EID Strategy Document of Helsingborg Hospital Area

Energy smart hospital for improved health care and reduced carbon footprint

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1. Introduction

The purpose with this strategy document is to steer the development of a cooperative planning process through establishing a common understanding between stakeholders of the main goals and objectives for the future development of an area. The strategy should illustrate a clear path from the area's present state and conditions to a shared vision of the future, where the strategy provides answers to how you together with the local stakeholders are going to achieve the common goals.

This strategy document refers to the Helsingborg Hospital Area in Sweden, which is a part of a EU project called AREA 21, part-financed by the European Union (European Regional Development Fund and European Neighborhood Instrument) as part of the Interreg Baltic Sea Region Program 2014-2020, Priority 2 "Natural resources", Specific objective 2.3 "Energy efficiency". The duration of the project is between October 2017 and September 2020 and the project budget is 2.55 M EUR.

2. Background

AREA 21 is a three-year transnational cooperation project that is jointly carried out by 10 partner organizations from the Baltic Sea Region. The project seeks to model energy efficient urban areas of the future, adopting collaborative stakeholder engagement processes in the strategic planning and implementation of energy solutions. Specifically, AREA 21 brings together public authorities, energy providers, property owners and citizens to find and apply the best solutions for saving energy to decrease CO2 emissions. To achieve this, the project enables local authorities from cities around the Baltic Sea Region to run cooperative planning processes within Energy Improvement Districts. The process seeks to help authorities to work together across different sectors, to understand citizens' motives and barriers, and to activate relevant players in urban neighborhoods.

AREA 21 brings together ten partners from the Baltic Sea countries Estonia, Germany, Finland, Poland, Russia and Sweden. The partners represent local and regional authorities, energy companies and research institutes, with extensive experience in the fields of energy planning, citizen participation and strategy development and close links to the target groups of the project. This guarantees access to relevant information and direct communication during the implementation of local activities. The project partnership is supported by a network of associated organizations, including city administrations; energy companies and housing organizations from the partner cities; national ministries with a focus on energy and environment; international organizations and networks such as EUROCITIES and the Union of the Baltic Cities.

The partners of the project are the following:

- HafenCity University Hamburg
- Tampere University of Applied Sciences
- Peter the Great St. Petersburg Polytechnic University
- Kohtla-Järve Town Government
- Tartu Regional Energy Agency
- City of Tampere
- Öresundskraft
- Region Skåne
- Free and Hanseatic City of Hamburg, District of Wandsbek
- City of Lublin

AREA 21 aims to provide local authorities, energy agencies and other institutions responsible for energy planning with the know-how and strategic tools on how to plan and implement new solutions for energy efficiency in urban districts. To achieve this, the project develops and tests new formats of cooperation between public authorities, energy providers, public property owners and citizens. Together across seven locations in the Baltic Sea Region, this project will facilitate public organizations and private actors to work together in elaborating holistic strategies and implementing context-specific measures in Energy Improvement Districts. Furthermore, the project also promotes the use of smart technologies to facilitate the energy planning process, to test new forms of public participation, to raise awareness about the individual energy consumption and to promote behavior change.

The Energy Improvement District (EID) concept is an innovative system approach for low emission urban districts. It promotes a paradigm change from a strong public sector to a more cooperative model of development that involves also citizens and businesses. The concept facilitates the pooling of competences, ideas and joint activities between public and private stakeholders for energy efficiency planning and implementation. By promoting network and consensus-building activities, it fosters identification of tailor-made solutions, piloting of new projects and establishment of both informal cooperation and formalized partnerships. The newly developed concept addresses the specific challenges and needs of European cities. It will be implemented as a framework within selected areas of partner cities and will offer the opportunity to involve public property owners and citizens as building owners and users in the initiation of energy efficiency measures.

