



PURPOSE OF THE QUESTIONNAIRE

Region	Gotland
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This questionnaire has been jointly developed by the CPMR Islands Commission (IC) and Greening the Islands. It forms part of the cooperation agreement that our organisation signed during the latest IC General Assembly in Corfu. This exercise aims to collect information on existing policy measures and/or funding schemes linked to:

- The development of renewable sources;
- boosting transition to electrical mobility;
- supporting stand-alone water supply in your island;
- improving sustainable waste management.

It is worth highlighting that the information collected through this questionnaire will be used to feed into the future joint IC/GtI position/technical report. In this respect, a debate on the first information and data collected will be organised during the international conference organised by Greening the Islands on 15 October and in the workshop organised by the CPMR Geographical Commissions on 16 October in Palermo.

Due to the high added value of this initiative, the key role played by your governments in providing information and data by answering to the greatest possible range of questions is highlighted.

In addition, if you complete the questionnaire on time, you will get a free 1-year subscription to the Greening the Islands Observatory, which includes free access to the Members-only area where you will find technical solutions and best practices for islands, meet all islands stakeholders of the network, etc.

GENERAL INFORMATION ON THE ISLAND

Population residing on the island (specify the reference year)
59 260 as per 30 June 2019

Population in the peak tourist month (specify the reference year)
It peaks in July, with a summer population of around 120,000 persons during a few weeks that are especially busy and then ends in mid-August. Approximately 40 per cent of dwellings are second homes. Approximately 1,000,000 guest nights per year are payed for at hotels & camping sites et c and the same annual amount is estimated to be spent in private holiday homes; which means that in average the island is populated by around 65,000 persons.

Surface area [km²]
3 184 km ² , whereof 3 151 km ² land area, which includes the main island Gotland and its few surrounding islands, of which of only nearby Faroe has permanent residents.

Distance between the island and the closest continental harbour [km]
150 km



Presence of energy and/or environmental planning tools on the island (if existing, specify the type; e.g. energy plans, waste management plans, water management plans, mobility plans)

The Land use plan (mandatory for municipals) is currently revised, areas for development are in the areas of energy infrastructure planning and climate adaptation, but also the present plan is rather progressive in those areas.

The municipal energy plan, Energy 2020. The current energy plan was adopted in 2014. Hence, it was adopted prior to UN's Agenda 2030 with the global sustainable development goals, as well as before the Paris Agreement within the UN Convention on climate change, from 2015.

Presence of any protected natural areas (if existing, specify the type of protected area and restrictions, percentage of protected area, surface area and any other suitable information)

5.8 per cent of the total land surface of Gotland is protected, of which the major national park, the separate island Gotska Sandoen counts for 0.3 per cent, nature reserves 4.9 per cent, nature conservation area 0.6 per cent, and biotope conservation area 0.1 per cent. Another way to put it is to say that 13 per cent of Gotland's forests are protected.

Any environmental quality certifications and/or quality labels recognised by the local government (if existing, specify the type)

The local government has built a new sport and event arena and a 2ndary school building in Visby, according to Sweden Green building council's Gold Standard.

The waste water sludge from the utility in Visby has a REVAQ-certificate for waste water sludge, showing the upstream work to avoid hazardous metals and substances.

When it comes to public procurement, documentation of certificate according to ISO 14001 or ISO 9001 meet the demands of quality and or environmental work or anything that equals the formal certifications. Hence, we demand a set of environmental requirements, but cannot demand them to have a specific certification.

Significant projects in the "Sustainable Tourism" sector (if existing, briefly describe)

Several projects have been initiated, among others within a frame work program entitled SUSTAINABLE GOTLAND and within the ERDF. Some examples:

- **In Tjelvar's foot path** – a project on sustainable and experience-based culture and scenery tourism in Gotland's countryside, a project that builds on a research project carried out by Uppsala University focusing on the development of the cultural landscape at ancient abandoned sites in Gotland's countryside.
Cultural heritage incubator - The project aims to establish a national heritage incubator on Gotland, which will provide companies in the cultural heritage area with support for innovation and increased entrepreneurship. Furthermore, the project will strengthen collaboration between public and private cultural heritage actors as well as the academy.



