

# Sustainable Energy Planning

## -how to make a local energy plan

Endre Ottosen, NEPAS

„Upgrading the education level at territorial (local) self-governments in the scope of sustainable energy management and Earth climate protection“



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Project co-financed by Lithuania



# Energy Management - Powered by NEPAS

Name  
Venue, date

**NEPAS**

# Our basis

As for management in general, energy management will only provide good results where all critical framework conditions play together.

Our clients in private industry and public sector will focus on energy management, and thereby achieve higher energy performance:

- By using energy efficient technologies and better planning tools.
- By developing its own expertise and forward-looking behavior.
- By focusing on the internal decision making, initiation of activities and measuring of results.



# Our background



New Energy Performance AS - NEPAS - is a consulting firm located at Kjeller outside Oslo. NEPAS works in the intersection between consultancy and research/development, and provides services within energy management, energy efficiency, local energy planning and higher education.

# Our clients

Our clients have a common objective to improve their energy performance and are mainly from the following sectors:

- Industry
- Municipalities
- Higher education



# Our products and services



Our products and services are under the umbrella **energy management**, and include:

- Energy efficiency
- Benchmarking
- Local energy- and climate planning
- Training courses and higher education
- Environmental labelling of companies (Miljøfyrtårn)

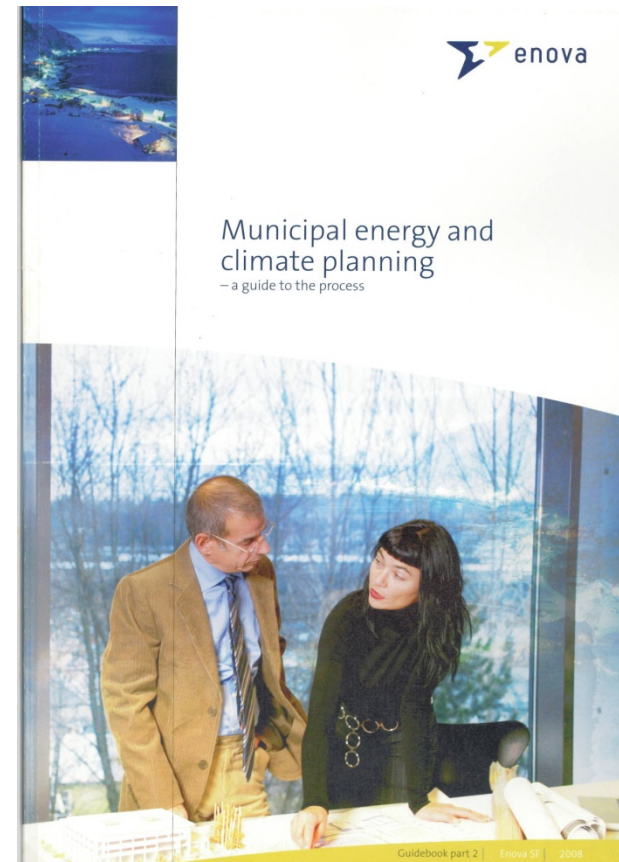
# About NEPAS

## **Sustainable Energy Planning at local level:**

- Projects and clients in Norway and Europe
- Developed SEAPs for 10 Norwegian municipalities and counties
- Developed guidelines for Sustainable Energy Planning at local level, recommended by the CoM and Enova
- Participated in a number of European projects supported by the IEE-programme to develop tools and methodologies for local energy planning. (ELVA, 3-nity, SEC-BENCH + +)
- Projects in Ukraine and Bulgaria, supported by Norwegian MFA and Norway Grants, to adopt national guidelines and develop SEAPs in selected pilot municipalities