AREA 21 implements the EID concept in the seven pilot areas in the Baltic Sea Region, where the Helsingborg Hospital Area (HHA) is the Swedish focus area. The hospital area is one of the biggest energy consumers in the city of Helsingborg and therefore it has a major impact on both the local as well as regional energy system. In a future society with more intermittent energy production, and where the energy power rather than energy itself will be of interest, a big energy consumer as the hospital area has a vital role to play. In harsh times of high energy demand and low production quantities, the hospital area may support the city by reducing its own energy usage. This means that the hospital will act as a flexible energy power balancer in the regional energy system by lowering its own energy usage when needed.

Hence, a lot of energy efficiency work needs to be performed at the Helsingborg Hospital Area, which demands both a reduction of the overall energy usage as well as an optimization of the actual energy power usage at the hospital departments. To do so in an innovative and efficient way, the EID concept has been implemented in the area. This process was initiated by the identification of common overarching energy and climate goals affecting energy stakeholders within the hospital area. In the continuing formalization of the work, the physical boundaries of the EID were set, as well as the energy efficiency potentials being further analyzed. The results of this work can be seen later on in this strategy document.

The collaborative work was continued by identifying all the key stakeholders to a series of workshops. The aim of the workshops is to foster engagement of local stakeholders in cooperative energy planning at a district level and to establish long lasting cooperation in the EID. This means also to enable and initiate a cooperation, dialog and collaborative work between the stakeholders as well as develop jointly defined goals, strategy and action plan for the EID. The idea is that the formed cooperation from the workshops in the EID area should continue also beyond the end of the Area 21 project.

The key stakeholders in the Helsingborg Hospital EID Area which were invited to the workshops are:

- Department of Real Estate (real estate development and technical management), Region of Skåne
- Building maintenance and project management, Region of Skåne
- Procurement department, Region of Skåne
- Energy Utility business department
- Energy Utility development department
- Regional service (supply of maintenance and logistics), Region of Skåne
- Healthcare departments, Region of Skåne
- Healthcare leaderboard, Region of Skåne

The last phase in the EID process is the actual execution of the developed action plan and a follow-up of its financial and technical outcome. In addition, it is of great importance to communicate the lessons learnt from implementation of both each measure of the action plan, but also from the whole process of implementing the EID concept in the area.

3. Local Context

3.1 Description of Helsingborg Hospital Area

The EID area in Sweden is called Helsingborg Hospital Area (HHA) and is located in the central part of Helsingborg; the second largest city with 150,000 inhabitants situated in the region of Skåne. The hospital is easily accessible by public transport, is open 24 hours providing emergency services, and is the largest energy consumer in Helsingborg city. Currently, the hospital is undergoing reconstruction, which is anticipated to be complete by 2027. The main building will be refurbished, and a new building will be constructed. Moreover, the external environment surrounding the hospital will be landscaped and refurbished. Here follows some short fact about HHA:

- Location: Helsingborg, Region Skåne, SE
- Function: Emergency hospital, 24/7
- Area: Building footprint: 0.025 km^2; overall facility area: 0.14 km^2
- Buildings: Hospital building (constructed 1975); 6 detached houses, garage
- Staff: 3,000 employees
- Beds: 350
- Visitors: 362,000 per year
- Ownership: Public, owned by Region Skåne
- Energy use: 235 kWh/ m^2 per year

All buildings within the hospital area are owned by Region Skåne, except for a car park which is a financial leasing. Region Skåne does however supply all the maintenance and operations including energy and utilities to the car park. Only smaller areas within the hospital facilities are leased to private businesses and operations such as kiosks and cafés. The hospital area is supplied with the following main utilities:

- electricity (16 GWh) by Bixia AB, distributed in the local grid by Öresundskraft AB,
- district heating (18 GWh) distributed by Öresundskraft AB,
- district cooling (3-4 GWh) distributed by Öresundskraft AB,
- potable water (90 000 m3) distributed by NSVA.

The new hospital area in Helsingborg will be completed in 2027 and the total budget is 6 100 M SEK. The project is funded by tax money. By 2027 a new building (building 23) on 46 000 m^2 will be built, and a total area of 74 000 m2 in the old main hospital building (building 02) will be refurbished. About 50 000 m2 of the external environment will also be refurbished/landscaped.

