⁵ COMPLETING THE PICTURE HOW THE CIRCULAR ECONOMY TACKLES CLIMATE CHANGE

²⁶ <https://eatforum.org/eat-lancet-commission/the-planetary-health-diet-and-you/>

Support factors

Adaptation to climate change

Because of an increase in precipitation and the rise of sea levels adaptation to climate change and resilience of the City needs to be developed. When preventing flooding or other effects of climate change it continues to be necessary to keep in mind that the City has to be walkable and that wholesome modes of travel can work. It is also necessary to ensure that other infrastructure is not endangered such as because of energy transport. All structures, nature based or otherwise need to have resilience against climate change. Circular thinking is important when tackling climate change and carbon sequestration can well go together with the development of flood control structures and other prevention for trees and vegetation.

Awakening and innovation

Carbon neutrality and adjustment to climate change cannot be attained unless there is a joint effort by all. Knowledge of climate issues and the consequences of climate change has been on the increase and at the same time Icelanders have increasingly become more interested in contributing to this matter. A minority of the country feels that they are well knowledgeable regarding climate issues²⁷ which shows that there is need for an awakening and increased education. At the same time changes need to occur quickly so that emissions can be quickly reduced. There is a need for another and a new thinking and approach to the topics of daily life, systems and technology in order to attain huge changes in the carbon footprint. An increased awakening and innovation are important factors for this to happen.

Operations of the City of Reykjavik







The City of Reykjavik has an influence on how walkable the City is by planning walkable communities but also by setting demands and making requirements and give instructions to contractors and economic operators how best to ensure access. Energy exchange in own car fleet has a substantial impact on the City's climate accounting and the support of energy exchange by the residents and in business and industry has an impact on societal emissions.

Sustainable procurement by the City can greatly influence circular thinking but also on the use of fossil fuels and requirements regarding green structures which the City builds. Circular thinking is important in order to reduce the creation of waste and to reduce the emissions from it at the city's workplaces. The emphasis has been placed on green structures in the new buildings that the City operates, and there will be a continuation of this. The own cultivation by the City and all planting has an influence on carbon sequestration.

Equality evaluation of climate action – before and after

Climate change and action because of it has an unequal impact on different groups in society just as other actions by the government. Experience and research show that upheaval caused by climate change has the most detrimental effect on the elderly, poor people and children. Women are a majority of older people and more women than men are struggling with poverty and they carry more responsibility for the care of children and family and the home. The consumption and travel habits of the genders are also different and note must be taken of gender-based differences in plans, goal setting and performance measurements. By taking note of gender and equality view-points we are more likely to be successful regarding these factors. The gender based, social and economic dimension must therefore be included in all plans for climate action and the success must also be evaluated in view of this. This means that there must be a continuous gathering of gender-based data just as other information concerning the quantity, cost and timing of climate action. It is important to evaluate each action of the climate action plan based on gender and equality-based aspects.

SECONDARY OBJECTIVES AND CRITERIA

| Objectives | Standards | Status 2020 | Indicator 2025 | Indicator 2030 |
|--|--|---|--|---|
|  Walkable city | ISO37120 Standard: Percentage of residents who live in proximity to basic services (<i>Basic Service proximity</i>). | ISO37120 success standards will be measured in 2021. In 2017 93.5% of the residents lived within 400 m from a bus shelter. In 2020 94% of the residents lived within 400 m from a recreational area. | 90% in the proximity of service. | 90% in the proximity of service. |
|  Energy exchange | The emissions of GHG from transportation. | The emissions of GHG from transportation was 340.921 tCO ₂ equivalent in 2019. Thereof 283.018 tCO ₂ because of street traffic. | It is estimated that GHG emissions from transportation will be reduced by 5% annually. | Goal: Emissions from transportation less than 170.000 tCO ₂ equivalent (<i>50% of 340 thousand</i>). |
|  Health-promoting modes of travel | ISO37120 standard: Percentage of travel because of work by other mode of travel than by private car | ISO37120 success standards will be measured in 2021. 2019 28% of those questioned used health-promoting mode of travel to and from work. ²⁸ | The plan is that over 50% will use health-promoting modes of travel by 2040. 2025 the percentage would need to be at least 40%. | 45% to use active health-promoting mode of travel. |
|  Circular - thinking | Emissions of GHG from waste. Consumption driven emissions. | Emissions of GHG from waste was 54,522 tonnes in 2019. Consumption driven emissions is expected to be 484,000 tCO ₂ equivalent in 2019. | With the introduction of GAJA emissions should be close to 0 by end of 2025. There are expectations that by 2025 there will be available more precise information about consumption driven emissions. | Carbon neutral treatment of waste. |
|  Green structures | Emissions of GHG from construction industry. | Emissions of GHG from waste was 54,522 tonnes in 2019. Consumption driven emissions is expected to be 484,000 tCO ₂ equivalent in 2019. | Expectations are for a that in 2025 there will be available more precise information about emissions from construction. | Carbon neutral Construction industry |
|  Carbon sequestration | Emissions/ GHG sequestration because of land use. GHG sequestration because of forestry. | Emissions from drainage of wetlands is estimated to be 56,009 tCO ₂ equivalent. Carbon sequestration because of forestry is estimated to be 10.587 tCO ₂ equivalent. Net emission from land use was accordingly 45,422 tCO ₂ equivalent in 2019. | Net emissions will be close to zero in 2025 and that carbon sequestration will take place from then on. | Carbon sequestration positive. |

28 Gallup Travel habit survey, questionnaire survey.

Action

Decade of action

Many different parties need to put in effort. At the start of this report a list of 15 of the main actions have been highlighted and the actions that are presented for the next five years are shown in the accompanying annex. There are a variety of actions and they arrive from different corners in the spirit of the procedure that was used during the work on the action plan where there was a wide range of consultation from various sources. The actions are a sort of guide to where the way leads for the next five years but there is a need for further processing in order to be able to quantify, cost estimate and schedule the actions. As soon as this action plan has been approved work will be initiated to assess what each single action will return in carbon dioxide equivalents and what it will cost. It is expected that work will be completed by summer 2021. As far as possible there will be an analysis of the effect the different actions will have on different social groups, with respect to income, origin, gender and other factors. The objective with the actions is that the City of Reykjavik will be contributing to support the goal of the Paris agreement to maintain global warming within 1.5°C.