# Methodology: Enova guidebook

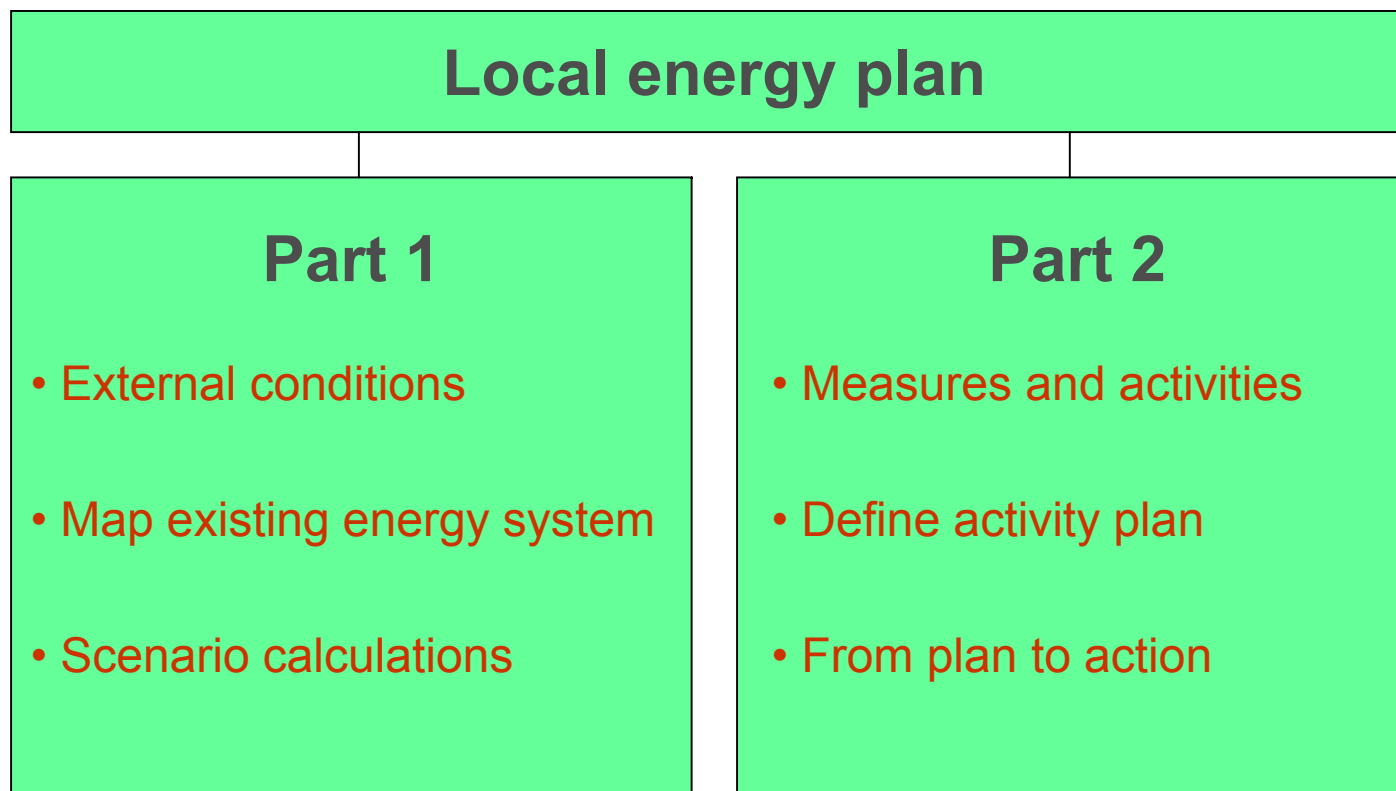
- Methodology suggested by the national energy efficiency agency in Norway, Enova
- Contributions from i.e. NEPAS and 3-nity (IEE)
- A new, revised English version is available, ready for Lithuanian translation.
- Input on available Lithuanian sources for data and statistics is needed!
- EU Covenant of Mayors: SEAP