The existing main building 02, will be refurbished and new light and bright facilities will be made. Wards will be equipped with flexible rooms, single patient rooms as far as possible for hospitalized patients, a new surgery department, a refurbished radiology department and a state-of-the-art neonatal department with the capacity to take care of mother and child together simultaneously.

Facilities for the adult psychiatry will also be created. The new building under construction will include psychiatry, somatic wards, a new production kitchen and facilities for education. This new building will also make facilities available in the main building 02 making it possible to refurbish these to meet future needs. The new hospital building is designed by using high environmental standards and will be incorporated in the adjacent green areas.

The refurbishment of the hospital area will also include a more distinct main path through the outdoor area of the hospital, connecting and integrating the surrounding city areas. In addition, more coherent green area, available green roofs and an outdoor environment with spaces and “rooms” for recreation and relaxation are planned. The conditions for public transports, pedestrians and bikes will be enhanced. The new hospital will be flexible giving the businesses and operations the opportunity to grow and change over time.

3.2 Policies of climate, energy and spatial planning

On a national level Sweden has implemented The Swedish Climate Law 2017:720, which includes guidelines on how the country should be ruled in order to cope with the environmental problems. One example is the climate goal with a reduction of 85% GHG discharge by the year 2045 in comparison to 1990-levels. Furthermore, there are 16 environmental quality goals in Sweden, which were agreed upon in November 2005 by the Parliament. The goals, which are also known as "The Generation Goals", state that our environmental problems should be coped with now and not laid on future generations.

The national climate and environmental goals are also interpreted at a local level in the City of Helsingborg in the Climate and Energy plan 2018 – 2024. This plan has put the local goals at a higher level in comparison to the national ones, for instance the goal of climate neutrality is set to 2035. Another goal referring to the carbon dioxide emissions is the one regarding ecological footprint, stating that the City of Helsingborg by 2045 should reduce the ecological footprint into a sustainable level of 1,7 global ha in comparison todays value of 5,2 global ha.

Moreover, the Climate and Energy plan also consist of goals targeting energy. For example, it states that by 2035 10% of the energy demand should originate from local solar power, and the primary energy usage for electricity and heating should be decreased by 30% compared to 2016. Additionally, by 2024 there should only be renewable and/or recycled energy in the district heating supply.

While the above-mentioned energy and climate goals are going to be implemented, the city is growing. In 2017, a policy describing and determining the future development of the city was agreed upon, this one called the *Vision Helsingborg 2035.* Since Helsingborg is surrounded by productive agriculture areas, the urbanization is only allowed through more dense settlement inside the existing city area. By 2035 there should be 12 750 new built homes, with 100-140 homes per ha. Furthermore, no new parking areas are permitted to be built. This goes in line with the set goal towards 2025, stating that the transport by bicycling and walking as well as public transport should increase from 45% to 71%.

2017, a Letter of Intent between Region Skåne and its energy suppliers was established, including promises that all energy deliveries should be 100 % fossil fuel free by 2020. Since then there are, in line with these statements, regular strategic meetings between Region Skåne and its energy suppliers, where common goals and strategies are discussed and agreed upon. In other words, the cooperation formats changed from a customer-supplier-relationship into a partnership.

In 2018 a new part of this cooperation was realized with a new Energy Strategy towards 2030, including the development of energy smart hospitals. In order to achieve the high set goals in this strategy, Region Skåne together with the energy suppliers needed to expand their existing strategic cooperation to include also tactical and operational levels. Regarding the partnership between Region Skåne and Öresundskraft, this work was initiated during the beginning of 2019, including for example workshop sessions with local key stakeholders initiated by the EID process of Area 21.

