



BELGIUM, Flanders – regional policy framework

National policies affecting 4th generation District Heating (4DHC) development

- There is **no national approach towards DH**, renewable energies are a skill almost entirely regionalized (apart from off-shore wind). However, related to heat networks the federal government is mandated to define maximum prices, government assignments, and consumer rights.

Other national regulations influencing energy efficiency and renewable energy investments, funding programs

- National Energy Efficiency Action Plan (2014)**: The competences for energy efficiency are distributed between the three regions, with support measures from the federal government. The regions have, each for its own territory, implemented the EPB and the EED directive; promoted further energy efficiency by households and tertiary buildings through grants, compulsory audit schemes, awareness raising programmes, etc.; fostered energy savings in industry by signing voluntary agreements with industry (Flanders, Wallonia); and promoted renewable energies and cogeneration by setting up green and CHP certificates systems.

Regional or local policies influencing 4DHC development

- “Warmteplan 2020” (Heatplan)** was approved by the Flemish government in June 2017. By 2020, the “Energy Plan 2020” aims to produce 9.197 GWh through ‘green’ heat. It is forecasted that only 8.765 GWh of green heat will be produced by 2020 within current policies. This leaves a gap of about 432 GWh which needs to be bridged. Therefore extra measures are needed. Some of the measures planned are in APPENDIX 2.
- The **“Witboek: Beleidsplan Ruimte Vlaanderen”**: The Flemish Government approved on 30 november 2016 this policy document on strategic spatial transformation plan in Flanders. The “witboek” contains the following information on heatnets:
 - To meet our energy-needs, we need to make an efficient use of energy sources such as cogeneration of heat & power (WKK), heat pumps or heat nets.
 - Heatnets need to be bundled as much as possible with the existing infrastructure.

- The use of waste energy in a heatnet is a valuable option to increase energy efficiency. In Flanders, few examples of heatnets exist. They are mostly applied in new living areas. In the future there will be a challenge to transform the already existing urban tissue.
- Local governments need to be assisted in the implementation of heatnets. The Strategic Project “Energielandschappen 2.0” together with the Province East-Flanders develops a toolbox to implement heatnets in existing urban tissues.
- [Vlaams Klimaatplan 2013-2020](#): The Flemish ‘climate plan 2013-2020’ wants to stimulate the development of heatnets. In order to implement 2012/27/EU on energy-efficiency, Flanders made an analysis by 31 december 2015 on the development of district heating and cooling. This analysis will be repeated every 5 years.
- Overview of Flemish (and federal) **subsidies for HeatNets**:
 - [STRES: “Strategische Ecologiesteun” or “Strategic Ecologysupport”](#). Entrepreneurs can obtain subsidies for green investments and ‘strategic’ high-tech in the Flemish Region from the agency of Innovation & Entrepreneurship. The minimum investment is € 3 million. The percentage of support varies from 20 until 40%.
 - [Ecologiepremie+: “Ecologysupport+”](#), Entrepreneurs in the Flemish Region can obtain grants from the Agency of Innovation & Entrepreneurship for investments in certain environment- and energy saving technologies, CHP, and renewable energy.
 - [REG: REG-subsidies from the distribution system operator](#). Entrepreneurs can obtain certain subsidies (for heatpump, solar boiler, thermo-regulating glass, lightning) if they invest in rational energy use or “rationeel energiegebruik” (REG). These funds are granted by several distribution system operators in consultation with the Flemish Government.
 - [Klimaatfonds](#): This fund aims to finance the “Vlaams Klimaatplan 2013-2020”. This plan contains measures to respond to climate change.
 - [Call green Heat](#): In June 2013, the Flemish government provided extra financial support within the frame of the Flemish Action Plan for Green heat. There will be an increased ecological support for technologies that focus on green heat and waste heat. This is an investment support with a yearly budget from the Flemish Government. For green heat projects can be submitted through a ‘call’-system.
 - [The RenovatiePact](#): Initiated by the Flemish Government in December 2014, the RenovatiePact’s objective is to develop and implement a coherent plan of action that, in a short-, medium- and long-term perspective, will lead to a significant increase of the renovation rate of the Flemish housing stock and will optimize its energy performance to nearly zero energy level.
 - [“Investeringsaftrek” \(+scan VLAIO\)](#): ‘investment incentives’ from the federal government of finances.