# The planning perspective



# Local and regional energy planning

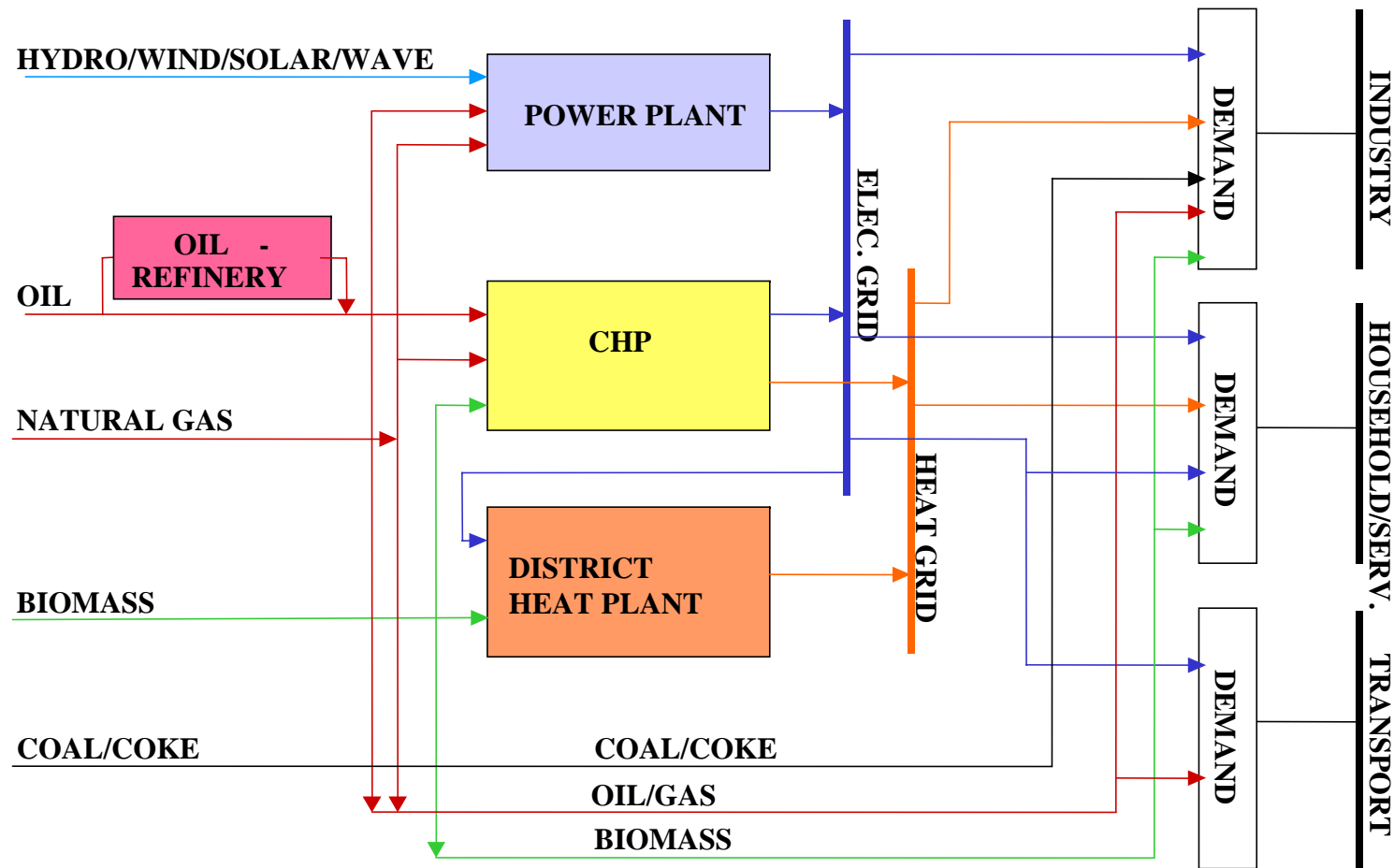


# Framework Conditions

## External conditions effecting local energy planning

- Local and regional conditions
- National legislation, guidelines and measures
- International guidelines and measures (EU)
- International treaties (Kyoto)
- History, previous work