3.3 Energy efficiency potentials

The hospital area is one of the biggest energy consumers in the city of Helsingborg. Therefore, it has a major impact on both the local as well as regional energy system. In a future society with more intermittent energy production, the energy power rather than energy itself will be of interest. This since the sun may not shine and the wind may not blow at the same time as the demand of energy is peaking. Based on this fact, a big energy consumer as the hospital area has a vital role to play in the future energy system. In harsh times of high energy demand and low production quantities, the hospital area may support the city by reducing its own energy usage. This means that the hospital will act as a flexible energy power balancer in the regional energy system. Here follows a couple of examples of energy efficient measures at the hospital:

Since there are a lot of energy heavy machinery and equipment in a hospital, a lot of electricity is used. The hospital environment also demands a lot of ventilation. In both these areas, there are residual heat to be reused, both generated by the machinery inside the building but also as warm air being ventilated out from the building. The problem today is that there are not enough installed techniques for capturing and distributing this residual heat, and therefore all the residual heat cannot be reused. This issue may however be solved, for example by putting heat exchangers and heat pumps at the ventilation outputs, so the heat can be captured. Furthermore, by putting in some new flow exchangers in the existing heat infrastructure inside the hospital area, the residual heat can be distributed to other parts inside the building or to other buildings. As a result of this, the total heat energy distribution to the area will be reduced.

As a heat energy storage, the existing building structure can be used to store more heat than needed at the time. The existing heating system at the hospital area is based on a circulation of water, which feeds the surrounding areas with heat. Since heat flows rather slowly between physical medias, the circulating water can be boosted with more heat for it to be used a couple of hours later. This storage mechanism can be used today without the requirement of any greater investments or refurbishments, it just needs to be organized and optimized in cooperation with the energy supplier. As a result of this, the hospital area will be able to dodge energy power peaks, and therefore be more energy effective.

The electrical energy usage of the hospital is rather heavy. The base consumption is 1,5 MW, with a daily fluctuation up to 2,5 MW. Most probably there are some inefficient energy consumption in the bottom of these 1,5 MW, for example machines not put on energy saving mode and so on. By conduction energy audits and mapping the energy performance of machinery and equipment, the base consumption of the hospital area can be reduced. Furthermore, this energy usage can be covered by local solar power production. The daily usage of electricity can be managed by electric energy storage, for example with batteries. By using this, energy can be bought when economically and environmentally beneficial, and used later when it is required. Due to this, similar to the heat storage solution, the power demand of electricity can be flexible and therefore provide balance in the total power output of the city of Helsingborg.

In the Area 21 project, a new ICT-tool will be developed and tested in the hospital area to quantify the impact of an energy efficiency measure from both an economic and environmental perspective. As the tool is based on frequent metering data, employees will transparently see their energy use, to trigger their decision-making towards using less energy. The tool may therefore contribute to reduce the total energy usage in the area and thus integrating the hospital as part of the city energy network.

3.4 Key challenges to energy efficiency

Moreover, there are some challenges with the above presented energy efficiency potentials. To begin with, data is required. This means data of energy usage, energy production, energy costs, weather data, hospital operation data and so on. There are challenges to be able to measure all these areas and not least to gather all the measured data. The data then needs to be analyzed and clearly visualized to be able to create a willingness to act on behalf on the provided results. This includes visualizing energy usage for each of the hospital departments, but also providing relevant decision basis for the strategic management departments to take action on.

Another challenge is to create economic incentives to work energy efficient. For example, the existing rental model between the hospital property owner and the tenants of the hospital (the different departments) has a fixed energy cost. In other words, there are no clear economic incentives for the departments to reduce their energy usage. If the renting model was instead based on the actual energy usage of each department, as well as rewarding the use of possible residual energy, there would be an incentive to reduce the total energy usage of the hospital. At the same time, the energy contracts towards the energy suppliers also need to be developed. The existing models do not encourage energy efficient usage promoting reduced power output such as described above, which is required in order to provide incentives for energy efficient investment to the property owners.

Finally, there is a regulation challenge regarding local solar production. In Sweden there are laws stating that properties with power above 255 kW are heavily taxed. This taxation results in non-beneficial investment budgets of solar cells. Since the hospital area, due to the single ownership of Region Skåne, is seen as one property, the development of local solar production is inhibited. This means that the potential of covering all the hospital roofs with solar cells and there through maximize the local solar production is, with the existing Swedish taxation framework, unexploited.