Principal aims:

Walkable city

| Action | Schedule | Cost | Success measurement | Effect on GHG emissions | Guarantor |
|--|------------|--|--|--|-----------|
| Emphasise proximity to basic services – consolidate populated areas. | 2021-2030 | Part of AR2040 and work within framework. | Percentage of inhabitants with access to proximity services. | Reduces emissions significantly because of less need to drive. | DEP * |
| Promote the wellbeing of pedestrians, pollution-free areas defined. | 2021-2025 | Needs to be cost estimated and defined. | Sq kilometres of areas free from polluting traffic. | Indirect impact – reduces emission. | DEP |
| Promote the wellbeing of pedestrians. Ensure walkable and green environment along new and re-designed routes | Is ongoing | The green network is developed according to the implementation plan and is within framework. Other planting-actions and nature conservation needs to be defined and cost estimated. | Number of implementation project that are completed each year. Number of planted plants in areas where people pass by. Number of nature reserves. Quantification of the well-being of persons and / dis-satisfaction with marked paths. | Reduces emissions, vegetation sequesters carbon, adaptation to climate change. | DEP |
| Promote the wellbeing of pedestrians. Increase the number of eco-streets in a systematic manner. | 2021-2025 | Needs to be cost estimated and defined. | Sq Kilometres scope of eco-streets. | Indirect impact – reduces emission. | DEP |
| More space for pedestrians, reduce number of parking spaces by 2% per year. | 2021-2025 | Needs to be cost estimated. | Number of parking spaces within the city land, change from last year. | Indirect impact – reduces emissions | DEP |
| More space for pedestrians, shaving off asphalt and reduce the scope of roads. | 2021-2025 | Needs to be cost estimated. | Scope of roads has become 35% of land use by 2025. | Indirect impact – reduces emissions. | DEP |
| More space for pedestrians, estimate the cost of land that is being used for traffic structures and parking spaces. | 2021-2025 | Insignificant. Working according to a price inquiry. | Completed and issued before end of 2021 | Indirect impact. | DEP |
| Increase electronic service in order to reduce travel need. | 2021-2025 | Part of S&E and work within framework. | Percentage of electronic services of City of Reykjavik. | Reduces emissions significantly because of less need to drive. | S&E** |
| Car-detoxification. Actions that aid people with stopping to need to rely solely on a car as a daily mode of transportation. Such as setting up a pooling system with various means of transportation in the districts, promote the idea to try using the bus system and/ or electric cycles for a certain period of time. | 2021-2025 | Needs to be further developed, cost estimated and defined. | Needs to be cost defined. | Reduces emissions. | DEP |
| Reduce number of petrol stations. | 2021 | Is being processed by a working group. | Recommendations from a working group. | Reduces emissions. | DEP |

* DEP is short for City of Reykjavik – Department of Environment and Planning

** S&E is short for City of Reykjavik Department of Services & Innovation

Principal aims:

Energy exchange



| Action | Schedule | Cost | Success measurement | Effect on GHG emissions | Guarantor |
|--|-----------|---|---|---|---------------------------|
| The city to pass a new energy policy, i.a. about use of water and electricity. | 2022 | Needs to be estimated based on cost but also based on benefit. | Energy policy passed. | Better use of energy reduces emissions. | City Council. |
| Promote the use of diverse climate-friendly energy sources: electricity, methane and / or hydrogen | 2021-2025 | Needs to be better defined and cost estimated. | Needs to be cost defined. | Reduces emissions | Needs to be cost defined. |
| The City passes an action plan for effective and green transportation which is suited for reducing the overall emissions from transportation within the City limits in accordance with the interpretation of the Paris agreement. The action plan is to be broken down according to mode of travel and energy sources with measurable results. | 2021-2025 | One of the functions of DEP and within the framework. | Emissions from car traffic | Reduces direct emissions from transportation. | City Council. |
| Systematic work towards energy exchange in ports. | 2021-2025 | It is assumed that the project will return a profit. ²⁹ | Energy exchange complete. | Estimated approx. 21,000 tonnes per year. ³⁰ | Faxaflóa-Harbour & Ports |
| Increased number of charging stations. | | Part of DEP work and within framework | The emission of GHG - emissions from public-transportation. | Reduces emissions. | DEP |
| Public transport free from GHG emissions. | 2021-2025 | Is one of Strætó-Bus - Company strategic planning for carbon neutrality within framework. | | Reduces emissions by about 5,000 tonnes per year. ³¹ | Strætó Cityline. |
| The City's LED-ification continues. Exchange all light bulbs used by the City with environmentally friendly options. | 2021-2025 | Estimated annual saving approx. ISK30 million. ³² | | Reduces emissions from street illumination. | |

²⁹ EFLA, 2020

³⁰ COMPLETING THE PICTURE HOW THE CIRCULAR ECONOMY TACKLES CLIMATE CHANGE

³¹ <https://eatforum.org/eat-lancet-commission/the-planetary-health-diet-and-you/>

³² See proposal from financial controller at the City Council 16 May 2019 https://fundur.reykjavik.is/sites/default/files/agenda-items/29_tillaga_valnefndar_um_fjolgund_verkefna_sem_ma_fjarmagna_med_graenum_skuldabrefum_2019-05-13.pdf

Principal aims:

Health-promoting transport (active modes of travel)

Percentage of pedestrians and cyclists is so arranged that the objectives of the Paris agreement are met.