# Map existing energy system - RES

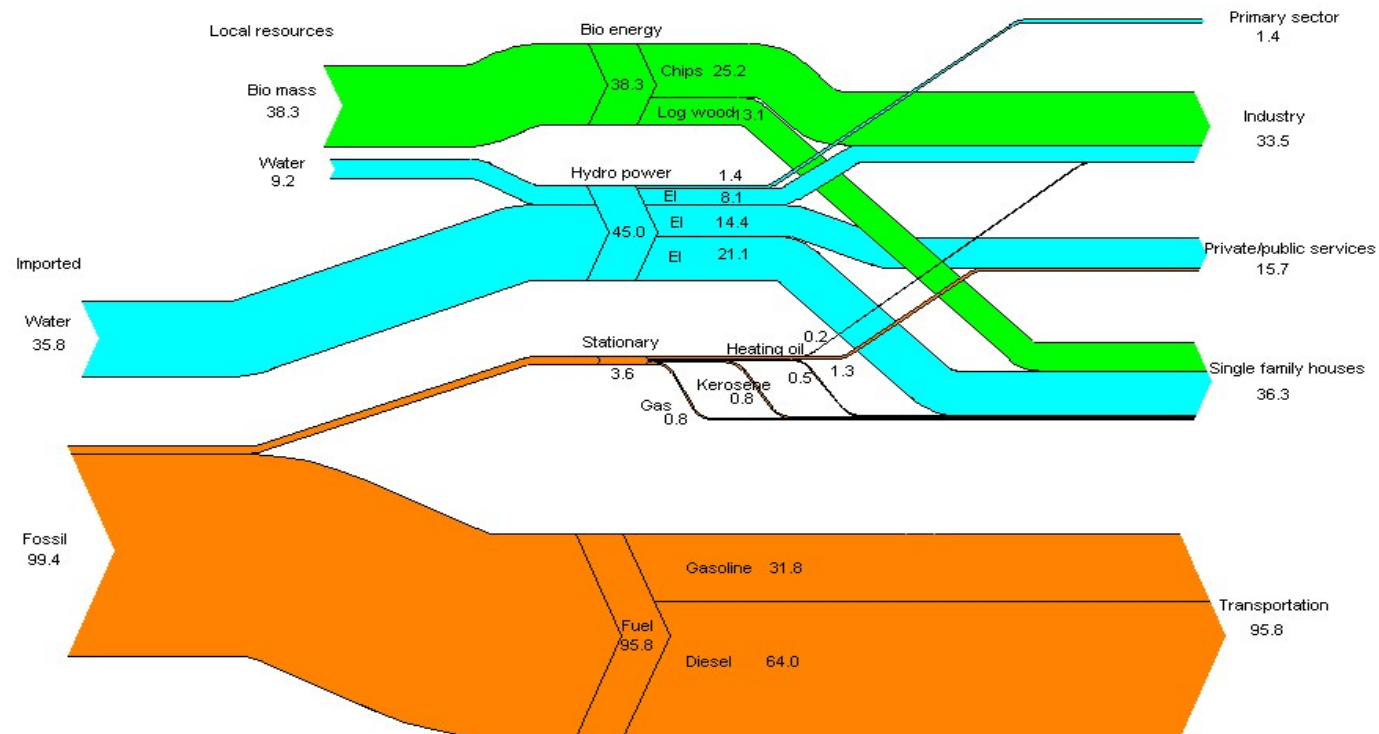


# Map existing energy system



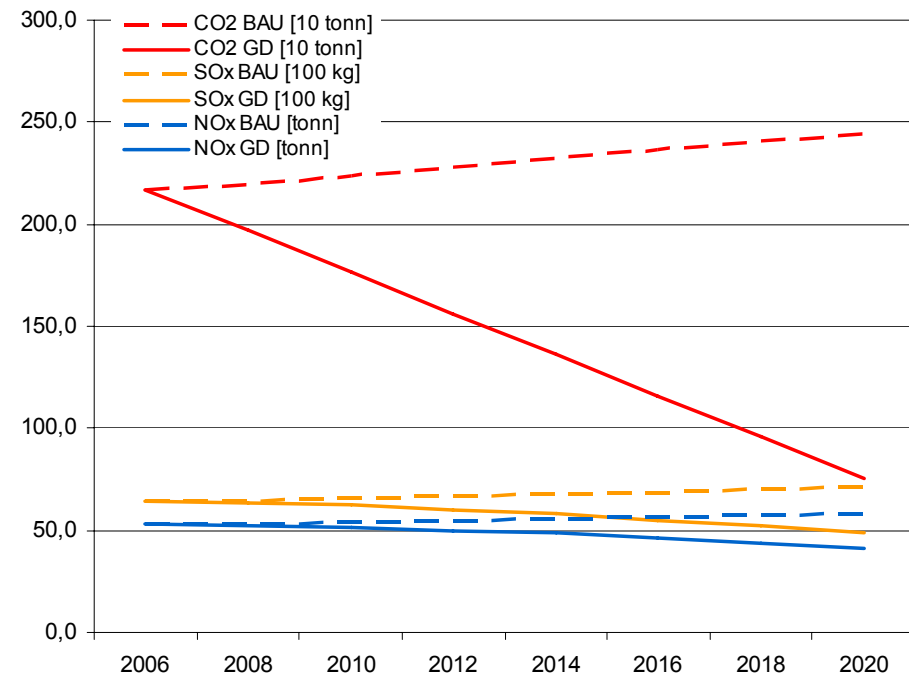
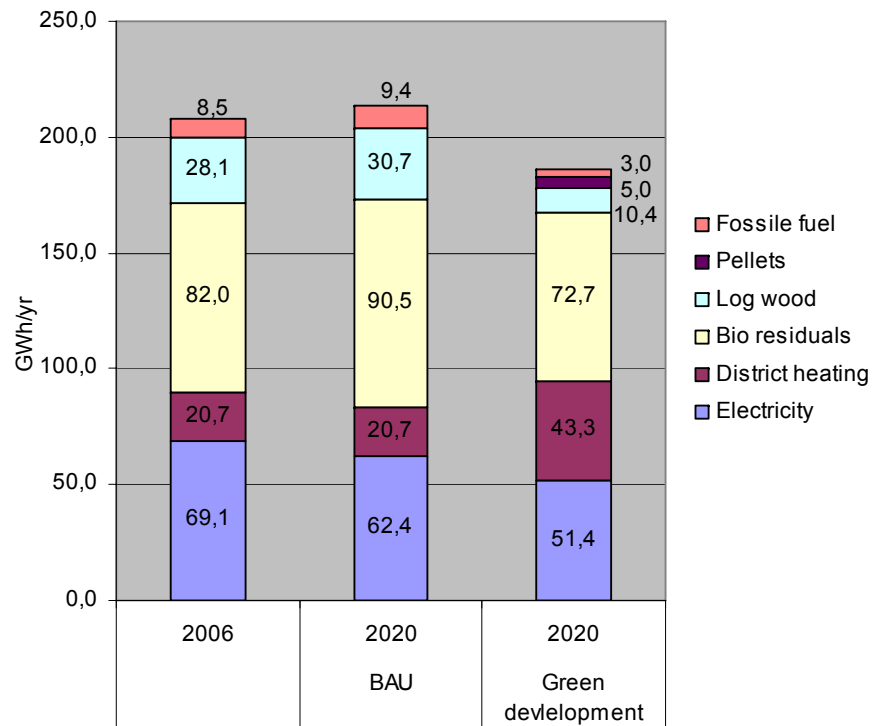
# Map existing energy system

