

Energi2020 Strategy and Action Plan with nine sub-strategies: Approved by the Council 17th May 2011



Energi2020

Ringkøbing-Skjern – **100 %** vedvarende

Energi2020-Strategy for Ringkøbing-Skjern Municipality (2011-2014)





Mayor Iver Enevoldsen
Ringkøbing-Skjern Municipality

Historically, the Ringkøbing-Skjern area has found its energy in natural resources, including peat, brown coal, water mills and wind mills. The modern wind turbine had its cradle here (Vestas A/S). The wind turbine manufacturers and the many sub-suppliers have given a significant boost to local employment and business development but they have also made a global impact.

In wind, sea, sun and soil, rests enormous energy potentials. These natural resources, together with the population's craftsman competences within fishing, agriculture and metal manufacturing – mixed with local inventiveness, drive and will, are the preconditions for the project.

Fireballs, citizens, businesses and local energy associations have put renewable energy on the agenda for more than 25 years.

Project **Energi2020** has its origins locally and is deeply rooted locally. Dialogue and cross-disciplinary cooperation are the key words.

A united Council stands behind the project **Energi2020**, which is going to make the area 100% self-sufficient in renewable energy by the year 2020.

Via the EU's Covenant of Mayors, the Ringkøbing-Skjern Municipality intends to show that we put action behind our objectives in **Energi2020**, both nationally and internationally.



Energi 2020

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The Vision

Energi2020 is Ringkøbing-Skjern Municipality's vision to become self-sufficient in renewable energy by year 2020. This means that we produce as much renewable energy as the citizens and businesses in the municipality consumes. This applies to housing, workplaces and transport.

The road to the objective is taken through dialogue and cooperation. Businesses, citizens, associations and institutions need to carry out large and small projects using renewable energy and make energy savings.



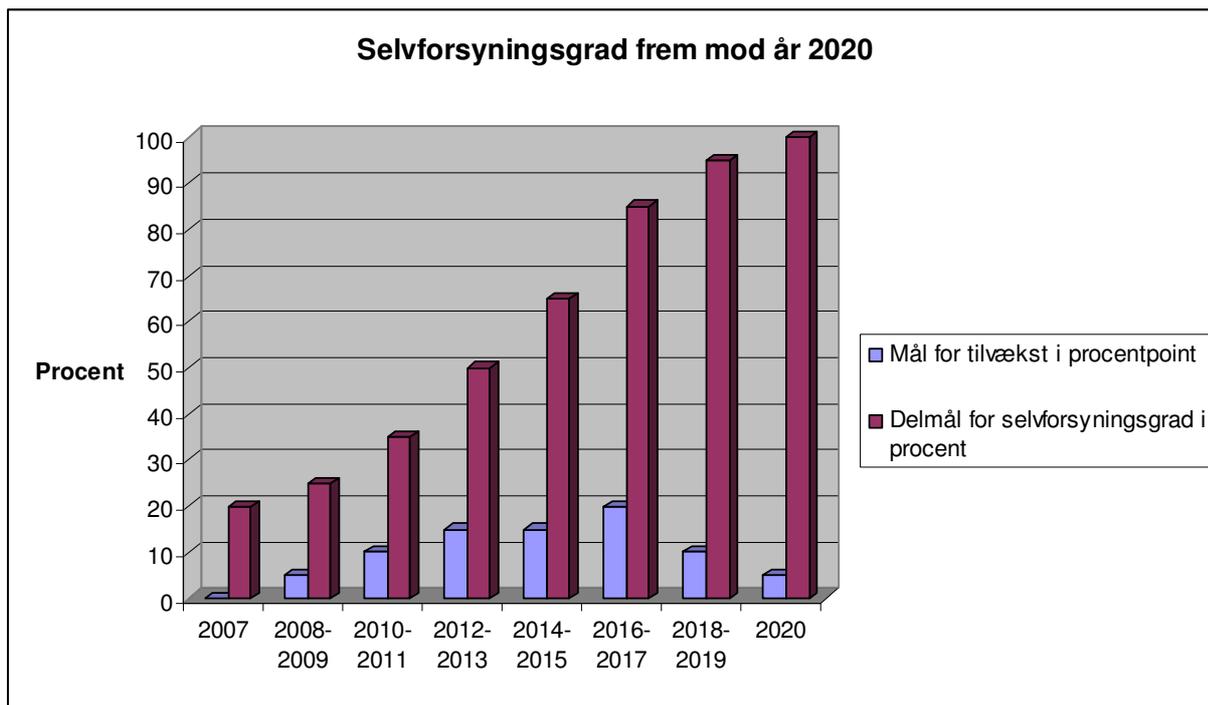
The objectives:

The objective is 100% self-sufficiency

The road to 100% self-sufficiency in renewable energy will happen via energy savings and change-over from fossil fuel consumption to renewable energy sources.

The objective is achieved in this order:

Status for 2007:		20 %
Sub-target 2008-2009	+ 5	25 %
Sub-target 2010-2011	+10	35 %
Sub-target 2012-2013	+15	50 %
Sub-target 2014-2015	+15	65 %
Sub-target 2016-2017	+20	85 %
Sub-target 2018-2019	+10	95 %
Sub-target 2020	+ 5	100%



Part objectives

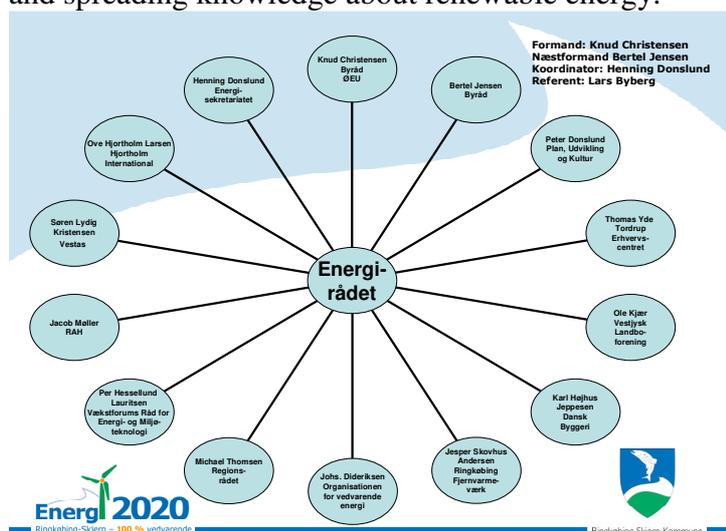
The Green Accounts show that 20% of the energy consumption was covered by renewable energy in 2007. The remaining 80% is to be found in the adding up of the following sub-objectives:

- **Buildings 10 - 20%**
New buildings will be able to produce more energy than they require for themselves. The energy consumption in buildings accounts for approximately 40% of the total energy consumption. In existing buildings the energy consumption must be halved in order to contribute 20% to the overall objective.
- **Wind turbines: 25 – 30%**
The municipality has approved a big wind turbine plan, which directs the siting of new turbines. The objective is that wind turbines produce twice the annual electricity consumption in the municipality.
- **Bio energy: 15 – 25%**
As the country's geographically largest municipality, we have significant green resources. We will produce bio energy with materials from animals and plants.
- **Other energy sources: 10 - 25%**
Private citizens, businesses and the municipality work with solar, thermal, geothermal, fjord thermal, photo voltaic, wave energy and other renewable energy sources including combinations of energy sources and energy storage.
- **Transport: 5 - 15%**
The municipality has hydrogen vehicles and hydrogen refuelling stations. Public and private transport has to convert to green fuel e.g. electricity, hydrogen and bio fuel. Cargo transport on main roads can partly change over to sea transport.

Organisation and processes

The Energy Council

The work to convert Ringkøbing-Skjern Municipality to 100% renewable energy is rooted in the Energy Council. It comprises people from businesses and organizations as well as politicians and civil servants from the municipality. The Council advises the Economy and Business Committee and plays its part in inspiring local surroundings and spreading knowledge about renewable energy.



The Energy Secretariat

The Municipality has established an Energy Secretariat, which coordinates the work. It comprises employees, who can draw on support from other parts of the municipal organisation. The Energy Secretariat is responsible for information and marketing. They draw up the Strategy and Action Plan for Energi2020, as well as maintaining and running the dynamic Action Plan with a forward look. In addition, the Energy Secretariat provides services for the Energy Council and assists all interested with advice, contacts and inspiration. The Energy Secretariat is organisationally under the Development Department. Inwardly, the Energy Secretariat must work to embed Energi2020 into the whole of the municipal organisation.

Processes and totalities

The road to the objective passes through a myriad of solutions. There is not just a requirement for one process, or the need for just one direction. There is a need for many processes and numerous routes to travel. For that reason we have to be open and receptive to all opportunities, large and small, which arise now and in the coming years. We will need to find sustainable solutions from a total perspective.

As the energy politic is dynamic and needs to keep rolling, updating the Municipality entails prioritising on all levels and making conscious decisions on a regular basis. The Energi2020 Strategy is heard every fourth year. That means at the beginning of each new election term. The Energy Secretariat annually reviews the Energi2020 Action Plan.

The Green Accounts are followed up every 1-2 years and in this way keeps the drive towards 100% net self-sufficiency in renewable energy on track.

The strategy for realisation of vision, objectives and sub-objectives:

Energi2020 consists of nine strategy subjects in total.

The first four strategies are the so-called cross-disciplinary strategies:

1. Green Growth Laboratory
2. Planning and active cooperation
3. Energy supply structure
4. Communication and dissemination

The next five strategies are the so-called vertical strategies

1. Buildings
2. Wind
3. Bio energy
4. Other renewable energies
5. Transport

The table below shows the nine strategy subjects for Energi2020. The four cross-disciplinary strategies are highlighted in green whilst the five vertical strategies are highlighted in blue.



The four green cross-disciplinary strategies which will contribute to vision, objective and all sub-objectives:

Cross-disciplinary strategy 1) Green Growth Laboratory

Energi2020 shall strengthen local businesses which can develop and test new technologies and in this way create green growth in Ringkøbing-Skjern Municipality: a Green Growth Laboratory. The term is not just limited to the already existing wind turbines, hydrogen cars and biogas but is tackled from an all round perspective and in an extended way as new cooperation forms and technologies are planned, tested and launched. Our Green Growth Laboratory is a bright, crystal clear room where local citizens and businesses have a view to the global world, and where everybody else can look in and participate. In mutual dependency with the surrounding world we will create sustainable and economic green growth for the benefit of climate, citizens and businesses. The Energy Secretariat makes the Green Growth Laboratory transparent via www.energi2020.dk.

Objectives – Green Growth Laboratory:

- We will create green growth in collaboration with local positions of strength and green technologies.
- We will give the area a competence lift on know-how, technology and cooperation.
- We will create sustainable business development for the benefit of citizens and businesses.

Objectives for – Green technologies:

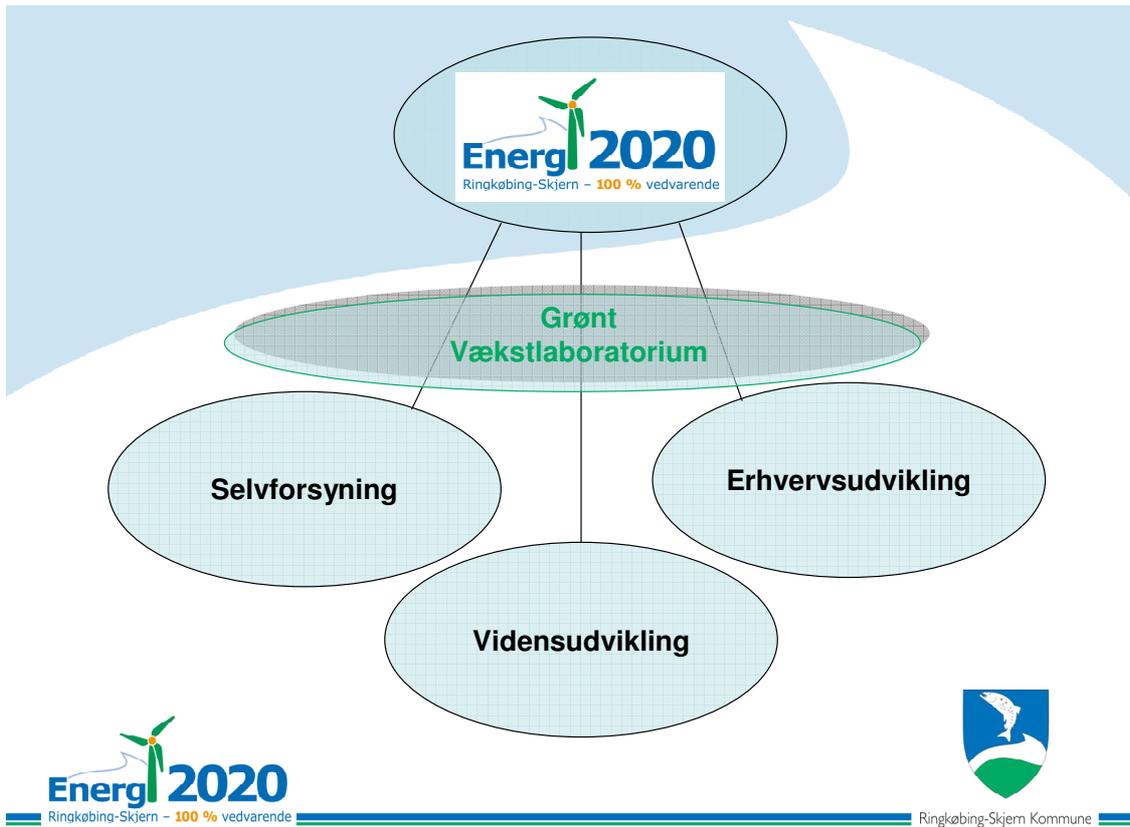
- Create 2-4 cooperation projects between research environments and businesses.
- Ensure that existing and new green technologies are tested and used by local businesses.