SECTION I: ENERGY

QUESTION 1: Is your island connected to the national system for the transmission of energy or to the gas national network?

Yes, through cables Gotland is connected to the Regional system operator (which is Vattenfall), but not to the transmission system operator. In order to allow for export of surplus energy from the island to the mainland (Gotland generates occasionally a surplus of fossil free electricity from wind power plants) there is need for more investments.
There are no gas pipe lines to Gotland.

QUESTION 2: Are there economic aids for the transportation of gas and/or oil to the island for the local production of electric energy?

No

QUESTION 3: Number, type and capacity of centralised and distributed energy generation plants on the island (thermal power stations, co-generation plants, district heating, PV, wind, etc.). Provide number, type and power for each type (for PV just provide an idea of the total cumulated capacity and the % of contribution).

Over 600 PVs installed and connected to the grid, but the share of electricity production from them is rather limited with 3-5 MWh per annum (that is 3-5 of 900!). While wind power supplies around 50 per cent. There are no CHP.

The presence of a cement plant on the island, makes Gotland a unique case among islands. The local climate objectives must be viewed separately from the industrial impact. The reason is that the cement plant is a multinational industry for export to a huge number of countries. And its emissions are counted within the ETS system, and not the national one. Nevertheless, the

E plant is part of the local energy system as it delivers excess heat to the district heating system in the village of Slite.

It also uses about 30 per cent of the electricity usage on the island. A prerequisite for the wind power development on Gotland as the factory always causes a load on the electricity system.

Other local district heating systems, there are approximately 35 MW installed capacity for heat production in the district system. Besides that, there are a number of small district heating system with less than 2 MW installed altogether.

QUESTION 4: Are there incentives to district heating systems in the islands?

There is district heating in Visby and in the villages Hemse, Klintehamn and Slite, and biofuel is predominantly used in the district heating system. Gotland is just like the rest of Sweden well endowed with district heating. A discussion is on regarding new dwellings whether to promote district heating or alternatives. The reason is that in the future, we would like to change so as to allow for plus energy buildings, passive housing. At present though, district heating is a first hand choice.

QUESTION 5: According to your knowledge, will the integrated National Energy and Climate Plans (NECPs) of your country directly and/or indirectly contribute to create the necessary conditions to





improve the production of electricity from renewable resources in your island? If so, could you explain how?

We would like to have a greatly enhanced mutual exchange of energy from fossil free sources with the mainland. Gotland could, if an off shore wind power park gets developed south of the island, contribute to the mainland's needs of fossil free energy.
It is the presence of the Cement plant that is a driver for enhanced capacity.

QUESTION 6: Did your regional/local government set a specific strategy to enhance the production of electricity from renewable sources?

Yes, 100 per cent from 2020, but we will not quite manage to reach it.

QUESTION 7: Could you tell us what are the targets/objectives of your strategy for the future? Please answer the question by using one or more of the following indicators: % of renewables of annual energy production; % reduction in CO2 emissions; % reduction in energy consumption (compared to the reference year).

Source	Today	TARGET 2030	TARGET 2050
Electric Energy from RES, locally produced	50 % on total	100 % on total	100 % on total
Thermal Energy from RES in ESR-sector	% on total	% on total	100 % on total
Reduction in energy related CO ₂ emissions (if available)	45 % in ESR sector	63 % in ESR sector	100 %
Reduction in energy consumption	%		

Our CoM 2020 target for 45 % reduction from 1990, regarding the CO₂-emissions from energy activities on Gotland - **except for ETS- industries** – have already been achieved. According to the regionalized version of the national IPCC emission-report, the **energy related** annual climate emissions in the society of Gotland, excl. the industrial emissions from cement and lime produced for export in multinational ETS- industries located on Gotland, were reduced from 681 kton in 1990 to 486 kton CO₂ ekv in 2017.

QUESTION 8: Did your strategy cover and/or contribute to the achievement of the objectives of the Sustainable Energy Action Plan (SEAP) existing in your islands? If Yes, could you explain how? Could you attach any available official document providing information on existing links?

Please see https://www.covenantofmayors.eu/about/covenant-community/signatories/action-plan.html?scity_id=12519

QUESTION 9: Did your government start to work on the 2021-2027 ERDF Operational Programme? If so, is production of electricity through renewable sources a policy objective of your ERDF OP? Could you provide us with qualitative and quantitative information on how your government is planning to use ERDF budget to enhance production of electricity through renewable sources?