RES → Energy flow chart

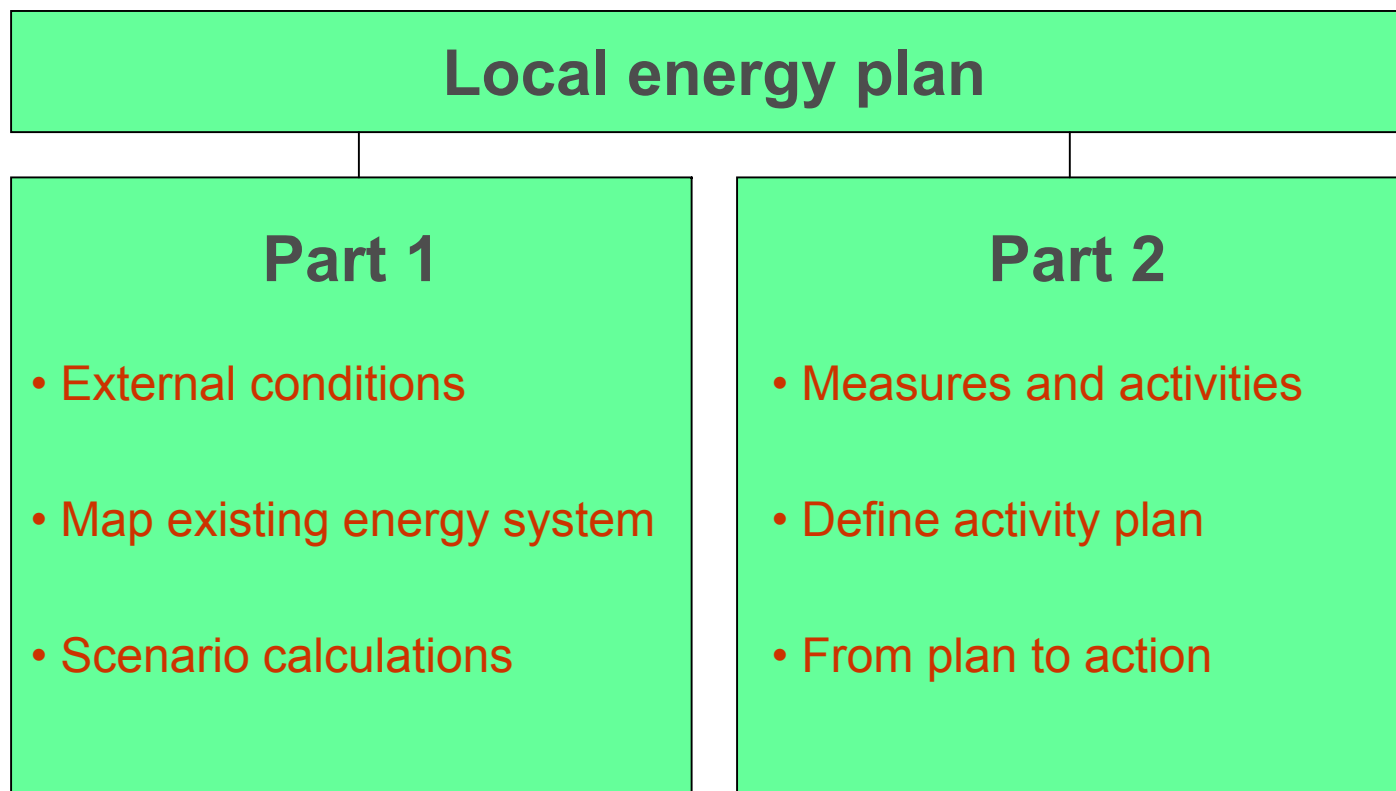


# Scenario calculations

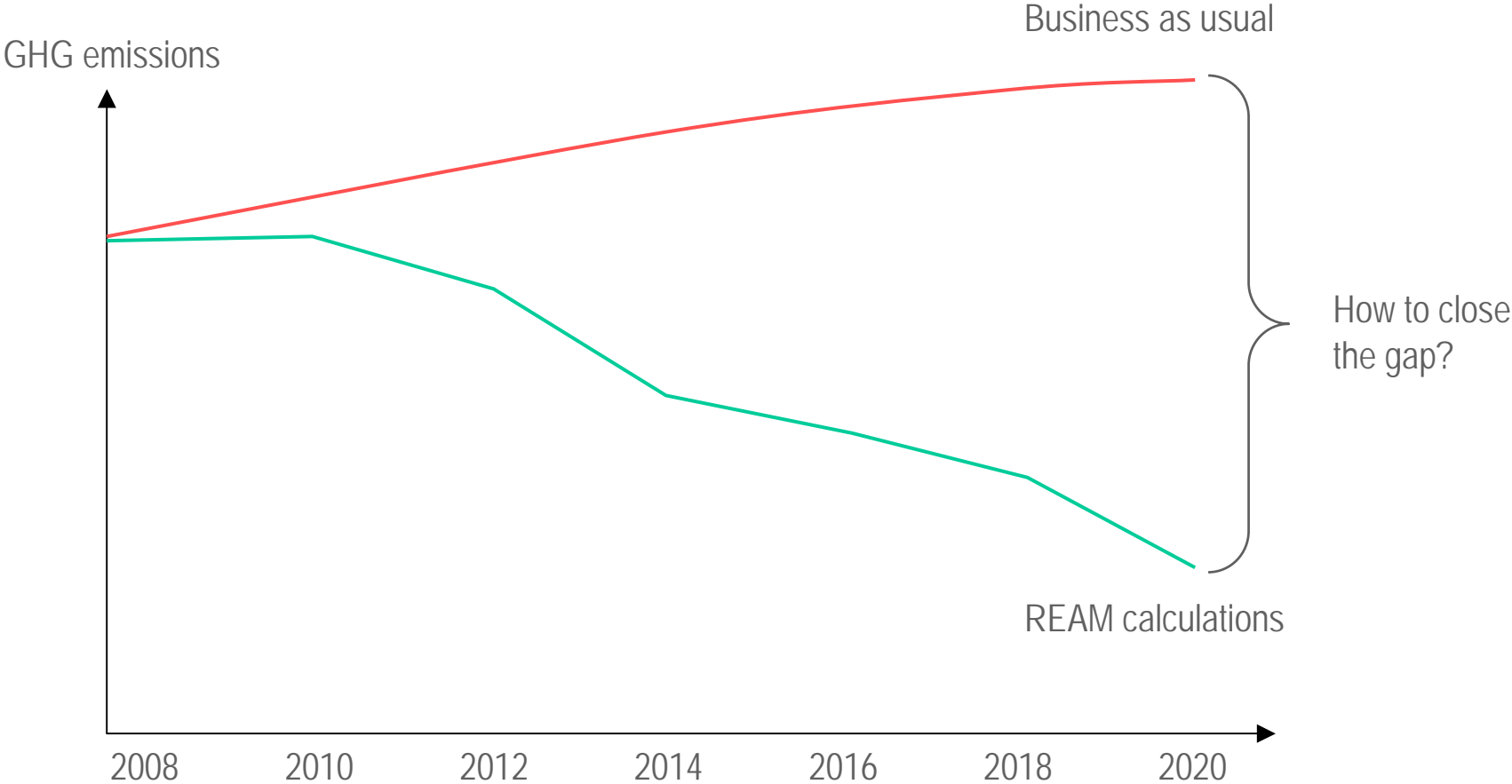
- Use a modeling tool (e.g. REAM) to calculate scenarios for the future development of the energy system (separate presentation).



# Local and regional energy planning



# Calculated potential



# Organization and program structure

## Main Program

Efficient use of energy and local production of energy from renewable energy sources