Objectives for - Local positions of strength:

- Present local positions of strength.
- Make visible the local competences to promote cross-disciplinary cooperation between the businesses.

Objectives for – Local turnover and technology:

- Ensure interaction between local customers and local manufacturers.
- Ensure a home market that creates the foundation for the business export industry.



Green Growth Laboratory:

The keywords are Self sufficiency, Know-how Development and Business Development

Cross strategy 2) Planning and active co-operation

The Municipality shall support an active development in renewable energy throughout the municipality via dialogue, planning and governance. The Municipality shall support the right energy development through planning and regulation. The venture in renewable energy shall promote quality and positive development and thus create added value for the benefit of citizens and businesses.

Planning shall be made from an all round perspective, where benefits and disadvantages as well as side effects are evaluated. The energy savings or energy efficient solutions in one area must not hinder appropriate solutions somewhere else. Planning and common sense must go hand in hand.

Economical mechanisms must be developed and incorporated which promote Energi2020 both internally in the municipality and externally.

Energy economical models shall focus on long-term payoff and entirety.

Objectives – Planning and active cooperation:

- We will promote the objectives in Energi2020 via dialogue and active cooperation.

- We will see opportunities and promote long-term planning from an all-round perspective.
- Soft and hard values have to be included within this perspective.

Targets for – Economy and payback time:

- Make economy and payback time visible for the strategy areas: wind, buildings, bio energi, other renewable energy and transport, in order to avoid short-term solutions.
- Visualise good cases

Targets for - Network:

- Networks have to be created and maintained which support self-sufficiency, know-how development and business development

Targets for - Organisation:

- That Energi2020 is coordinated, promoted and conveyed effectively.

(Picture: Puzzle figure with layer cake slices)

Cross strategy 3) Energy supply structure

For the coordination of the many current and forthcoming energy sources there has to be developed a comprehensive plan for the energy supply structure in the whole of Ringkøbing-Skjern Municipality. The plan shall ensure that the different energy sources are used in a collaborative way that uses the local energy sources to optimum effect. In addition there shall be developed a comprehensive heating plan which forms an important part of the total plan for the energy supply structure.

The phase-out of natural gas and other fossil energy sources as well as coordination of the many new energy sources shall occur in collaboration with the surrounding municipalities and in relation to national energy planning.

Energy supply structure is made visible on www.energi2020.dk

It is planned to establish a think-tank which shall work with energy storage.

Objectives – Energy supply structure:

- We will secure an efficient energy supply structure in the whole of the municipality in close collaboration with surrounding municipalities and in relation to national energy planning.
- We will secure coherence between energy production and end consumption.

Targets for - Heat:

- Secure appropriate and balanced expansion in renewable energy- based heat, including district heating, block-heat, "village heat" and individual heating taking into consideration stable heat supply and reasonable heating expenses

Targets for - Electricity:

- Ensure biggest possible output of local renewable energy-based electricity production taking into consideration stable electricity supply and reasonable electricity prices

Targets for – Energy Supply Structure and ”Smart Grid”:

- Secure efficient collaboration between the different energy producers in relation to the energy consumption at residential housing, workplaces and transport etc.

(Picture: The map with energy supply structure)

4) Communication and dissemination

All consumer energy.

Energi2020 shall involve all inhabitants in Ringkøbing-Skjern Municipality. The driving force in Energi2020 is the big and small projects that citizens, businesses and associations are putting in motion. When each single citizen saves energy by insulating their house, introducing new technology or driving more economically, they contribute to meeting the objective.

The Energy Secretariat disseminates Energi2020 via inspiration, dialogue and cooperation with citizens and businesses, creating the basis for the energy related changes required to convert from fossil fuels to renewable energy sources.

The homepage www.energi2020.dk will display all relevant results, both large and small, which citizens, institutions and businesses achieve. On the same homepage the citizens and the businesses can inspire and communicate within a variety of fora. The Green Growth Laboratory and Energy supply structure is shown at www.energi2020.dk

Objectives – Communication and dissemination:

- Energi2020 will put Ringkøbing-Skjern Municipality on the map.
- We will display the area’s many competences and businesses within renewable energy.
- We will inspire citizens and businesses to use renewable energy.

Target for - Globally:

- Ensure that Energi2020 and local competences are visible nationally as well as globally.

Target for - Nationally:

- Ensure that Energi2020 and businesses become visible so knowledge can be exchanged with research institutions and other businesses.

Target for - Citizens and businesses in the local area:

- Ensure anchoring and progress of Energi2020 with local citizens and businesses for mutual benefits.

(Picture: Homepage www.Energi2020.dk, version 2.0)

The five vertical strategies, which shall realise each of the five part objectives:

1) Buildings

Part objective:

New buildings will be able to produce more energy than they require themselves. Buildings account for approximately 40% of the total energy consumption. In existing buildings the energy consumption shall be halved in order to contribute 20% to the total objective.

Strategy:

There has to be focus on low energy consumption in all buildings. That includes housing, holiday homes and businesses as well as public and private buildings. This means electricity and heat for housing and businesses including process energy for manufacturing.

Energy sources supplying buildings are changed from fossil fuels to renewable energy sources. Plants for production of renewable energy can take place in large or medium communal plants, for example, via district heating or another form of communal plant for supply to towns or village communities with electricity and heat. Individual units in or adjacent to buildings also play a crucial role.

The inter-disciplinary strategies play an important role. Knowledge development, planning, energy supply and communication are crucial factors in order to achieve energy savings and to convert to renewable energy sources.