| Action | Schedule | Cost | Success measurement | Effect on GHG emissions | Guarantor |
|--|-----------|--|--|---|-----------|
| Outstanding winter season services for pedestrians, cyclists and bus traffic. | 2021-2025 | The cost of the winter services depends on climate. Is in the DEP budget. | Percentage of winter service for marked paths per km vs. roads per km. Winter service for marked paths (km) / Winter service for roads (km). | Depending on the sources of energy of machines and equipment used for winter service. | DEP |
| Equality in the design of traffic structures – funds that go to road transport will be balanced with funds for infrastructure for pedestrians and cyclists. | 2023 | An appraisal needs to be performed in order to estimate the next steps. | That an appraisal has been performed. | During the implementation stage there is no change unless there is change in the price of selected materials. | DEP |
| Access for all irrespective of mode of travel and age. A framework must be set up, or instructions for the design of new and older routes. | 2022 | Indirect costs for the personnel who designs the instructions. | Design of instructions completed. | Indirect affect might reduce need for driving. | DEP |
| Condition and scope of pavement and cycling paths to be first rate and in priority. | 2021-2025 | Indirect costs for the personnel who designs the instructions. | Design of instructions completed. | Indirect impact, promotes active modes of travel. | |
| A ban on or restrictions on use of cars in specific areas when the air quality forecast indicates that pollution exceeds health protection limits (gray days). | 2021-2025 | One of the functions of the response team for air quality and is within the framework. | Needs to be cost defined. | Reduces emissions. | DEP |
| Set up special collection areas for shared electric bikes, scooters, electric scooters and other such instead of parking spaces. | 2023 | Indirect costs for the personnel who define such areas. | Number of collection areas. | Indirect impact, promotes active modes of travel. | DEP |
| Charging stations for cycles in covered car parks and at the City's institutions. | 2021-2025 | Needs to be cost estimated. | Number of covered car parks and institutions that possess charging stations. | Indirect impact. | DEP |
| A coordinate cycle path system for the whole capital area. | 2021-2025 | Part of follow-up on the cycle plan and is within the framework. | The length of cycle paths in Km. | Indirect impact, promotes active modes of travel. | DEP |
| Separation of pedestrians, cyclists and drivers. | | Part of follow-up on the cycle plan and is within the framework. | The percentage of separated cycling paths and pedestrian paths. | Indirect impact, promotes active modes of travel. | DEP |
| Possible to store cycles at bike transfer stations / large bus-stations. | | Part of follow-up on the cycle plan and is within the framework. | Number of storage areas. | Indirect impact, promotes active modes of travel. | DEP |



Principal aims:

Circular thinking

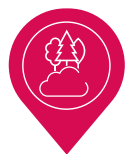
| Action | Schedule | Cost | Success measurement | Effect on GHG emissions | Guarantor |
|---|-----------|---|---|---|-----------|
| Zero waste policy 2025. | 2021-2025 | Needs to be cost estimated. | Policy ready. | Reduces emissions from mixed waste. | DEP |
| Experimental project for vegetable markets in districts. Street-food vegetables. Promote more of the share economy in the districts. | 2023 | Needs to be cost estimated. | Needs to be cost defined. | Reduces emissions from the importation of food products. | DEP |
| Emissions from the production of food to be evaluated in carbon footprint for the City of Reykjavik. | 2021 | Within the framework. | Assessment completed. | Indirect impact, increases the knowledge of emissions from food products. | DEP |
| Emissions from industry also to be evaluated in carbon footprint for the City of Reykjavik. | 2021 | Within the framework. | Assessment completed. | Indirect impact, increases the knowledge of emissions from industry. | DEP |
| Develop a venue for waste from the construction industry. | 2022 | Needs to be cost estimated and better defined. | Venue has been established. | Reduces emissions. | DEP |
| Correlate sorting-methods for the institution of the City of Reykjavik and for households in the capital area. | 2021 | Within the framework. | Correlation achieved. | Indirect impact, will presumably reduce emissions from waste. | DEP |
| Emissions from industry also to be evaluated in carbon footprint for the City of Reykjavik. | 2021 | Within the framework. | Assessment completed. | Indirect impact, increases the knowledge of emissions from industry. | DEP |
| Commitments regarding emissions from industry inserted into zoning plans. | 2021 | Indirect costs for the personnel who develop the specifications. | Stipulations and Commitments completed. | Reduces emissions. | DEP |
| Apply for being a European Green City. | 2022 | Indirect costs for the personnel who write and produce the application. | Applying completed. | Indirect impact. | DEP |
| Support agencies and projects that provide repair service for electrical equipment, tools-instruments- "library"(sewing machines, instruments etc.). The Major theme is to repair rather than throw away. | 2021-2025 | Needs to better defined and cost estimated. | Needs to be cost defined. | Reduces emissions from waste- preventive measures. | DEP |

Principal aims:

Green structures



| Action | Schedule | Cost | Success measurement | Effect on GHG emissions | Guarantor |
|--|-----------|---|---|---|-----------|
| All construction projects by the City of Reykjavik to be fossil fuel free, i.e. that work equipment be powered by electricity or biofuel. | 2023 | Needs to better defined and cost estimated. | Over 80% of work equipment at construction sites to be fuelled by environmentally sound energy sources. | Reduces local emissions. | DEP |
| Sustainable design of city to be the guiding light for all city planning and construction project. | 2021-2025 | Needs to better defined and cost estimated. | Needs to be cost defined. | Reduces emissions i.a. for modes of travel but may also increase carbon sequestration. | DEP |
| Emissions from the production of construction materials also to be assessed in the City of Reykjavik carbon footprint. | 2021 | Within the framework of DEP. | Assessment completed. | Indirect impact, increases the knowledge of emissions from construction materials. | DEP |
| New districts to be environmentally certified. | 2021 | Within the framework of DEP. | Number of environmentally certified districts. | Reduces emissions. | DEP |
| Plan rented plots for cottages / huts. Small summer huts with a little garden plot "Kolonihave". Hólmsheiði and Austur-heiðar could be possible locations. | 2024 | Needs to better defined and cost estimated. | Needs to be cost defined. | Depends on the effect on the travel need of cottage holders and the focus on cultivation. | DEP |
| BREEAM-certification for new buildings and the maintenance of the City's properties. | 2021-2025 | Is part of DEP projects and within framework there. | Number of BREEAM certified construction projects on the City's properties. | Reduces emissions. | DEP |