Steering committee, main program manager, topical program managers

Topical program 1  
Efficient use of energy

Topical program manager 1

Topical program 2  
Energy supply with district heating

Topical program manager 2

Topical program 3  
Other energy supply with renewable energy

Topical program manager 3

Topical program 4  
Renewable energy in local transport

Topical program manager 4

# Main targets and measures

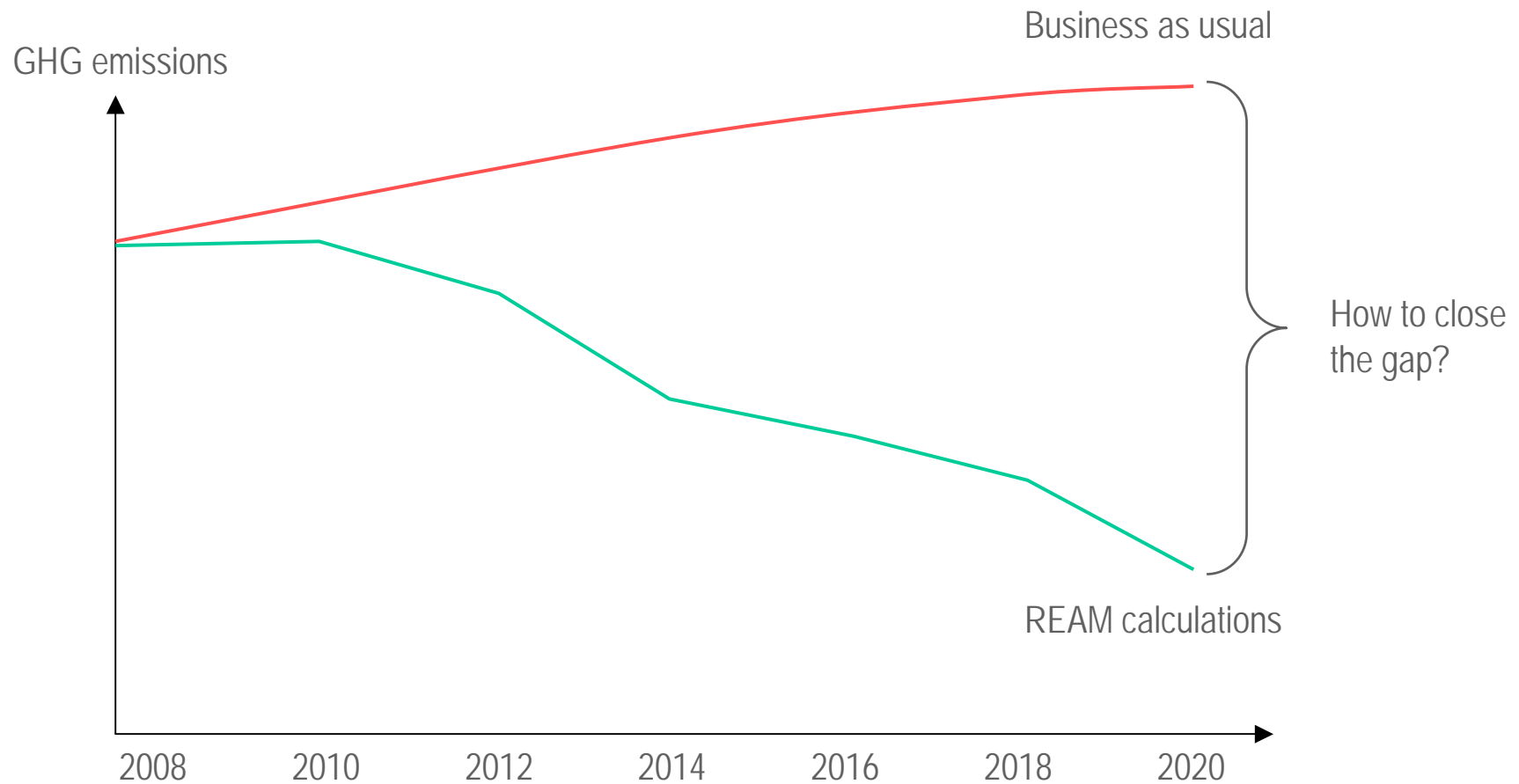
Sub-target	Sub-target description	Nr.	Measure description
<b>D1</b>	<b>Business development, building of competence and communication</b> - The municipality will play an active role in developing a sustainable community and competitive, local businesses based on alternative energy solutions.	T1.1	Establish a municipal program for rational use of energy and more use of renewable energy sources, and link this program up to other local planning mechanisms as well as regional and national support schemes.
		T1.2	Establish strategic alliances with SECs nationally and abroad, preferably through externally funded projects.
		T1.3	Establish suitable collaboration fora with local businesses and other stakeholders, define roles and expectations.
		T1.4	Implement a number of "no/low cost" measures during first half of 2008 to establish a good signal effect in the local community. See guidelines for citizens input (WP4)
T4.1	Establish an internal program structure for renewable energy systems outside DH-area, and link this program up to regional and national support schemes		
T4.2	Map all oil/kerosene-fired heating systems, and recommend alternatives for conversion of single buildings.		
T4.3	Establish one or more demonstration projects in order to show options and limitations related to minigrids.		
T4.4	Investigate, negotiate and build minigrids based on renewable energy sources outside the DH-area.		