Tougher energy requirements for new constructions mean that we ensure low energy consumption in building mass, thus avoiding the energy waste of the past. In the Municipality Plan there has been an introduced requirement for low energy construction which in accordance with current building regulations means Low Energy Class 2015. Tougher demands shall also be required within district plans.

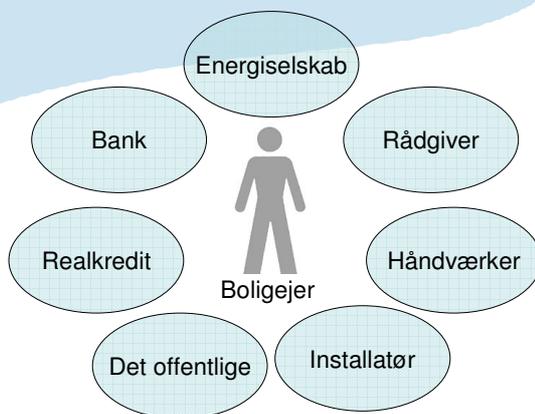
The Municipality, supply businesses etc. plans and coordinates changes and expansion of town areas. In addition, knowledge can be derived from "Heat Plan Denmark" and other relevant reports. Planning and simulation tools can also be used for coordination and visualisation of impact in the short and long run.

In relation to municipal buildings there shall be a focused effort to reduce the energy consumption and convert to renewable energy. This can have an inspiring and contagious impact in relation to owners of the private building mass.

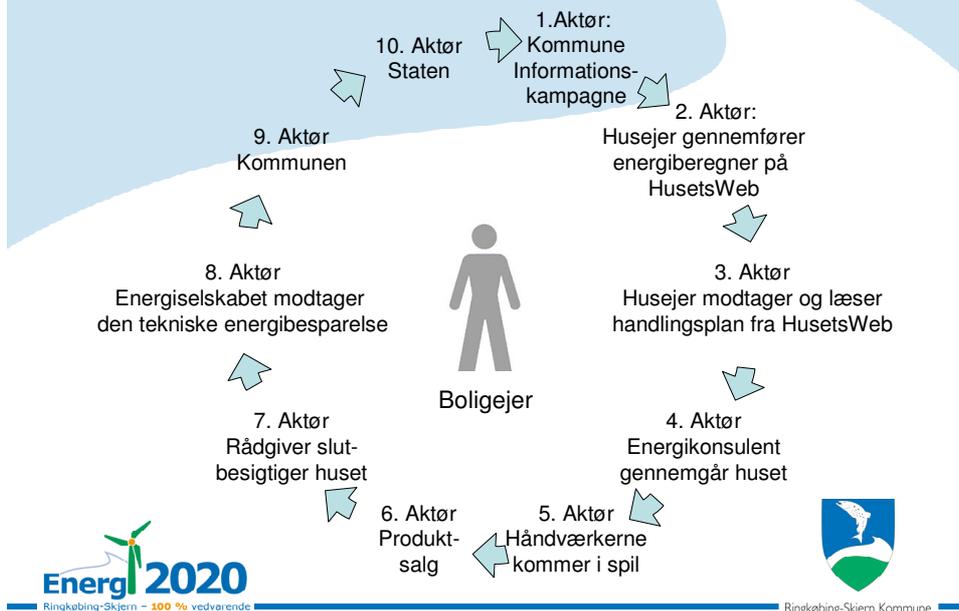
The process with energy savings and conversion to renewable energy shall take place in close dialogue and between all parties. This applies to private citizens, associations, workmen, businesses, supply businesses, the Energy Secretariat, the Energy Council and the Municipality.

With green energy renovation we will focus on energy savings, comfort and value creation which means increased values of buildings. We will promote models that place the building owner at the centre and makes the energy renovation a more simple process. The Energy Secretariat initiates campaigns, for example, via web tools, conduct of energy checks in buildings, ongoing training of workmen, simplification of financing and credit rating. The process is inter-disciplinary which will create additional employment, business development, added value for the individual home owner and increase the quality of the total building mass in the municipality.

Samarbejdsmodel – boligejeren i centrum



Værdikæde ved energirenovering



The example shows the relevant stakeholders in the value chain.

Objectives - Buildings:

- Constructions and renovations will be energy efficient, using Renewable Energy (RE).
- This applies to both private and public buildings.
- In existing buildings the energy consumption shall be halved in order to contribute 20% to the overall objective in Energi2020. Expected contribution 1-2 PJ or 10-20%.

Targets for – Energy renovation of buildings:

- 1000 home owners, primarily outside the district heating areas, carry out energy renovation.
- Businesses with an energy action plan increases by 10%.
- By 2014, 20% of holiday home owners and users should have the opportunity to see their energy consumption.
- The Municipality's own buildings save 20% on energy consumption.

Targets for – Energy savings in buildings:

- Every year, savings equating to 2% of the overall objective in Energi2020 or approximately 0,2 Peta Joule per year are achieved.
- In the Municipality's own buildings, savings of 20% are achieved.

Targets for – New constructions:

- In revision of current district plans as well as with all new district plans there will be requirements that all new constructions are in Low Energy Class 2015

- Electric and heat distribution by renewable energy or district heating. All district heating is converted to renewable energy. Natural gas is gradually phased out by 2020.

2) Wind

Part objective:

The municipality has approved a big theme plan for wind turbines, which indicates siting of new turbines. The objective is to produce at least twice as much as the annual electrical consumption in the municipality from wind turbines. This can contribute approximately 30-40% to the total objective in Energi2020.

Strategy:

On the basis of the approved theme plan for wind turbines, district plans are prepared, which indicate siting of wind turbines in the selected areas. On this basis by 2020, there will be the possibility for erection of up to 200 wind turbines with a total capacity of up to 464 MW, which will fulfill the part objective. As many old turbines are simultaneously taken down, the number of turbines will drop by 140, whilst at the same time, the capacity will become 3 to 4 times greater. Wind turbines are absolutely crucial in the efforts to achieve the objectives in Energi2020. In collaboration with other renewable energy sources, the complete tapestry of solutions is created.

Test centre:

Test centre areas for household turbines and mini turbines are appointed as required. As the experiences with mini turbines are currently limited and as many innovative mini turbines are in the pipeline, a test centre for mini turbines could contribute to increase knowledge as well as make transparent the opportunities and limitations of these. A test centre could be placed on open land or could be placed in an industrial area where changing wind conditions give realistic test results. Test centres for big and giant turbines are selected and established in cooperation with the state and other stakeholders. These test centres will be able to contribute to retention of employment in the area within the subjects of testing, research and development.

Significant amounts of wind turbine power bring new challenges and also new opportunities and thus development of new exciting technologies which in the long run can benefit employment and business development.