Principal aims:

Carbon sequestration

| Action | Schedule | Cost | Success measurement | Effect on GHG emissions | Guarantor |
|--|-----------|--|--|--|----------------------|
| Reclamation of 60% of wetlands within the City of Reykjavik before the year 2040. | 2021–2025 | Needs to be cost estimated. | Percentage of reclaimed wetland. | Might be up to 33,000 tonnes. ³³ | USK |
| Climate forests – establish numbered goals for number of trees per year (e.g.) 10,000 trees). | 2021 | Needs to better defined and cost estimated. | Number of trees planted per year. | Carbon sequestration approx. 1,000 tonnes per year. | DEP |
| If ground vegetation cover is removed because of constructions, streets or paths this vegetation cover must be used for finishing or for other places, e.g. on house-roofs or disturbed areas. | 2021–2025 | Need to take careful note of placement and extent of forestry. | Needs to be cost defined. | Carbon sequestration. | DEP |
| Tree and bush cultivation on traffic islands | 2021–2025 | Needs to better defined and cost estimated. | Needs to be cost defined. | Carbon sequestration. | DEP |
| Gardens on rooftops, vertical gardens / plant-walls. | 2021–2025 | Needs to better defined and cost estimated. | Needs to be cost defined. | Carbon sequestration. | DEP |
| Use green areas for cultivation, outdoors activities, forestry more than is being done at present, and make smaller the “dead areas”. | 2021–2025 | Needs to better defined and cost estimated. | Needs to be cost defined. | Carbon sequestration. | DEP |
| Increase the number of garden growing plots at retirement homes and schools. Everybody to plant trees. | 2021–2025 | Needs to better defined and cost estimated. | Number of garden growing plots. | Carbon sequestration. | DEP WD* DS&R** |
| Increase the bio-diversity in green areas. | 2021–2025 | Needs to better defined and cost estimated. Within the framework of USK. | See goals in the action programme for bio-diversity. ³⁴ | Carbon sequestration. | DEP |
| More declarations of protection and increased nature preservation with emphasis on bio-diversified ecosystems that sequester carbon – particularly wetlands, birch woods, mud flats and seaweed beaches. | 2021–2025 | Insignificant cost and may even open up for access to additional funding from the state. ³⁵ | Number of declarations of protection. | Reduces emissions and can act as carbon sequestration. | DEP |

* WD is short for City of Reykjavik Welfare Division

** DS&R is short for City of Reykjavik Department of Schools and Recreation

33 The carbon farming of land use in Reykjavik, April 2020 https://reykjavik.is/sites/default/files/losun_ghl_vegna_landnotkunar_i_reykjavik_environice_april_2020_endursk.pdf

34 BIODIVERSITY – CITY OF REYKJAVIK Action Plan for 2016–2026 https://reykjavik.is/sites/default/files/ymis_skjol/skjol_utgefid_efni/adgerdazaaetlun_um_lifraedilega_fjolbreytni_-_lokautgafa.pdf

35 SVÆÐISBUNDIN NÁTTÚRUVERNÐ Í REYKJAVÍK, skýrsla birt á fundi umhverfis- og heilbrigðisráðs 30. september 2020 https://fundur.reykjavik.is/sites/default/files/agenda-items/us200337_-_stefnumotun_i_natturuvernd_-_samantekt_fyrir_uh-rad_2020_utgafa_21_september.pdf

Principal aims:

Adaptation to climate change

| Action | Schedule | Cost | Success measurement | Effect on GHG emissions | Guarantor |
|---|-----------|---|-----------------------------------|-------------------------------------|--------------|
| Take flood control into consideration in planning with human-friendly and nature based solutions. | 2021–2025 | Needs to be better defined and cost estimated. | Needs to be cost defined. | Carbon sequestration by vegetation. | DEP, Veitur. |
| Change design premises based on predictable climate change. | 2021–2025 | Needs to be better defined and cost estimated. | Needs to be cost defined. | None. | DEP Veitur |
| Decide the frame of reference for acceptable risk – design premises. | 2021–2025 | Needs to be better defined and cost estimated. | Needs to be cost defined. | None. | DEP |
| Use blue-green surface water solutions for new and older districts. | 2021–2025 | Within the framework of USK. | | Carbon sequestration by vegetation. | DEP, Veitur. |
| Planning must include possible changes of location of populated areas. | 2021–2025 | Part of the work on AR2040 and within the framework. | Needs to be defined. | Depends on the approach. | DEP |
| Risk analysis of climate change and impact. | 2022 | Needs to be better defined and cost estimated. | Upgrade assessment. ³⁶ | None. | DEP |
| Design in agreement with nature and community – apply nature based solutions, respect tolerance limits and create an area for public use. | 2021–2025 | Needs to be better defined and cost estimated. | Needs to be cost defined. | Depends on the approach. | DEP |
| Protection of nature areas that are important for the adaptation to climate change, in particular flood installations in coastal areas and near rivers and lakes. | 2021–2025 | Need to define and cost analyse in accordance with a declaration of protection of coastal areas and wetlands and areas that are important for carbon sequestration. | Part of nature protection plan. | Carbon sequestration. | DEP |

³⁶ Risk assessment was made in September 2017: "Summary of the principal risk factors due to climate change in Reykjavik, ways to adjust and the state of affairs" https://fundur.reykjavik.is/sites/default/files/agenda-items/loftslagsbreytingar_fskj.pdf

Support action:

Change in attitudes and innovation

| Action | Schedule | Cost | Success measurement | Effect on GHG emissions | Guarantor |
|---|-----------|--|--|---|---------------|
| To undertake an assessment of in which manner it is best to support the city administration in the fight against the climate threat. | 2021 | Needs to be cost estimated and defined. | Estimate completed. | Indirect impact. | City Council. |
| Participation of the City in climate-related innovation- and research-projects. | 2021-2025 | Preparations and applications within the framework of S&E. Project to be started up when grant obtained. | Number of innovation projects. | Depends on the projects. | S&E |
| Powerful marketing and promotion effort about the actions taken by Reykjavik City and B-sector enterprises in climate matters. | 2021 | Needs to be cost estimated and defined. | Knowledge of the Reykjavik residents of climate affairs. | Indirect impact because of increased knowledge. | SBB* |
| Education on climate issues in the Botanical garden | 2021 | Received a grant from the Climate Fund. | Number of participants in education. | Indirect impact because of increased knowledge. | DEP |
| Statistics for CO2 equivalent for food and especially animal products that are consumed by the citizens. | 2021 | Part of the assessment of the carbon footprint of the City of Reykjavik and is within framework. | Carbon footprint of food products. | Indirect impact because of increased knowledge. | DEP |
| The city to organise the production of data concerning emissions and challenges and issue in an accessible manner. Changes between years to be visible to the public. | 2021 | Is part of the work of the city in climate affairs and within the framework of DEP. | The issuing or posting of data on the web. | Indirect impact because of increased knowledge. | DEP |
| Information to tourists - that Reykjavik advertises its goals for tourists. Something cool and conspicuous in Lækjartorg square. | 2021-2025 | There needs to be an assessment whether a design contest should be held. | Needs to be defined. | Indirect impact because of increased knowledge. | DEP |

* OMCAO is short for office of Mayor and Chief Administrative Officer

Support action:

The operation of the City of Reykjavik to become carbon neutral

| Action | Schedule | Cost | Success measurement | Effect on GHG emissions | Guarantor |
|---|-----------|---|--|---|--|
| Carbon negative procurement to be implemented at City of Reykjavik in the context of sustainable procurement that take additional factor into consideration than only the carbon footprint. | 2022 | Needs to be defined. Cost is presumably insignificant, needs consulting and education but later becomes part of the work of the staff. | Work procedure formulated and introduced regarding all procurement by the City of Reykjavik. | Could be significant for indirect emissions. | Procurement department. |
| The suppliers will be required to provide information about their emissions with respect to their services. | 2022 | Part of the work of the staff regarding calls for tenders and price inquiries but needs perhaps education. | Quantity data information about emissions from suppliers. | Indirect impact on emissions of the suppliers. | Procurement department. |
| The operation of the City of Reykjavik to be carbon footprint offset as of the year 2021. | 2021 | Needs to be cost estimated. | Projects for carbon offset to be selected and that payment has been made. | Emissions from Reykjavik City operations 2019 were 1,831 tonnes. | City Council |
| Objectives and actions on how to reduce the emissions for the City of Reykjavik to be presented for each area. | 2022 | Needs for education and follow-up which is part of the job of the project for Green-Steps and is within the framework of DEP. | Expected emissions stated and how to reduce these. Environmental indicators/ key figures to be developed in the statements from the special subject departments. | May be substantial. | OMCAO – Office of Mayor and Chief Administrative Officer |
| Carbon neutrality of the workplaces of the city of Reykjavik to be supported with new climate step. | 2021 | Part of the job of the project for Green-Steps and is within the framework of DEP. | Climate step ready. | May be substantial. | DEP |
| The offices to have access to the data for their success in environmental matters, e.g. through the Manager with the assistance of a data stream from Agresso or Klappagátt. | 2022 | Part of FÁST work and within their framework. Need probably additional education. | Access to data become a reality. | Indirect affect, may have extensive effect on emissions. | FÁST* |
| To be developed: comprehensive financial statements for City of Reykjavik as they appear in ESG, GRI and SDGs. | 2022 | One of the functions of FÁST and within their framework. | Publication of comprehensive financial statements. | Indirect impact. May have the effect of encouragement to further great deeds. | FÁST |
| All the workplaces of the City of Reykjavik complete at least step 1 of Green steps. | 2021 | Is one of the main projects of Green steps and is within the framework of DEP. | All workplaces have completed step 1. | May be substantial. | DEP |
| Promote transportation agreements. | 2023 | Needs to be better elaborated and cost estimated. | Percentage of those who use active modes of travel to and from work at least 50% 2025. | Reduces emissions because of changed travel modes. | Human resources department. |
| Ensure that the staff at City of Reykjavik get free access to electric bikes during work hours. | 2021 | Needs to be better elaborated and cost estimated. | Needs to be more elaborated on. | Reduces emissions because of changed travel modes. | Human resources department. |
| Promote collaboration with the universities regarding research on the effect of climate change (precipitation and rising sea levels). | 2021 | Collaboration with universities is part of the activities of the city and is within the framework. | Needs to be more elaborated on. | Indirect impact on emissions. | S&E |
| Food footprint to be established in the canteens of the administration buildings. | 2021 | Becomes part of the next call for tenders. | Food footprint established. | May reduce emissions due to increased knowledge. | S&E |
| Events arranged by the city of Reykjavik and for the City of Reykjavik to become “Green events”. | 2021–2025 | Within the framework of DEP. Instructions are available at the Green steps and it is possible to receive education from them. In the long run green events will embody savings. | The percentage of green events compared to events in Reykjavik. | Reduces emissions, creation of waste and overall environmental impact. | MOF** |
| Climate action to be analysed from the viewpoint of gender aspects. | 2021–2025 | Part of a gender-based budget is to increase education. | Number of analysed actions. | Indirect impact on emissions increases knowledge. | KFS-*** group |

* FÁST is short for the financial and risk management department of the City of Reykjavik. ** MOF is short for the department of culture and tourism of the city of Reykjavik.

*** KFS group is a group for gender based financial and operational planning of the city of Reykjavik

Future forecast – how can carbon neutrality be achieved?