T4.5	Establish local market structures for sales, logistics and operation of minigrids and stand-alone heating systems.		
	area by 2010.		new to MW chips-fired plant.
<b>D4</b>	<b>Other energy supply with renewable energy sources</b> - Oil and kerosene heating systems will be phased out in new buildings outside the DH area and in existing buildings which can be converted to alternative energy solutions	T4.1	Establish an internal program structure for renewable energy systems outside DH-area, and link this program up to regional and national support schemes.
		T4.2	Map all oil/kerosene-fired heating systems, and recommend alternatives for conversion of single buildings.
		T4.3	Establish one or more demonstration projects in order to show options and limitations related to minigrids.
		T4.4	Investigate, negotiate and build minigrids based on renewable energy sources outside the DH-area.
		T4.5	Establish local market structures for sales, logistics and operation of minigrids and stand-alone heating systems.
<b>D5</b>	<b>Alternative energy in local transport solutions and infrastructure</b> - All municipal vehicles will use alternative energy sources by 2010.	T5.1	Establish an internal program structure for transport solutions, and link this program up to regional and national
		T5.2	Establish at least 2 filling stations for alternative fuels in the municipality.
		T5.3	Convert the entire municipal car fleet to alternative fuels by 2010.
		T5.4	Rationalise the road lighting system in the municipality.

# Measures and activities

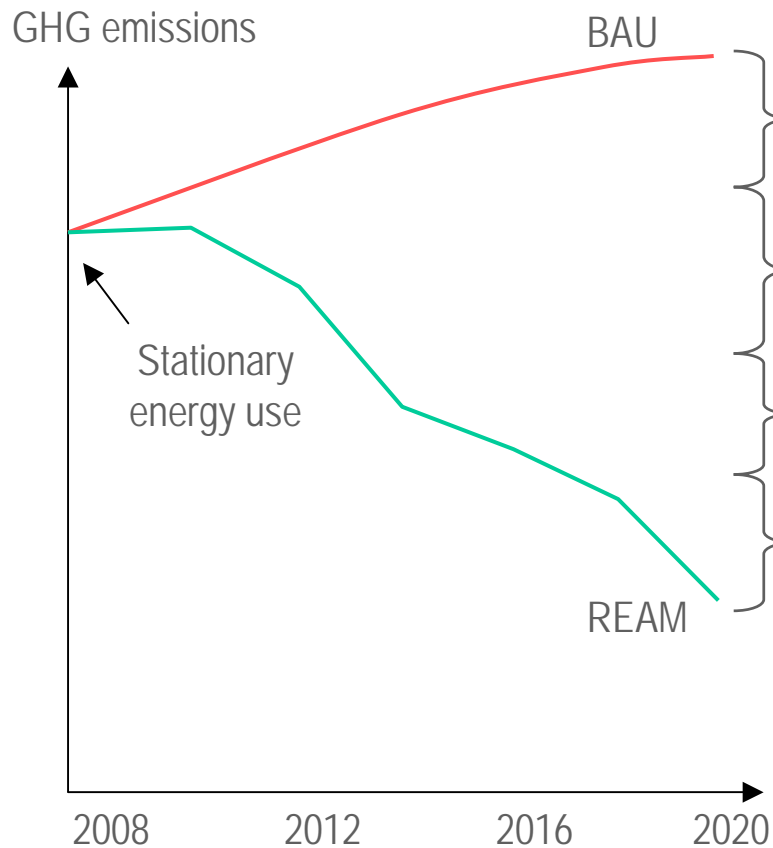
**D4 Other energy supply with renewable energy sources - Oil and kerosene heating systems will be phased out in new buildings outside the DH-area and in existing buildings which can be converted to alternative energy solutions**