4. Vision and Goals to achieve it

As earlier mentioned, a workshop process has been performed in the Helsingborg Hospital Area as a part of implementing the EID concept. As a first step for the stakeholders to join up in discussion and start collaborating, a vision of the area was elaborated and later decided on. It is stated as follows:

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It is important to point out the opportunity, which is generated from energy efficiency measures, where money can be saved and later re-invested in healthcare. Since the hospital is owned and operated by the public sector, and therefore not allowed to make economical profit, the saved money can be trusted to be put back into the healthcare operations again.

To achieve the vision of the hospital being an energy smart hospital, an overhead goal of reduced energy usage was also ratified during the EID workshop process. As the hospital area is being rebuild and expanded, the energy savings are also expressed per square meter in the goal. This to be able to measure progress towards the vision regardless of when during the building process. The goal is stated as follows:

- ✓ **Achieve an annual energy saving of more than 20% by 2030 with a parallel 30% increase of the facility area, resulting in a reduction of energy usage from 235 kWh/m² to 177 kWh/m² per year.**

By lowering energy usage, losses and recycling residues, the hospital will reduce its carbon footprint and operating costs, providing more funds for health care investment. Surplus heat that is not used within the hospital area, will be sold to Öresundskraft and redistributed in the city energy supply network.

An upgrade of the hospital area as an Energy Improvement District will also contribute to the fulfilment of the Region Skåne's 2030 Energy Strategy and of the Swedish national goal for climate neutrality by 2045. The project that is built on an established long-term cooperation between Region Skåne and Öresundskraft, will serve as an exemplary model for future collaboratively projects related to climate issues.

5. SWOT Analysis

The local condition analysis in the HHA also includes a SWOT analysis to identify strengths, weaknesses, opportunities and threats for integrated energy planning in the EID area. Here, the characteristics that support the initiation of a cooperative energy planning process and are disadvantageous in the initiation of a cooperative energy planning process where identified. Additionally, characteristics such as favorable conditions in the environment that the project could exploit to its advantage as well as unfavorable conditions in the environment that could endanger the project were identified. The analysis is presented below:

STRENGTHS

- Region Skåne owns the facilities in the EID
- Existing strategic cooperation dialog between the facility owner and the energy utility
- High competence on energy and climate matters in Region Skåne
- Regular energy audits are performed in the EID
- Region Skåne as well as Helsingborg have energy and climate goals in line with the national goals of the area, however the local ones are set at a higher level

WEAKNESSES

- Big hierarchy-modelled organization within Region Skåne results in barriers in cooperation process
- The operations (healthcare) need to precede along with the construction and refurbishment process
- Lack of detailed plan and strategy on energy measurements, so the analysis can be performed on separate specific sources of big energy usage
- Internal rental model lack incentives for energy efficiency
- Existing price models on energy do not always financially reward energy efficiency measures

OPPORTUNITIES

- General rising awareness of the climate problems among the citizens, results in high enthusiasm among the employees
- New cost-effective technologies make local measurements and control possible
- The hospital area requests good will factors to strengthen its general image, and the EID process is a great example of this
- The rising focus of a future power capacity shortage in Scania favors the willingness to work with energy effective measurements

THREATS

- Political frameworks can be changed and therefore the energy and climate goals of the region as well as the city may be jeopardized
- Short term energy policies on national level
- Reconstruction projects can generally be seen as problematic, this may result in lowered enthusiasm and incentives

6. Definition of EID Specific Objectives

The objectives, which are presented below, are defined under consideration of the local framework conditions of the hospital area in Helsingborg. They address the main challenges identified in the conducted SWOT analysis as well as the results from the earlier performed EID workshop process.