In order to look into the future one needs to take note of the situation today and affect the future. Presented here below are some possible scenarios in the direction of carbon neutrality. There it is obvious how important it is that everyone make a common effort and that all sectors of the economy emphasise carbon neutrality.

Criteria:

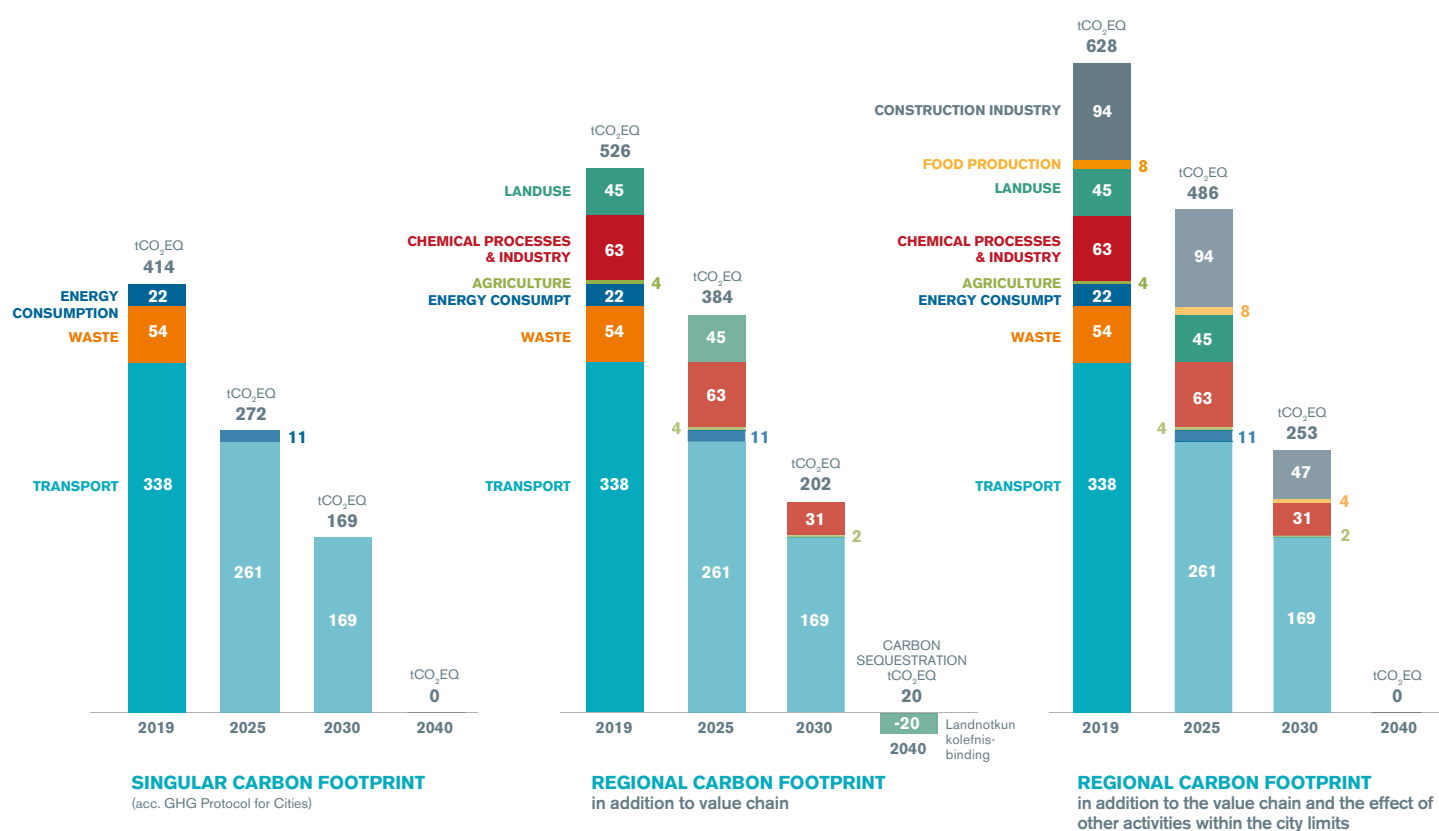
Transport: The general zoning plan for Reykjavik until the year 2040 assumes that trips by private cars will decline by 50% by 2030. This forecast assumes that emissions from transport will decline by 5% annually until the year 2025 but then in 2030 they become half of what they were in 2019. If we set as goal that all cars are free from the emission of GHG in 2040 the emission will be put at 0 for that year.

Energy: Reykjavik Energy-Orkuveita Reykjavíkur aims at carbon neutrality in 2030. That will affect the emission of GHG and it the forecast is that release from energy will have dropped to 0.

Waste: It is expected that when the Sorpa gas & composting plant will become fully operable the landfill disposal of organic and combustible waste will stop. The goal is that emissions from landfill disposals will have reached almost 0 by 2025.

Other emission factors: The Paris agreement has been interpreted in such way that in order to reach its goal emissions will need to be reduced by half from what they were in 2005. Emission figures from 2005 are not available so that in this present context we need to use the latest figures on emissions from 2019 and that emissions are cut by half from that time.

All other emission factors, agriculture, construction etc. are cut by half in the calculations for 2030 and it is assumed that agriculture and the construction industry will be carbon neutral by 2040.