Possible "excess power" gives opportunities to attract and establish brand new energy demanding industries which can act within the fluctuating energy streams. A think-tank is sought which shall work with energy storage etc. Vestas, electricity supplying businesses, the Municipality and other relevant stakeholders shall participate.

Objectives - Wind:

- We will utilize the area's large wind potential for production of electricity generated by wind turbines
- We will select and establish areas for test centres for large and small wind turbines.
- Existing and future wind turbines have to contribute 3-4 Peta Joule in order to contribute 30-40% towards the overall objective in Energi2020.

Targets for – Theme plan for wind turbines:

- Known wind turbine areas in the Theme Plan with appendices shall be incorporated within district planning by the end of 2014
- Test centre areas for giant turbines, large turbines, household turbines and mini turbines identified and established in the period 2011-2014

Targets for – Effects from wind turbines:

- Annual status made for each single wind turbine site
- That wind turbines contribute 3PJ in 2014 and at least 4PJ in 2016, thus contributing 40% to the overall objective in Energi2020.

Target for – Green Arrangement:

- That "Green arrangement" benefits the citizens in terms of nature, culture or energy.

(Picture: Wind turbines)

3) Bio energy

Part objective:

As the geographically biggest municipality in the country, we have significant green resources. We will produce bio energy from manure and plants. The objective is to utilize 80% of the manure as well as energy crops from 5% of the agricultural land for the production of biogas. Apart from gas the big bio resources are used for production of bio energy in fluid and solid form. In total, bio energy shall contribute 25-35% towards the overall objective in Energi2020.

Strategy:

An outline report has been prepared for a decentral/central biogas model for Ringkøbing-Skjern Municipality. The idea is to de-gas slurry and plant materials near the source. Approximately 60 biogas plants are expected to be located decentrally on farms with additional slurry supplied from neighbouring farms. The produced biogas is transmitted via approximately 200 kilometers of pipes to the towns' combined heat and power plants, where electricity and heat is produced efficiently. The model includes one or two big centrally shared biogas plants for treatment of complicated biomasses. The decentral biogas model has a low transport requirement as it is not the water containing slurry but just the valuable biogas that is moved over greater distances.

South of Skjern River, there is planning for location of the first five farm biogas plants which are to supply the combined heat and power plant in Skjern. This system shall act as a demonstration project, before a possible rollout of the decentral model in the remaining part of the municipality.

The newly established public-private owned shareholding company Bioenergi Vest A/S will take care of planning, establishment and running of biogas plants and the biogas net.

The biogas expansion shall form part of keeping the foundation for a continued agricultural production in the municipality by minimising the farming's environmental impact on sensitive nature by over-nutrient application. At the same time the degasification of the slurry will reduce the obnoxious smell from spreading the slurry. Finally the project shall create local know-how about environmental technology, which will create a breeding ground for industrial business development.

A big private business is investigating the opportunities for establishing a large central common biogas plant in the eastern part of the municipality. Such a large central plant will often have several business of scale advantages but is challenged by long distances for the raw materials. This big common plant can contribute by producing large volumes of renewable energy, but requires a big catchment area. For that reason, planning wise, it must be coordinated with the rollout of the decentral biogas project, in order for the northern and the southern part of the municipality not to be cut off from the connection to a decentral biogas net. Biogas from central and decentral suppliers must be thought through.

Apart from biogas, bio energy shall be manufactured in both fluid and solid form. Fluid form based on rape seed, sweetcorn, potatoes, grain, wood cuttings, straw etc. Solid form based on wood, willow, poplar, straw, wood cuttings and waste.

A large-scale energy willow project has been created and is in its third year of operation. Wood cutting from this is to be explored locally.

Objectives – Bio energy:

- We will produce bio energy from plant and animal material.
- We will replace natural gas and other fossil fuels with locally produced biogas.
- Bio energy shall contribute 2,5-3,5 Peta Joule in order to contribute 25-35% to the overall objective in Energi2020

Target for - Gas:

- That 80% of the area's slurry is used for production of biogas by 2020
- That energy crops from 5% of the agricultural land is used for production of biogas by 2020
- That biogas contributes 1PJ in 2014 and 2PJ in 2020.

Target for - Liquid:

- That there is locally-produced bio ethanol, biodiesel and other based on rapeseed, sweet corn, potatoes, grain, wood chips, straw etc.
- That the liquid bio energy in 2014 can be used in the agricultural and transport sector and thus replace fossil fuels.

Target for - Solid:

- That bio fuel such as wood, willow, poplar, wood chips, straw and combustible waste in 2014 can contribute 1,2PJ
- That local bio fuel is used for local energy generation in communal plants in the municipality's many villages.

(Picture of biogas plant, of, livestock map or willow fields)

4) Overall objectives for "Other renewable energy sources"

Part objectives:

Private holdings, businesses and the municipality work with geothermal heating, fjord thermal heating, solar thermal heating, photovoltaic, wave energy and other renewable energy sources as well as combination of energy sources.

Other renewable energy shall contribute 10-25% to the overall objective in Energi2020

Strategy:

The part objective can only be achieved through a thorough dialogue with all relevant stakeholders. At several district heating plants there are efforts to establish heat pumps and "electrical kettles", which can contribute to down regulate the grid, when there is an over-production of electricity, both from wind turbines and other sources. Furthermore, in Ringkøbing there is an established 15.000 square meter big solar heat plant.

An effort is made to disseminate the beneficial value of geo thermal heat, solar thermal heat, photovoltaic etc., just as an effort is made when suppliers meet potential customers in Ringkøbing-Skjern Municipality.

Objectives – Other renewable energy sources:

- We will utilize all efficient technologies for utilization of differences that nature provides us with.
- We will create synergy and showcase the Green Growth Laboratory via the Energy Supply Structure Plan.
- "Other Renewable Energy" shall contribute 1,0-2,5 Peta Joule in order to contribute 10-25% to the overall objective in Energi2020

Targets for – solar thermal and photovoltaic:

- Solar heat contributes 0,3PJ in 2014 and 1PJ in 2020
- Solar cells contributes 0,2PJ in 2014 and 1PJ in 2020

Targets for – Geothermal heat pumps:

- Citizens and businesses establish 100-200 heat pumps per year.
- 80% of all heat pumps are regulated in synergy with smart grid.
- Use of heat pumps contributes 0,2PJ in 2014 and 0,5PJ in 2020

Target for – Wave energy, hydro power, geothermi, gravitation power, algaeas etc.:

- To examine and use areas and technologies where nature offers us differences: Heat/cold, high pressure/low pressure, salt water/fresh water etc.