Nr	Measure description	Activity	Activity description	CO <sub>2</sub> - emission tonnes	CO <sub>2</sub> - saving %	CO <sub>2</sub> - saving tonnes
T4.1	Establish an internal program structure for renewable energy systems outside DH area, and link this program up to regional and national support schemes	A4.1.1	Establish sub-plan for programme structure and local energy action committee			
		A4.1.2	Meet with funding partners, discuss structure, build-up and implementation			
		A4.1.3	Apply for funding to finance programme			
		A4.1.5	Programme implementation			
T4.2	Map all oil/kerosene-fired heating systems, and recommend alternatives for conversion of single buildings.	A4.2.1	Feasibility study to identify all buildings with oil-fired heating systems.		10 %	15 000
		A4.2.2	Contact all building owners with oil-fired heating systems, inform about alternative heating solutions.		10 %	15 000
		A4.2.3	Negotiate framework contracts with suppliers of services and equipment for conversion to alternative heating solutions.		10 %	15 000
		A4.2.4	Monitor and stimulate to conversion of heating systems		10 %	15 000
A4.2.1	Feasibility study to identify all buildings with oil-fired heating systems.			10 %	15 000	
A4.2.2	Contact all building owners with oil-fired heating systems, inform about alternative heating solutions.			10 %	15 000	
A4.2.3	Negotiate framework contracts with suppliers of services and equipment for conversion to alternative DH heating solutions.			10 %	15 000	
A4.2.4	Monitor and stimulate to conversion of heating systems			10 %	15 000	
	sales, logistics and operation of minigrids and stand-alone heating systems.		installers, plumbers, building owners etc.			
		A4.5.3	Establish strategic alliances with suppliers of equipment (pellets stoves etc..)		10 %	30 000
		A4.5.5	Marketing campaign for more advanced pellets boiler systems and water based systems in single houses (new and existing houses)		15 %	45 000
		A4.5.6	Energy-miniexhibitions in building warehouses and other sales-channels for relevant heating equipment.		15 %	45 000
				<b>300 000</b>		<b>165 000</b>
<b>Total</b>				<b>580 000</b>	<b>45 %</b>	<b>260 500</b>

# Breaking down the gap



# Closing the gap



Reduced use of fossil energy through	Emission reductions
Efficiency measures in municipal buildings	25 %
District heating in urban areas	35 %
Mini-grids in building clusters, cottage areas etc.	15 %
Chip burners, pellet boilers, heat pumps in buildings in rural areas	25 %
<b>Reductions according to REAM potential</b>	<b>100 %</b>

# A SEAP must lead to change!

*Closing the gap, the SEAP must lead to change and be of multiple characters.  
Actions should always start where the municipality is in control !*

- **Leadership and organisational capacity**
  - Show dedication through strong internal leadership and motivating actions (define new responsibilities, separate energy unit, extra training of staff..)
- **Involve external stakeholders**
  - Establish/strengthen collaboration structures between the municipality, the citizens and the local businesses (events, regular workshops, competitions)
- **Simple actions first!**
  - Establish routines/systems to monitor progress (EMS, benchmarking)
  - Do all no-cost and low-cost measures in municipal buildings (operation and maintenance, light bulbs, window-stripping, tuning of boilers and heating systems)
- **Profitable investments second!**
  - Energy efficiency measures in municipal buildings (insulation, new windows, radiator regulation valves, new boilers)
  - Renewable energy sources, waste incineration, district heating...



# From plan to action – check list

- Establish a program structure
- Identify local key actors, and involve local industry and commerce (critical success factor!)
- Establish main goals and measures
- Identify a *detailed* activity plan containing time-frames and emission reductions according to calculated potential in REAM
- Review main goals and measures
- Make sure that proper budget allocations are made in order to carry out the identified activities

→ **Adopt and implement the local energy plan!**

Thank you for your attention

Questions?

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