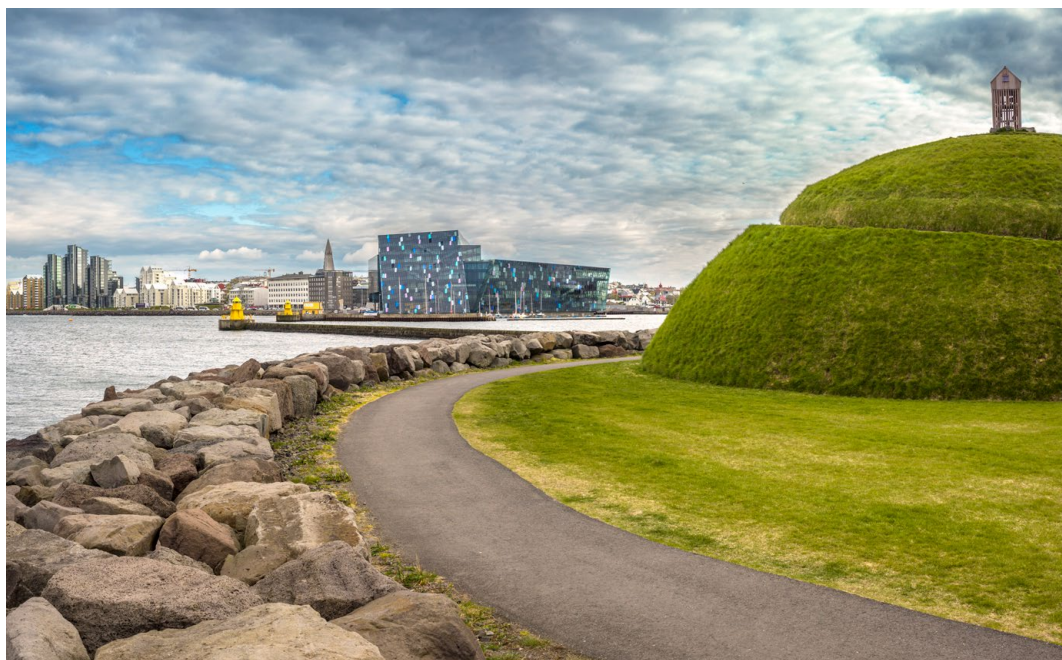
IMPLEMENTATION, ASSESSMENT AND CONTROL

To obtain carbon neutrality by 2040 is a huge project. At the outset it was assumed that an action plan would have to be made for five years at a time. This action plan needs to be revised by the end of 2025.

According to the instruction on an assessment of local communities' carbon footprint they are "... advised to adopt the following procedure when reducing the emission of GHG:

- 1) Climate policy
- 2) Assessing the carbon footprint where emission and sequestration is assessed
- 3) Measurable goals including a financed and scheduled action plan based on quantification and cost estimate of the actions.
- 4) The enforcement of the action plan including a periodical revision"³⁷

The policy is clear, Reykjavik intends to be carbon neutral by 2040 and has had its carbon footprint assessed over the past years. The measurable goals are found in the success in reducing the release of greenhouse gasses. The assessment of emissions has up until now been conducted every year as of and included 2020. The Department of Environment and Planning is responsible for interacting with the international treaty between local communities on climate issues: The Global Covenant of Mayors, and that climate accounting will be submitted according to this treaty. The Finance Office is responsible for annual assessments of emissions from the operations of the City of Reykjavik. It is assumed that supervision and follow-up of a new action plan will be with a political steering group and then with a special view to arrangements for the implementation of a gender-based budget for the City of Reykjavik.



37 <http://www.skipulag.is/media/pdf-skjol/Mat-a-kolefnisspori-a-skipulagsstigi.pdf>

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Authors of photos

- pg. 9 – Laugavegur: Juliette Rowland
- pg. 18 – Hlemmtorg: DLD and Mandaworks
- pg. 18 – Children running: Juliette Rowland
- pg. 18 – Skólavörðustígur: Inga Rún Sigurðardóttir
- pg. 29 – Þúfa: Ragnar Th. Sigurðsson

GENDER EQUALITY EVALUATION OF THE CITY OF REYKJAVÍK CLIMATE POLICY 2021–2025

January 2021

The City of Reykjavik climate action plan which is operative until 2025 is going to be approved, and this plan is a continuation of an earlier plan that was effective until the year 2020. The action plan is based on the work of a steering group as well as on consultation with the public and with external stakeholders, and it is part of reaching the goal set by the City of Reykjavik to become carbon neutral before the year 2040 and to adapt to climate change in an environmentally sound and human friendly manner. The main objectives of the City of Reykjavik climate policy are divided into six important issues; [Walkable city](#), [Energy exchange](#), [Health-promoting modes of travel](#), [Circular thinking](#), [Green structures and carbon sequestration](#). In addition to these objectives there are three categories that need to be directed toward all of the six main objectives; [Adaptation to climate change](#), [Awakening and innovation and the operation of the City of Reykjavik](#).

An addendum to the policy includes a list of actions that come with a defined time table, cost and expenses breakdown, success measurement and an underwriter. The City will need to undertake these actions in order to achieve the objectives of the climate policy.

Local communities are in a key position to succeed in actions against the danger that is threatening us because of climate change. This key position consists in the power of the planning authority held by local communities with respect to land use and transportation, e.g. the possibility to develop infrastructure for public transport, to create a walkable environment within the communities in order to reduce the use of cars etc. The situation that has arisen in the world because of climate change is so serious that it cannot be ignored and it is therefore necessary that local communities take such action that is available to them in order to mitigate the harmful consequences of climate change.

In this connection it is important to take into account that climate change and actions undertaken because of it, will just like other actions taken, have an unequal effect on different groups of the society. Experience and research show that upheaval caused by climate change has the most detrimental effect on the elderly, poor people and children. If this is put in the context of gender the women are a majority of older people, more women grapple with poverty than men, and in addition women carry the main responsibility for childcare (European Institute for Gender Equality, 2012). It is also important to take note of the consumer habits and travel behaviour which are different and it is therefore worth the effort to note this gender-based difference in goal setting and performance measurement methods. By taking note of gender and equality aspects in the action plan we are more likely to be successful. This gender and equality evaluation seeks to elucidate the gender and equality effects that are connected with the climate policy.