Local and regional good practices

- **HeatNets in Flanders:**

- Existing HeatNets: Roeselare, Brugge, Gent, Mons
- New Heatnets: Antwerp, Turnhout, Waterloo, Harelbeke-Kuurne, Bocholt, Merksplas
- Planned Heatnets: Aalst, Oostende, Eeklo, Genk, Mol-Dessel, Mechelen, Leuven, Hasselt

More information can be found in [„Duurzame Warmte en Koude, de groei van duurzame warmte- en koudenetten in Nederland en Vlaanderen“](#), published by Klaas de Jong

- **In Kortrijk** – several projects:

- **Venning:** the renewal of a social housing neighbourhood in Kortrijk, with a biomass installation and HeatNet
- European project BISEPS: at **Kortrijk Noord**, companies are being clustered so they can make use of renewable energy and exchange heat
- **Kortrijk Weide:** pilot of HeatNet NWE

- **Further details on existing and new HeatNets:**

- **MIROM Roeselare:** a heatnet having a waste-incinerator as source. Roeselare is city situated in Midwest-Flanders.
- **Harelbeke and Kuurne:** A heatnet between the waste-incinerator IMOG and the urban neighbourhood is newly constructed. The connection between IMOG Harelbeke and Nerva (manufacturer of concrete elements)
- **Transfo Zwevegem:** former power plant that is being transformed into a site showcasing sustainable energy, among which 4DHC.
- IMOG site at **Moen:** biomass installation
- Crematorium at **Kulak:** re-use of heat
- **Menen:** HeatNet NWE case part of the long term transition roadmap

BARRIERS to development of 4DHC

Policy and legal barriers

- **Uncertainty of local politics/ elections; inconsistent local or regional policies:** Deputy mayors for climate and for city-development and housing are very supportive on DH, but we do not know whether in the next legislation, they will have the same interests. Regional policies are in general supportive towards DH in Flanders, but the support for sustainable energy projects in Flanders has been very inconsistent and varied greatly during the last decade. Therefore, investors are uncertain to invest a lot of money (as cost DH) in high risk projects as DH.
- **Public procurement issues:** Cities do not have the knowledge to write tenders, but do have to obey public procurement legislation.

- **Unfavourable legislation:**
 - In Flanders the EPB-legislation (Energie Prestatie) is not very favorable for DH if it does not use a renewable energy source. A lot of DH systems have to start with gas as energy source and evolve towards renewable in a later stage, where more dwellings/buildings are combined to one backbone heat-pipe. (In Kortrijk this is the case) The EPB-report has to be filled in soon after building the projects and therefore the developer chooses other options to get good EPB point instead of DH with later on a renewable source.
 - Some waste heat potentials can't be used because of legal barriers (industrial waste heat). For example, there is no legislation that assign developers of heatnets specific rights to use someone else's property for the construction of their heat network and accompanying infrastructure.
- **Inconsistency in legislation and subsidies:**
 - The use of electricity to circulate warm water in heatnet is punished (lower E-level, even if green electricity will be used later), counterproductive subsidies
 - Heat nets are in place before local and regional legislation, should be the other way around. However, multiple stakeholders in Flanders remarked that concerning the construction of heatnets there should be no rigid legal framework as there needs to be enough contractual freedom. Local circumstances will determine the most optimal form of organisation. Concerning the construction and maintenance of heatnets, pragmatic solutions are preferred more than rigid theoretic and academic approaches.
 - Heat demand for a single house cannot be provided due to privacy issues.

Financial and market barriers

- **The very low ROI and the very long term character of the investment** results in reluctance of commercial parties to invest. Even the selling of waste heat that could anchor companies to their roots is not easy to establish. Because the earnings are not high and the freedom of a company to relocate is diminished.
- **Low gas prices** as competition to district heating
- **Lack of business cases** when **introducing DH-networks in brownfield scenarios**
- **End-users cannot get appropriate loans** considering higher purchase price and lower recurrent energy costs
- **Lack of funding/subsidies on local level**
- Need for **financial support for developing the backbone of the network**
- Timing of introducing and stopping subsidies is important for respectively starting up a market but not over subsidize.
- **Pre-finance** the additional capacity to be future proof
- **Market barriers:** Many different partners are involved with a DH system, the contracts are not easy to settle and always the government is involved also (for the building permits, for the use of their public domain, as a customer) the commercial logic and the governmental thinking are not always in line. The end user of the building is not always the one who builds, maintains the building. Because of the DBFMO system for realising public buildings (like schools in Flanders), the end-user is not the one to decide on the maintenance and the design and techniques.