No, too early to say.

QUESTION 10: Are there any incentives in your island supporting the production of electricity from renewable sources? If so, could you provide us with qualitative and quantitative information about them? For instance, please: explain what their legal basis is, explain who are the eligible actors/bodies, provide us with information about the positive impacts of some of them.

LIST THE TYPE OF INCENTIVE EXISTING IN YOUR ISLAND [tariff, tax credits and deductibles, capital contribution to the investment, public insurance of the investments, contribution to the cost of interests, issuing of certificates representative of production from renewable sources]:





Biofuel for heating. One of the most important stakeholders are the local energy utility GEAB Värme, which operate district heating in Visby and in the villages Hemse, Klintehamn and Slite. The transition from oil to biofuel in the district heating has proven to give better air quality and less transports in the medieval inner city of Visby, a UNESCO world heritage site. Other smaller bio energy companies provide small scale community heating, produces woodchips or firewood for sale from forest residues or market and install bio fuelled heating systems. At the sawmill located in village Klintehamn there is also a small enterprise that produce wood pellet from saw mill residues and thereby covers about 1/3 of the annual consumption on Gotland of wood pellets. Those companies make it possible for other enterprises and households on Gotland to make sustainable choices of heating systems. Not at least for Region Gotland; with around 500 000 sqm. built area to heat, the transition from oil heating has reduced CO₂-emissions by 90 % or 8 kton per year since 1995 in the Region's own operations.

Renewable power production. Wind power from local production, around 180 MW capacity installed on commercial conditions, meets on annual base around 50 % of the electricity consumption on Gotland. Wind power plays a lead part in the regional plans for Gotland to have a sustainable energy supply. PV:s for local power production is a fast growing production branch, but from a small scale, around 5 MW installed capacity, mainly as so called micro-installations. The present grid situation has been an obstacle for larger plants.

Fossil free transports. A few projects on Gotland have investigated the possibility of industrial production of biofuel on the island. Production of liquid biofuel in a scale suitable for Gotland has not become successful, but biogas for transport fuel and heat production started in 2010 on commercial basis and has had a positive development since then. Although slower than desired in the biogas strategy adopted by the region, the capacity is increased a lot since 2010 and a demand for biogas as industrial fuel is at present the strongest force for further biogas development. Next step seems to be a biogas plant in Klintehamn in cooperation between the region's waste water utility and a local food business.

E-vehicles For the introduction of electrical vehicles on Gotland a number of projects have had an important role, f ex "Gotland elbilslandet" <http://www.elbilslandet.se/> which introduced e-vehicles for rental in the tourism sector, and the still ongoing "Elbil Gotland", <http://elbilgotland.se/> and also "Fossilfri framfart" run by the local enterprise organisation "Tillväxt Gotland". Gotland is today relatively well provided with infrastructure for public available charging of e-vehicles. Around 50 charging stations are installed all over the island. Fast charging stations are installed at Visby airport and in a large shopping area in Visby together with a handful of semi fast charging stations in Visby. Fast charging stations also are available central i Fårösund the most northern village and in Hemse, the largest village on the southern part of the island.

Further need of infrastructure for fossil free transports and improved public transports A public authority-led project aiming to identify further needs for infrastructure for charging of e-vehicles and transport- biofuel is led by the county administration. The national road administration has a plan for further development of bike road along country roads on Gotland, Region Gotland has responsibility for streets and roads within the villages an in Visby and the development of continuously improved bike-road infrastructure. New procurements for improved public transports are underway.





LNG ferry One small but important step for less climate impact from the ferry transport to and from Gotland is the first LNG ferry, yet in regular service to and from Gotland, in line with the latest national procurement of regular ferry services between Gotland and the mainland. A 2nd ferry will arrive in January 2020.

LNG ferry bunkers LNG either via ship to ship in Visby or from pier to ship at the mainland, but also open a possibility for a small proportion of compressed biogas, that can be locally produced, to be mixed into the LNG-fuel.

Biofuel for aviation One, soon two, of the regular aviation companies provides biofuel tickets for an additional cost, using a certain amount of biofuel on certain flights in proportion to how much biofuel the flight costumers have bought.