Gender-based consumer habits

Car ownership by men is considerable higher than car ownership by women, and according to figures from the year 2017 women are only registered as owners of 37% of passenger cars (Lilja G. Karlsdóttir & Ásta Þorleifsdóttir, 2018; Reykjavik City, 2019). This applies both to car ownership in general but also with respect to electric cars. However, women appear to be proportionately more likely to own or to want to own an electric car as according to figures from the Icelandic Transport Authority from the year 2020 the possessors of electric cars (and part of electric cars) are 58% men and 42% women.

There are indications that women take care of waste sorting in the homes to a greater degree than men (Reykjavik City, 2017). A certain gender-based division of labour appears however to be present whereby men are to a greater degree handling the transporting of waste to the

sorting centres while women handle the sorting inside the homes. An additional emphasis on the sorting of waste will therefore probably have a greater impact on the behaviour of women than on men, unless care is taken to communicate specifically with those groups that are unlikely to sort waste.

According to research highly educated men who are highly paid are those who have the highest carbon footprints and they are also the most unlikely to change their habits (Kronsell, 2013). Women appear, according to Icelandic numbers, more likely to change their consumer habits into a more environmentally friendly direction (Gallup, 2020c) and women are also considerably more likely to become vegan than men if the replies to a survey taken by the association of vegans at year end 2020 is to be taken seriously where 78% who replied defined themselves as women (Lovísa Arnardóttir, 2020).

Gender-based travel habits

The travel habits of the genders are different. Foreign research shows that whereas men generally travel longer distances but take fewer trips, the women take many short trips during the day, in between errands that are connected with care taking and housework. Research also shows that women use public transport to a higher degree than men and that women are to a less degree the possessors of cars (European Institute for Gender Equality, 2012). In Iceland the gender ratios in the use of public transport is more even and according to figures from Strætó Bus from the year 2019 women were 55% of those who had a card with an ID number (Reykjavik City, 2019). It should be kept in mind that it is possible to use various forms of payment in Strætó Bus and therefore it is not certain that the aggregate gender-based statistics on the users is the same. According to statistics from the Director of Health the proportion of those who use an active method of travel¹ because of travel to work or to school, is higher in the summer than during the winter. However women are slightly more likely than men to use an active method of travel during the winter (Director of Health, 2020).

Approx. 19% of Reykjavik citizens claim by the end of 2020 that they use electric scooters to some degree (Gallup, 2020b). Foreign research has also demonstrated that men are more probable than women to use micromobility modes of travel. Data in this country point in the same direction, but men are more likely than women to use electric scooters and cycles to travel (Eyrún Atladóttir, 2020; Gallup, 2020b). Furthermore safe and good infrastructure appears to be very important regarding the use of cycles among women (Emond, et al., 2009).

Equal care giving and family responsibilities

When preparing the equality evaluation it is important to take note of what has been referred to as the caregiving economy, or all the unpaid work that is linked to caregiving- and family responsibilities and how this has a different effect on the experiences and habits of the genders. It is known that women attend to domestic and caregiving work to a higher degree than men. A Gallup environmental poll (2019, 2020c) showed a gender gap regarding how worried people were with respect to climate change, as the level was higher among women. Women carry generally speaking a higher portion of what is referred to as the mental load and whereas they to a larger degree worry more about climate issues it then is likely that the mental load that follows changing the behaviour and habits of the family and the spouse is placed on the shoulders of women, i.e. if there is no systematic effort made to reach other groups. Therefore it should be specifically studied when assessing actions according to the climate policy, whether such actions have an impact on the caregiving and family responsibilities of people, and how such impact is unevenly distributed between the genders but other parameters should also be studied such as finances and class.

¹ An active mode of travel is defined herein as cycling or walking three times or more per week to work or to school.

Gender and innovation, attitude and education

Foreign studies have shown that peoples' consumption and travel habits include a gender-linked dimension. That is to say, men eat meat to a higher degree than women and women use public transport relatively more than men who use a private car more than women do (European Institute for Gender Equality, 2012; Kronsell, 2013; Magnúsdóttir & Kronsell, 2015; Raty & Carlsson-Kanyama, 2009; Sundström & McCright, 2014). There are however strong indications that the carbon footprint of men is generally larger than that of women (Kronsell, 2013; Raty & Carlsson-Kanyama, 2009).

A similar pattern can be observed here in Iceland. As has been stated here above the results of the Gallup environmental poll that were published in 2020 show a difference between the genders with respect to the opinion to climate change. It can be mentioned that women replied more so than men that they were worried about the effect that climate change has on themselves and their family and in addition they answered that they cared about climate change to a greater degree than men did. At the same time a more positive attitude emerged with respect to changing habits because of climate change among women (Gallup, 2020c). Furthermore, women are more probable to change their consumption habits, the sorting of waste, to buy eco-friendly products and to reduce meat consumption. Men on the other hand are more probable to look at technical solutions, such as electric cars (Kronsell, 2013; Raty & Carlsson-Kanyama, 2009).

It is important that technical solutions and innovation that aims at resisting climate change takes into consideration the needs of different groups of people, as it has been pointed out that innovation is a male oriented sector and takes more into consideration the needs of men (Elam et al., 2019; Grünfeld et al., 2020; Schulze, 2015). In the City's innovation activities that are linked to climate issues it is therefore important to look to diverse solutions, to rely on gender-based data and to take actively into consideration gender and equality aspects.

As we know that men have less tendency to change their habits it becomes important that with an educational campaign that is linked to the actions of the climate policy it should be specifically taken note of reaching them, i.a. by counteracting harmful macho ideas.

Epilogue

The information that has emerged indicates that there is full reason to take gender and equality aspects into consideration when actions regarding climate change are presented. In order to promote that the objective of the policy is attained then awareness of the gender-linked dimension of the society is an important factor for all further work on the quantification, cost assessment and schedule for the actions under the policy. The message needs to reach all groups in society and it is therefore important to take a look at how it will be possible to direct the message to certain groups. Furthermore, it is important that success measuring tools be always gender-based when possible. E.g. it must be ensured that information about the use of different methods of travel are always gender-based in addition to other volume data on service receivers.

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