6.1 Efficient usage of energy

The purpose of an efficient energy usage is to obtain as much yield as possible from an input of energy. This objective can be carried out by for example coordinating hospital transports and refurbishing old building and/or build new energy smart buildings. However, the primary focus of the objective is on the different health care departments, where the most energy consuming equipment is used. If the renting models of the hospital departments would be based on the cost for their actual energy usage, the department will find incentives to reduce their energy usage. In other words, the energy cost needs to be flexible to the specific energy usage of the hospital departments. Moreover, this subject also refers to the energy utility point of view, where new services and business models need to be developed to promote energy effectiveness, such as power-based energy subscriptions.

Furthermore, this objective also includes to optimize operation and maintenance of existing buildings. When a building is planned to go through a refurbishment or a new building is planned to be built, it is important to involve the health care departments early in the planning process. This since these departments have knowledge of how the building interior should look like to optimize the future health care operations. Once the refurbishment or a new building is finished, the project needs to be transferred to the operation and maintenance department. Even though new buildings may have great theoretical energy performance value on paper, it is vital to transfer this performance into the reality as well. This can for example be achieved by putting energy requirement in the service level agreements (SLA).

6.2 Overview of energy flows and power usage

The overhead energy goals of the hospital area need to be broken down to each department of the hospital, so the specific energy usage can be measured with the correct KPI. Also, by measuring the building and operational energy separately, the analysis of energy data will be more accurate. It is furthermore important to measure the energy usage per second and obtain real-time-data, this in order to get an overview of the power usage of the hospital area. The analysis of energy and power data should preferably be conducted by the energy utility, who has experience in the area and therefore can identify critical times of high-power output.

Furthermore, this objective focuses on mapping the current energy performance of gears and equipment. A first step towards the overhead energy goals is to obtain knowledge of all the energy consuming equipment of the hospital. This mapping can be conducted for example by performing energy audits. After this, conclusions weather to change some equipment to reduce the energy usage can be drawn, and improvements implemented.

6.3 Energy visualization

When the above-mentioned identification of KPI's together with a good analysis of the energy data are performed, the visualization of data won't be too complicated. The visualization should be easy to interpret and relevant for each department of the hospital, where possible reductions of energy usage should be emphasized. Moreover, the energy usage should also be visualized for the strategic management department. By using the new developed ICT-tool *Energy Improvement Circle,* the impact of energy efficient investments can be quantified from both an economic and environmental perspective. The tool will provide decision makers with valid, relevant and easily accessible material to take action on. To summarize, the visualization is needed for different target groups depending on if the outcome should be a behavioral change or a strategic decision.

6.4 Energy requirements in procurement

In order for a purchase to be optimal, health care representatives and energy strategists/experts need to set energy requirements on the purchase. This will ensure a good energy performance of medical equipment as well as buildings from the beginning, regardless of how it later will be used in operation.

6.5 Involve healthcare operations staff in the energy efficiency work

If the different health care departments' respective energy usage is visible for the staff, they will automatically be included in the energy work. If the different departments also have a flexible energy cost based on their actual energy usage, the incentive to save energy of course increases. To be able to see possible energy saving progress will make the employees even more enthusiastic to continue. A-long-side this, it is important to educate the hospital staff in energy and technical competence, so they are able to handle the medical equipment in an energy effective way. This education should preferably be initialized by the energy strategists in cooperation with the health care departments. Finally, it is as mentioned above, also important that the healthcare departments participate in the investment and project planning in order for the correct demands are put in for example procurements.

6.6 Increase cooperation between the hospital area stakeholders

A cooperation between organizations such as property owner and energy utility, or between two different health care departments, will improve the energy efficiency work. Also, by doing this, synergies can be identified that will may result in even greater reductions of energy usage. An example on cooperation between the hospital and the energy utility that was found during the EID workshop sessions, was to spread knowledge of plastic waste impact on climate and how to reduce it. The district heating of Helsingborg is made partly from energy recover of waste combustion. The hospital area generates a lot of non-reusable waste, in particular a lot of plastic waste, that goes to energy recovery. A major part of the plastic waste is produced by fossil fuels, and when this is being combusted it results in greenhouse gas emissions. Thus, it can be stated that the hospital is partly heated by their own non-reusable waste, and consequently a reduction of plastic waste will result in lowered emissions of greenhouse gases.