-structure.

The development on Gotland depends upon secure, reliable and sustainable conditions for long term planning – which according to power transmission has been challenged by the, in 2017, inhibited plans for a new third sea cable between Gotland and the mainland. For now, activities focused on capacity and reliability improvements on the existing sea cables are underway.

PROVIDE US WITH INFORMATION ABOUT THE POSITIVE IMPACTS OF SOME OF THEM (e.g. costs of electricity are saved or reimbursed, etc.)

See above

QUESTION 11: Please, give some info about energy efficiency strategy and/or energy efficiency projects already carried out or planned (i.e. led, building efficiency, others)

The public limited housing company, and also a minor extent in the premises of Region Gotland, we have reduced energy consumption

We have managed to reduce it with 40 per cent since 1998. And the trend is downward for consecutive years in between and beyond. In the same time, we have increased from 72 per cent renewable in 1998, to over 99 per cent in 2018.

QUESTION 12: Any other info referring to energy and energy efficiency, if any (i.e. projects on smart grid, storage, others ...)

By the end of 2018 the national public limited Swedish energy company “Vattenfall”, presented a pre-feasibility study on a possible storage solution, in order to reduce the number of short switches of direction on the mainland and hereby also accomplish increased grid capacity on Gotland for further installation of power production units connected to the grid, up to a certain limit.





SECTION II: ELECTRICAL MOBILITY

QUESTION 13: Is there a public transportation service in your island?			
Yes			
QUESTION 14: Are the public vehicles fuelled by fossil sources or by electricity?			
The public city bus transportation vehicles run on biogas, while the buses servicing the countryside run on fossil fuel. From 2020, 70 per cent of all vehicles in the public transportation fleet will run on biogas.			
QUESTION 15: According to your knowledge, will the integrated National Energy and Climate Plans (NECPs) of your country directly and/or indirectly contribute to the development of electrical mobility solutions in your island? If so, could you explain how?			
We intend to undertake a feasibility study on e-aviation, that is e-aviation servicing our airport connecting it to Stockholm Arlanda airport. We also intend to make a feasibility study for an e-road between the airport and the city of Visby, permitting e-busses running on electrical power to and from the airport.			
QUESTION 16: Did your regional/local government set a specific strategy to enhance electrical mobility solutions?			
No, but there are on going cooperations with the County Administrative Board of Gotland for sustainable mobility on a strategy for improved for charging poles and other infrastructure including biofuel. A specific project to be that is initiated by the National Road Administration is the so called e-road with inductive charging that is to be demonstrated from the summer of 2020.			
QUESTION 17: Could you tell us what are the targets/objectives of your strategy for next years for electrical mobility? Please answer to the question also using one of more of the following indicators:			
Source	Today	TARGET 2030	TARGET 2050
Electric vehicles	% on total	% on total	% on total
Charging points	number	number	number
No targets.			
QUESTION 18: Is electrical mobility a policy objective of your ERDF OP? Could you provide us with qualitative and quantitative information on how your government is planning to use ERDF envelop to enhance electrical mobility in your island?			
Se above about e-vehicle project			
QUESTION 19: Are there incentives to the purchase of electric car? Are these incentives granted to the purchaser or to the seller of electric cars? Are these incentives among those for electric efficiency?			
There is a national system based on bonus-malus principle, that is, fossil fuel vehicles pay higher taxes than e-car, e-hybrids, biogas vehicles and so forth. Then there is national incentive scheme for supporting e-infrastructure and for biogas.			
QUESTION 20: Is there a specific tariff for the e- chargers? In the affirmative case are all the costs allocated as Euros per kWh or are there fixed amounts in the bill of electricity of e -chargers?			
There are a number of free chargers sponsored by the tourism sector. Otherwise the charging is decided by the supplier, for instance GEAB or Vattenfall.			
QUESTION 21: Is the tariff for the transportation by ship of e-cars to your island reduced in respect of other cars?			



No, rather one must inform the shipping company that you have an e-car and biogas. A few years ago, there was an opportunity to charge your e-vehicle during the passage. That is no longer so. Due to security reasons.

QUESTION 22: Is there a commitment for the Municipality, the local police or other public bodies to use e-cars?