(Picture of the big 15.000 m² solar heat plant with Ringkøbing Fjernvarmeværk)

5) Transport

Part objective:

The municipality has hydrogen cars and hydrogen refuelling stations. Public and private traffic shall change to run on electricity and bio fuel. Freight transportation on main roads can partly be changed to sea transport.

Transport shall contribute 5-15% to the overall objective Energi2020.

Strategy:

It can be predicted that the transport requirement will continue to grow steadily in the coming ten years. It can also be predicted that in the same period, a gradual change of transport to more energy correct solutions will occur.

Ringkøbing-Skjern Municipality shall be on the front edge to enable transport vehicles to operate by electricity or bio fuel. It can take place via tender and procurement. Electrical and hybrid cars shall be procured which can run further on the "litre". With this implementation there shall be focus on the consumers' functional requirements.

In dialogue with transport companies the municipality and Midttrafik shall work out a plan for conversion of the public traffic to 100% green, e.g. with electricity and bio fuels.

Ringkøbing-Skjern Municipality shall also work towards maintaining public transport supply within the municipality's boundaries as the public transport supply to bigger towns in Denmark is expanded. Train operations have a significant role to play because ordinary trains and light railways are very energy efficient in comparison to buses and cars.

Ringkøbing-Skjern Municipality shall work towards the realisation of the Seaway to west so that a bigger part of the transport of large cargo items can be transferred from transport on main roads to transport by the searoad. The project requires the establishment of access conditions in Ringkøbing Fjord and an expansion of the port in Hvide Sande.

Objectives - Transport:

- We will replace fossil fuels and change to entirely green transport
- We will push for public, business and private transport to be based on locally produced renewable energy, with consumption and production taking place in synergy.
- Transport has to contribute 0,5-1,5 Peta Joule to contribute 5-15% to the overall objective in Energi2020

Targets for – Public traffic:

- End goal is that traffic provided by the municipality is 100% green in year 2025, if possible in 2020
- That public and private transport in total contributes 0,1PJ in 2014 and 1,5PJ in 2020

Targets for – Private and commercial transport:

- That citizens and businesses choose energy efficient transport with more kilometres per litre.

- That citizens and businesses use locally produced electricity, bio ethanol, bio diesel and possibly hydrogen.

Targets for – Transport in synergy with locally produced renewable energy:

- To create interaction between transport and locally produced electricity and bio fuel to achieve synergy and high efficiency.
- That the liquid bio energy in 2014 can be utilized in the agriculture and transport sector to replace fossil fuels.

ENERGY ACCOUNTS:

From Appendix (xx) the Energy Accounts for 2007 and 2009 can be seen. The Energy Accounts have been devised by PlanEnergi for Region Midtjylland. Based on the Energy Accounts, the figure below shows the energy consumption and the energy shares for the whole of the geographical municipality for 2007 and 2009. It is important to be aware that renewable energy shares appear based on consumed renewable energy within the municipal boundaries and not based on the produced renewable energy within the municipal boundaries. That means that, for example, wood cuttings from energy willow are included in the Energy Accounts in the municipality where they are consumed and combusted and thus they do not register in Ringkøbing-Skjern Municipality, where much energy willow is grown and produced.

(Figure to be inserted)

In 2007, the total energy consumption in the whole of the geographical area of Ringkøbing-Skjern Municipality was approximately 10,6 PetaJoule. In Energi2020 the objective is to produce as much renewable energy as the citizens and businesses consume in total.

With a forward look it is necessary to create an appendix to the Energy Accounts which focuses on the share of produced renewable energy in proportion to the total consumption of energy. The new Energy Accounts appendix will show the degree of self-sufficiency towards the 100% which is the objective in Energi2020.

The afore-mentioned Energy Accounts devised for the Region measures how much renewable energy is consumed. That naturally encourages the use of renewable energy.

A new Energy Accounts with appendices which measures how much renewable energy that is produced locally will create a natural focus on energy production.

One-sided Energy Accounts which focus on consumed renewable energy rather than produced will give an undesirable distortion and can cause selection of financially unsuitable solutions. This underlines the importance of tackling renewable energy from a total perspective, in synergy and in balance towards the environment, CO₂, economy, energy independence, business development and employment and not in the least, energy efficiency.

It is judged unrealistic to achieve a utilisation degree of 100% in year 2020. At that time there will still be a few oil boilers as well as cars and aeroplanes which consume fossil fuels. On the contrary, it is judged realistic to achieve a net production degree with 100% renewable energy of 100% in 2020. This corresponds to the objectives in Energi2020

In the longer run, after 2020, Ringkøbing-Skjern Municipality will be able to become 130% self-sufficient with renewable energy, but could have a consumption rate of e.g. 98%. Ringkøbing-Skjern Municipality's "export" of produced renewable energy will benefit other areas. These municipalities can thus increase their own consumption rate.

Renewable energy shall be produced where it can be done optimally and cheapest which means where potentials and resources are present, for example, here in West Jutland.

Renewable energy shall be consumed where it can be utilised optimally and where sustainably and economically, it makes the most sense. Export of renewable energy can for example, be used in East Jutland.

This underlines the importance of thinking through the local energy planning, regional, national and North European energy planning from an all round perspective.

In the future, the Energy Accounts will be shown at www.energi2020.dk

CLOSING:

The path passes through a network of solutions. There is thus not just a need for a single process or just one path. There is a need for many processes and numerous paths to be taken. We have to be open and receptive to all opportunities, large and small, which arise now and in the coming years. Together, we will find sustainable solutions from a total perspective.

The strategy's efficiency depends on the interaction with national and European framework conditions.

These external framework conditions have the potential to significantly influence in both positive and negative directions.

As the strategies are based on local resources, with many local instruments and projects from the municipality's own citizens and businesses, it is judged to be realistic to achieve the objectives in Energi2020, whereby we are able to produce as much net renewable energy as energy consumed in the whole geographical municipality.

Energy 2020 Strategy

	Buildings	Wind	Bio energy	Other renewable energy	Transport
Green Growth Laboratory					
Planning and active co-operation					
Energy supply structure					
Communication and distribution					





Energi 2020

Ringkøbing-Skjern – **100 %** renewable

***Ringkøbing-Skjern Municipality has to be 100 % self-sufficient
with renewable energy by year 2020***



Ringkøbing-Skjern – 100 % vedvarende



Ringkøbing-Skjern Kommune

Buildings

The political vision

Energi2020 is Ringkøbing-Skjern Municipality's vision to become 100% self-sufficient in renewable energy by year 2020

Political objectives Strategy area 1: Buildings

- Constructions and renovations will be energy efficient, using Renewable Energy (RE).
- This applies to both private and public buildings.
- In existing buildings the energy consumption shall be halved in order to contribute 20% to the overall objective in Energi2020. Expected contribution 1-2 PJ or 10-20%

Milestone: 2011-2014

Energy renovation of buildings

Objective:

- 1000 home owners, primarily outside the district heating areas, carry out energy renovation.
- Businesses with an energy action plan increases by 10%.
- By 2014, 20% of holiday home owners and users should have the opportunity to see their energy consumption.
- The Municipality's own buildings save 20% on energy consumption.