7. The Helsingborg Hospital Area Action Plan

The action plan of Helsingborg Hospital Area is presented below. The plan outlines the activities (Activity-column) needed to address the identified objectives (Addressed objective-column) from the SWOT-analysis and the earlier performed EID workshop process. Prioritization and sequence of implementing each activity is determined by the set timeframe which will be specified and determined later on by the steering group.

Addressed Objective	No.	Activity	Responsibility	Timeframe	Status	Funding	Communication
1. Efficient usage of energy	**1.1**	Offer new energy contracts based on power, which economically reward energy efficient solutions	Manager of Energy Services at Öresundskraft	2020-	Under Planning	Öresunds-kraft	
1. Efficient usage of energy	**1.2**	Report unnecessary plastic packaging of laboratory products to the procurement department	Manager of Medical Service at Region Skåne	2020-	Under Planning	Region Skåne	
1. Efficient usage of energy	**1.3**	Establish a new model for the transfer between project and maintenance departments	Project Lead for the NSH project at Region Skåne	2020-	Under Planning	Region Skåne	
1. Efficient usage of energy	**1.4**	Put requirements on the optimization of building management in future procurements	Department of Real Estate (real estate development and technical management) at Region Skåne	2020-	Under Planning	Region Skåne	
2. Overview of energy flows and power usage	**2.1**	Map where it is most suitable to use disposable products in comparison to products usable multiple times	Manager of Health Care Department as well as Medical Service at Region Skåne	2020-	Under Planning	Region Skåne	

2. Overview of energy flows and power usage	**2.2**	Set up meetings between the energy strategists and the health care departments to further develop specific CPI: s for each department	Manager of Health Care Department at Region Skåne	2020-	Under Planning	Region Skåne	
2. Overview of energy flows and power usage	**2.3**	Conduct planned energy audits on the hospital buildings and implement the findings	Department of Real Estate (real estate development and technical management) at Region Skåne	2020-	Under Planning	Region Skåne	
2. Overview of energy flows and power usage	**2.4**	Provide real-time energy data, in other words measure energy per second	Manager of Distribution Department at Öresundskraft	2020-	Under Planning	Öresunds-kraft	
3. Energy visualization	**3.1**	Benchmark different ways/programs of visualizing energy data	Department of Real Estate (real estate development and technical management) at Region Skåne	2020-	Under Planning	Region Skåne	
3. Energy visualization	**3.2**	Visualize the specific energy use for each department relevant data is collected	Department of Real Estate (real estate development and technical management) at Region Skåne	2020-	Under Planning	Region Skåne	
4. Energy requirements in procurement	**4.1**	Gather valid expert groups with representants from health care departments during the procurement process	Building Maintenance and Project Management at Region Skåne	2020-	Under Planning	Region Skåne	

4. Energy requirements in procurement	**4.2**	Engage the leader board of the existing problems with the procurement process	Harald Roos, the Executive Director of the Helsingborg Hospital Area	2019-	Ongoing	Region Skåne	
5. Involve healthcare operations staff in the energy efficiency work	**5.1**	Health care departments should participate more in investment and project planning	Manager of Health Care Department at Region Skåne	2020-	Under Planning	Region Skåne	
5. Involve healthcare operations staff in the energy efficiency work	**5.2**	Visualize possible progress in energy efficiency work to engage the staff to continue working with this matter	Department of Real Estate (real estate development and technical management) at Region Skåne	2020-	Under Planning	Region Skåne	
6. Increase cooperation between the hospital area stakeholders	**6.1**	Study visit at the local energy recovery industry and learn more about the climate impact of plastic waste	Sustainability Strategist at Öresundskraft	2019-	Under Planning	Öresunds-kraft	
6. Increase cooperation between the hospital area stakeholders	**6.2**	Establish a steering group with the overall responsibility of the whole action plan	Harald Roos, the Executive Director of the Helsingborg Hospital Area	2019-	Done/ Up and running	Region Skåne and Öresunds-kraft	