No, we have a biogas commitment.

QUESTION 23: are there electric boats in your island? Do you know any policy in place for the development of electric boats?

No public service with electric boats. However, there is a ferry service connecting the island of Fårö with Gotland (approximately 15 minutes crossing time). There is a possibility that the ferry service could be electrified. But that is not in the hands of the municipality.

QUESTION 23: are there specific policies to implement the electric mobility using e-bikes and e-scooters end/or bike roots?

There has been a national scheme in 2018 that allowed for a 25 per cent discount to anyone who bought an e-bicycle. In 2019, the subvention was abolished.



SECTION III: WATER EXPLOITATION/SUPPLY

QUESTION 24: Is your island self-sufficient in terms of access to and/or supply of water for domestic use? What is the regional and/or local body in charge of water distribution?

Yes we are. And the municipality is in charge of water supply, but many single unit housings have access to their own water supply.

QUESTION 25: Could you provide more details on how your island has access to water for domestic use? For instance:

- Do you already have a desalination plants on the island or other local sources? If yes, please provide details in terms of technology and yearly production and % of total water requirement of the island
- If not, has your island already purchased or is there a programme to purchase desalination plants? If so, can desalination plants be installed on a free market basis?
- If not, who are the higher costs due to the transportation by ship of the water allocated to?

There are 2 desalination plants on the island, a smaller one on the east coast and a larger one inaugurated this summer on the west coast of the island. At present, not possible to account for share of total amount of water. The one on the east coast serves a limited area, to approximately 2 000 inhabitants. The utility is partly served by solar cells. It is the membrane technology that is used, 20 cubic metre per hour.

The other facility will be able to produce up to 7 200 cubic metre per day, and the technology used is reversed osmosis.

QUESTION 26: According to your legislation, is water a public or private resource?

Both, but the municipal level is charged with supplying water in case of emergency for households.

QUESTION 27: Is the operator of the water system paid by the customers of the islands or by the government?

The customer pays according to the law. But sometimes the infrastructure investments have to be made by the local government, and then it is charged for a number of years by the local water community collective.

QUESTION 28: Is the water tariff cost-reflective?

Yes, but see above.

QUESTION 29: Are there incentives for the maximisation of the use of local water and water recycle?

Yes, the municipality and the technical department are running water saving campaigns every summer. They aim at raising public awareness the incentives for drinking water (which is also used for showers and WCs).

The water that is distributed as tap water is of good drinking quality. Still, some people buy bottled water but mostly for fancy dinners and not for daily use.

QUESTION 30: Please provide some information on how water is distributed around the island (i.e. underground network, others ...)? If by underground network, please provide an indication of the amount of losses during the transportation (%)



By underground network pipes. The loss during transportation may be up to 20 per cent. But ongoing work to realign the pipes and reduce the losses. But in the choice of risking penetration of external water into the pipes and the exit of drinking water from the pipes, the latter is preferred.

QUESTION 31: Are there water treatment plants in the island? if yes, please provide some technical information (i.e. capacity, type of technology, % of depuration on total needs)

Yes there are. Mostly ground water which does not need all that much of treatment before distribution. And we also have fresh water from two lakes, and there they treat with some chemicals. Especially in the case of one of the lakes.

QUESTION 32: Any other information regarding water and water treatment if any

The southern Gotland water supply test bed aims at retain water and especially rain water long enough for filtration into the ground water instead of drainage into the sea. The test bed is funded by Region Gotland, Vinnova (national agency for innovation) and Horizon 2020.



SECTION IV: WASTE MANAGEMENT

QUESTION 33: Is there a strategy on waste management in your island? Could you list the main targets/objectives of the strategy?

There is currently a public consultation on a draft for a new waste plan for Gotland going on, from 1 October till 30 November 2019. A municipal waste plan is mandatory according to the Swedish national environmental act, and in line with EU legislation.

The final draft of the new waste management plan is expected to be adopted in 2020 and to entry into force from 1 July 2020. The main strategic strands aim at moving upwards in the waste value chain, focus on extracting the hazardous waste out of the recycling system, facilitation of sorting of waste at the source, Region Gotland will act as a precursor, and that Region Gotland shall engage in cooperation within relevant networks.