Efforts:

1. Municipality's effort on own buildings.
2. Campaigns aimed at residential housing, businesses, institutions and holiday homes.

Milestone: 2011-2014

Energy savings in buildings

Objective:

- Every year, savings equating to 2% of the overall objective in Energi2020 or approximately 0,2 Peta Joule per year are achieved.
- In the Municipality's own buildings, savings of 20% are achieved.

Efforts:

1. Campaigns
2. Lighting and electrical appliances
3. Process energy for manufacturing
4. Heating

Milestone: 2011-2014

Construction

Objective:

- In revision of current district plans as well as with all new district plans there will be requirements that all new constructions are in Low Energy Class 2015
- Electric and heat distribution by renewable energy or district heating. All district heating is converted to renewable energy. Natural gas is gradually phased out until 2020.

Efforts:

1. New constructions must be in Low Energy Class 2015
2. Overall heating plan is established. Renewable energy is chosen rather than fossil fuels
3. Wind turbine plan makes the electricity distribution green

Driving force

Dynamic

Link to relevant policies

Dialogue

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Wind

The political vision

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Political objectives Strategy area 2: Wind

- We will utilize the area's large wind potential for production of electricity generated by wind turbines
- We will point out and establish areas for test centres for large and small wind turbines
- Existing and future wind turbines have to contribute 3-4 Peta Joule in order to contribute 30-40% towards the overall objective in Energi2020

Milestone:

Theme plan for wind turbines

Objectives:

- Known wind turbine areas in the Theme Plan with appendices shall be incorporated within district planning by the end of 2014
- Test centre areas for giant turbines, large turbines, household turbines and mini turbines identified and established in the period 2011-2014

Efforts:

1. Required resources are reserved for wind turbine case-work
2. Test areas are identified for large and small wind turbines, in consultation with companies, organisations and citizens.

Milestone:

Effect from wind turbines

Objectives:

- Annual status made for each single wind turbine site
- That wind turbines contribute 3PJ in 2014 and at least 4PJ in 2016, thus contributing 40% for the overall objective in Energi2020.

Efforts:

1. Each year a consolidated status plan for all wind turbine sites is created
2. Energy production is shown online on the webpage www.energi2020.dk
3. Creation of a think tank which works with energy stores etc.

Milestone:

"Green arrangement"

Objectives:

- That "Green arrangement" benefits the citizens in terms of nature, culture or energy.

Efforts:

1. The Energy Secretariat provides information about the "Green arrangement" in terms of renewable energy, energy renovation etc.
2. The allocated money from "Green arrangement" is recorded and spending on energy initiatives is calculated

Link to relevant policies

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Bio energy

The political vision

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Political objectives Strategy area 3: Bio energy

- We will produce bio energy from plant and animal material.
- We will replace natural gas and other fossil fuels with locally produced biogas.
- Bio energy shall contribute 2,5-3,5 Peta Joule in order to contribute 25-35% to the overall objective in Energi2020

Milestone:

Gas

Objective:

- That 80% of the area's slurry is used for production of biogas by 2020
- That energy crops from 5% of the agricultural land is used for production of biogas by 2020
- That biogas contributes 1PJ in 2014 and 2PJ in 2020

Efforts:

1. Required resources for the Theme Plan for biogas plants and for biogas case work
2. Establishment of Bioenergi Vest A/S for start-up and operation of de-centralised/centralised RKSK-Biogas

Milestone:

Liquid

Objective:

- That there is locally-produced bio ethanol, biodiesel and other based on rapeseed, sweet corn, potatoes, grain, wood chips, straw etc.
- That the liquid bio energy in 2014 can be used in the agricultural and transport sector and thus replace fossil fuels.

Efforts:

1. Present efforts on the "liquid" bio energy had lower priority than "solid" and "gas", but time and new technology can change this prioritisation.

Milestone:

Solid

Objective:

- That bio fuel such as wood, willow, poplar, wood chips, straw and combustible waste in 2014 can contribute 1,2PJ
- That local bio fuel is used for local energy generation in communal plants in the municipality's many villages.

Efforts:

1. The energy secretariat investigates options to establish communal combustion plants for smaller urban communities.
2. Organisation and business models for collection and use of bio fuels are examined.

Driving force

Dynamic

Links to relevant policies

Dialogue

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Other renewable energy sources

The political vision

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Political objectives Strategy area 4: Other renewable energy sources

- We will utilize all efficient technologies for utilization of differences that nature provides us with.
- We will create synergy and showcase the Green Growth Laboratory via the Energy Supply Structure Plan.
- "Other Renewable Energy" shall contribute 1,0-2,5 Peta Joule in order to contribute 10-25% to the overall objective in Energi2020

Milestone:

Solar heat and solar cells

Objective:

- Solar heat contributes 0,3PJ in 2014 and 1PJ in 2020
- Solar cells contributes 0,2PJ in 2014 and 1PJ in 2020

Efforts:

1. Campaigns for solar heat and solar cells.
2. The Energy Secretariat, the Municipality and the suppliers create a common plan for Energy Supply Structure
3. District heating plants, the Municipality and the Energy Secretariat create a common plan for how the district heating plants can deliver 100% renewable energy by 2020.

Milestone:

Heat pumps

Objective:

- Citizens and businesses establish 100-200 heat pumps per year.
- 80% of all heat pumps are regulated in synergy with smart grid.
- Use of heat pumps contributes 0,2PJ in 2014 and 0,5PJ in 2020

Efforts:

1. Campaigns for heat pumps
2. Good case work when applying for use of heat pumps
3. Fjord heat and other technology is examined by district heat plants and the Energy Secretariat

Milestone:

- Wave power, hydro power, geothermic, gravity power, alga etc.

Objective:

- To examine and use areas and technologies where nature offers us differences: Heat/cold, high pressure/low pressure, salt water/fresh water etc.

Efforts:

1. We examine information from old and new technology and use it when opportunity and demand is there.
2. Efficient networking.