The main overall objectives as stated in the draft are:

1. In Gotland, less waste is generated
2. By 2025, it is easier for Gotland's residents and visitors to reuse used goods. Reuse of construction and demolition waste has increased.
3. In 2025, waste and materials that cannot be reused will be recycled. The proportion of sorted waste has increased.
4. Waste resources that are still generated will be utilized on Gotland. In 2025, recycling of energy and nutrition from waste has increased.
5. Minimized negative environmental impact from closed and active landfills
6. In 2030, Gotland's beaches, nature and street areas are garbage-free

Thus signalling that the waste material that is still generated will be regarded as a resource.

NB! Sending organic or combustible waste to landfill is prohibited according the Swedish national environmental act.

QUESTION 34: Who is in charge of the waste management: a private body or the government?

The legal responsibility lies with the municipality, while the actual services can be provided by other stakeholders. That is, the municipal level is responsible for waste emanating from households and municipal activities. Other responsibilities lie with producers of packaging, wheels, cars. Electrical and electronic devices, batteries etc., as well as industrial waste, construction and demolition waste.

Household waste and combustible waste are collected separately. Besides that, recyclables are collected separately too.

QUESTION 35: In what % is waste disposed locally? How is the local disposal carried out: landfills, incineration, reuse? Is there an implementation strategy for the future?

NB! Landfill and deposit are almost not in use. There are on the other hand a number of closed landfills and deposits the are in need of monitoring, and we do have specific monitoring schemes for that.

The figures below refer to household waste that in 2017 amounted to 68 000 ton, whereof 1 800 material recycling, 49 000 biological treatment (for biogas approximately 4 GWhs produced annually), 16 000 to incineration, and 1 200 disposal. There are a number of suggested targets, but not presented according to the table below. Hence, no targets for 2030 or 2050 are presented in the table.



Source	Today (2017)	TARGET 2030	TARGET 2050
Local Disposal	1.7 % on total	% on total	% on total
Local treatment	0.4 % on total	% on total	% on total
Recycling	97.9 % on total	% on total	% on total

As for waste from municipal activities consists of municipal waste in e.g. preschools, schools, elderly care and municipal offices as well as municipal operational waste from eg. sewage treatment plant, property management and street management. The Revaq certified sludge from the Visby facility is digested and centrifuged before being returned to agricultural land on Gotland or the mainland.

QUESTION 36: Is there a present or future commitment not to transport the waste inland or not to use landfills to dispose wastes? Is there a penalty or a tariff-mechanism to penalise the managers of the waste that use landfills or transports waste inland and do not plan investments to manage waste locally in the island?

There are monitoring procedures for former landfill facilities. They are covered with clay. And the drain water is taken care of.

Currently, there is one remaining active landfill with non-hazardous landfill cells waste and stable non-reactive hazardous waste, such as asbestos. An extension of the landfill within the existing permit has been decided and will be completed by 2020.

Food and residual waste and other waste are delivered to the Gotland Region waste facility in Roma. The food waste is digested at Brogas and becomes biogas and bio manure. Out of the combustible waste it is made a fuel mix that is extracted by the company Cementa in Slite. There is also the facility in Visby for transshipment and intermediate storage of hazardous waste for onward transport to the mainland.

QUESTION 37: Are there incentives for investments for plants for the reuse and recycle of waste or the energy-use of waste?

If so, what kind of incentives: cash contribution to investments, tax credits, premium for the energy produced by waste, premium for any ton of waste disposed locally, commitment to dispose at least a % of the waste locally, other?

Budgeted and planned investments in waste operations in 2019-2023 are related to Waste Landfill, Recycling Centres, Sludge Handling and Collection. There are no general investment schemes from national level, but there are possibilities to apply for project funding from national agencies in order to stimulate innovation.

QUESTION 38: What has been the most efficient instrument to promote the local disposal of waste?

The chain from collecting efficiently waste and that there is a recipient that can make use of the waste as a resource, for example the manufacturing of biogas locally. That is a success. Another issue is communication, among households. Households are very good at sorting their waste, despite the fact In the small fraction of waste that is shipped to the mainland for incineration in special incineration plants, less than 30 per cent is found out to be other material such as bio waste and packaging (that should have been sorted not for incineration).