Link to relevant policies

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Transport

The political vision

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Political objectives Strategy area 5: Transport

- We will replace fossil fuels and change to entirely green transport
- We will push for public, business and private transport to be based on locally produced renewable energy, with consumption and production taking place in synergy.
- Transport has to contribute 0,5-1,5 Peta Joule to contribute 5-15% to the overall objective in Energi2020

Milestone:

Public transport

Objective:

- End goal is that traffic provided by the municipality is 100% green in year 2025, if possible in 2020
- That public and private transport in total contributes 0,1PJ in 2014 and 1,5PJ in 2020

Efforts:

1. In dialogue with transport companies, the Municipality and Midttrafik establishes a plan for conversion of the public transport to 100% green, e.g. with electricity and bio fuel.
2. The Municipality plans and arranges for public transport to be efficient and attractive. Train services have to be included.

Milestone:

Private and commercial traffic

Objective:

- That citizens and businesses choose energy efficient transport with more kilometres per litre.
- That citizens and businesses use locally produced electricity, bio ethanol, bio diesel and possibly hydrogen.

Efforts:

1. The Municipality procure 5-20 electric cars and hybrid cars, as development of electric cars increases distances per litre
2. The Energy Secretariat informs and inspires citizens and businesses.

Milestone:

Transport in synergy with locally produced renewable energy

Objective:

- To create interaction between transport and locally produced electricity and bio fuel to achieve synergy and high efficiency.
- That the liquid bio energy in 2014 can be utilized in the agriculture and transport sector to replace fossil fuels.

Efforts:

1. Create coherence between wind turbines and electric cars
2. Energy supply structure
3. Examine hydrogen as energy carrier for transport.

Driving power

Dynamic

Links to relevant policies

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Green growth laboratory

The political vision

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Political objectives

Cross strategy 1: Green growth laboratory

- We will create green growth in conjunction with local positions of strength and green technologies
- We will give the area a lift in competence in terms of knowledge, technology and cooperation
- We will create sustainable business development for the benefit of citizens and businesses

Milestone:

Green technologies

Objective:

- Create 2 to 4 cooperation linkages between research environments and businesses
- Ensure that existing and new green technologies are tested and utilised by local businesses

Efforts:

1. The Energy Secretariat inspires and matches businesses and knowledge institutions

Milestone:

Local positions of strength

Objective:

- Display local positions of strength
- Visualise local competences in order to promote interdisciplinary cooperation between businesses

Efforts:

1. The Energy Secretariat conveys local business competences on the webpage www.energi2020.dk by which the Green Growth Laboratory is created.

Milestone:

Local turnover of knowledge

Objective:

- Secure interaction between local customers and local manufacturers.
- Secure a home market making the basis for businesses to export

Efforts:

1. Create a local market via communication and network

Driving power

Dynamic

Link to relevant policies

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Planning and active cooperation

The political vision

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Cross strategy 2: Planning and active cooperation

- We will promote the objectives of Energi2020 via dialogue and active cooperation.
- We will see opportunities and promote long-term planning from a total perspective.
- Soft and hard values will be part of the holistic thinking.

Milestone:

Economy and payback time

Objective:

- Visualise economy and payback time on the strategy areas: Wind, Buildings, Bio Energy, Other Renewable Energy and Transport, to avoid short-term solutions.
- To visualise good cases

Efforts:

1. Make models and spreadsheets available
2. Communicate good cases

Milestone:

Network

Objective:

- Creating and maintaining networks that support self-supply, knowledge development and business development

Efforts:

1. The Energy Secretariat inspires work with energy saving and renewable energy, e.g. via Energy Days
2. The Energy Secretariat facilitates active cooperation between supply businesses, planning authorities and others

Milestone:

Organisation

Objective:

- That Energi2020 is coordinated, promoted and communicated

Efforts:

1. The Energy Council advises the Economy & Business Committee, and contributes its competences to accomplish Energi2020.
2. The Energy Secretariat devises and accomplishes the strategy and action plans for Energi2020.

Driving power

Dynamic

Link to relevant policies

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Energy supply structure

The political vision

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Political objectives Cross strategy 3: Energy supply structure

- We will secure an efficient energy supply structure in the whole of the municipality in close collaboration with surrounding municipalities and in relation to national energy planning.
- We will secure coherence between energy production and end consumption.

Milestone:

Heating

Objective:

- Secure appropriate and balanced expansion in renewable energy- based heat, including district heating, block-heat, "village heat" and individual heating with consideration of stable heat supply and reasonable heating expenses

Efforts:

1. Initiation of total heat planning.
2. The consolidated heating plan shall ensure efficient and coordinated actions.

Milestone:

Electricity

Objective:

- Ensure biggest possible output of local renewable energy-based electricity production with consideration of stable electricity supply and reasonable electricity prices

Efforts:

1. Planning of plants for electricity production in close cooperation with electricity suppliers.
2. Ensure efficient utilisation of excess current.
3. Creation of a think tank which shall work with energy stores etc.

Milestone:

Energy supply structure and "Smart Grid"

Objective:

- Secure efficient collaboration between the different energy producers in relation to the energy consumption at residential housing, workplaces and transport etc.

Efforts:

1. Plan for a comprehensive Energy Supply Structure to be created.
2. Engineer or PhD-student to be employed to create a collaborated plan for energy supply structure. This will take place with support from universities and in dialogue with stakeholders.

Driving power

Dynamic

Link to relevant policies

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Communication and dissemination

The political vision

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Political objectives

Cross strategy 4: Communication and dissemination

- Project Energi2020 will put Ringkøbing-Skjern Municipality on the map
- We will display the area's many competences and businesses within renewable energy
- We will inspire citizens and businesses to use renewable energy

Milestone:

Globally

Objective:

- Ensure that Energi2020 and local competences are visible nationally as well as globally.

Efforts:

1. Covenant of Mayors
2. Application for Nordic Energy Municipality etc.
3. The Energy Secretariat ensures dissemination in English via the webpage www.energi2020.dk

Milestone:

Nationally

Objective:

- Ensure that Energi2020 and businesses become visible so knowledge can be exchanged with research institutions and other businesses.

Efforts:

1. The Energy Secretariat ensures dissemination in Danish via the webpage www.energi2020.dk
2. Green technology tour
3. Dissemination via miscellaneous media

Milestone:

Citizens and businesses in the local area

Objective:

- Ensure anchoring and progress of Energi2020 with local citizens and businesses for mutual benefits.

Efforts:

1. At www.energi2020.dk all good efforts about Energi2020 are gathered and displayed
2. Green technology tour
3. Dissemination via miscellaneous media

Link to relevant policies

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