- **Market monopoly** / Lack of free choice of energy provider for the end-user
- **End users' mindset** (they don't like change, when purchasing people are mostly looking for cheap and fast solutions, not sustainable, complaints during construction). Lack of knowledge about heat networks (people in general). More local information on local sources should be needed.
- **Timeframe of heatnet developments**/to get buildings connected (too slow for the end-users and developers)
- **Need for solutions so that investment in backup systems is not needed** by developers and end-users
- **Operational security and price** competition
- **The gas net** in Flanders is very extended
- Commitment to connect to secure enough demand
- **Need for a driving force**, could/should be the city
- The necessity to **'unbundle' growth, when the DH network further extends**. In Wallonia there is 1 DH network in Malempré, based on biomass. It's a village cooperation, and local farmers deliver wood pellets.
- **Lack of standard models** for heat nets. These are the most common models in Flanders:

Type	Heat production	Transport & distribution	Supply
Industrial waste heat delivery to a residential neighbourhood	Partner 1	Partner 2	
B-t-B waste heat connection	Partner 1		
Geothermal source connected to an urban heatnet	Partner 1	Partner 2	Partner 1
Launch of neighbourhood district heating with gas	Partner 1		
Multi-modal large scale urban district heating	Partners x, y, z	Partners a, b, c	Partners a, b, c

Recommendations for policy makers – Solutions proposed

- **Strengthen local governments' skills and leadership:**
 - Need for political courage and consistency/ Strong signals/decisions of local government will be followed by developers.
 - Prepare for communal heating in the future by investing in big boiler room instead of individual heating systems, to be able to connect in the future.
 - Raise awareness of end users and city administration, esp. deputy mayors in charge on benefits of sustainable energy projects, share research results
 - DH projects take a lot of time until they are finally realised. Multiple stakeholders mention that the main cause is the lack of necessary (juridical) knowledge, also at governmental institutions, to realise DH projects. Some say a roadmap could be a solution.

- **Legislative suggestions:**
 - **Encourage CHP** / when building a power plant, it should be an obligation to recuperate the heat
 - **Need for a regulating framework** (also for social pricing, unpaid bills, social energy security, for heat metering and measuring)
 - Local obligation to evaluate the feasibility of heat nets in spatial planning, urban developments
 - Change of law (e-level of buildings) favouring, instead of prohibiting the use of waste heat
 - Giving more time to finish the EPB-report and in calculating future investments in renewable energy?

- **Financial recommendations:**
 - **Organising a financing vehicle** at the Flemish regional level
 - We need to have a **tax shift from electricity towards gas**.
 - **Harmonising subsidies:** the overview of Flemish (and federal) subsidies for HeatNets shows that there are many different types of grants that can be employed for DH.
 - **Internalise environmental costs** by measuring sustainability, and integrating financial and environmental costs. The external costs (on the environment) is being internalised so e.g. companies take sustainability measures.
 - Proper density of heat demand should be realised in order to make it profitable
 - **Stimulate connection of end users** by giving some incentives

- **Other solutions proposed:**
 - **Multi stakeholder approaches** to speed up the process;
 - **Reward pioneer developers**/not present them the bill
 - **Heat balancing in heat networks** should be encouraged
 - **Connect old and/or public buildings** that are big energy users (biggest impact compared to well insulated buildings)
 - **Take advantage of opportunities for "drastic" changes**, f.i. very old gas lines, city developments, laying of fibre optic cables...
 - **Studies on demand and supply** for today and future forecasts
 - **Communication** – raise awareness, start discussions in newspapers, magazines, ...
 - **Create local sources** / Leiedal: study on sustainable energy sources

APPENDIX – 1

Goals of the Energy Plan 2020:							
GWh	Inventory 2015	Forecast 2020	2016	2017	2018	2019	2020
Green Heat	7.112	8.765	7.673	7.993	8.383	8.720	9.197
Biomass	3.197	3.972	3.346	3.581	3.885	4.004	4.327
Biomass Households	3.494	3.850	3.850	3.850	3.850	3.850	3.850
Solar Water Heaters	154	239	168	186	207	227	246
Heat pump	267	540	309	376	441	532	610
Geothermal Energy	0	164				107	164

APPENDIX – 2

Recently launched and planned measures of the Heat Plan 2020

1. HeatNets

It is necessary to have a solid legal framework to define market roles and – responsibilities. In order to construct heatnets, flexibility of the project structure is needed, so projects can be adapted to local circumstances, to make them economically viable, and to have projects supported by society.

1.1 Yearly call green heat, waste heat, and bio-methane.

The calls for green heat/waste heat/geothermal energy/bio-methane resulted in 26 projects (dd. February 2017). 18 of these projects deliver heat through heatnets to about 10.400 families. Currently, heatnets in Flanders provide heat to about 26.000 families.

<i>Calls</i>	<i>Projects</i>	<i>Heatnets</i>
Biomass/bio-methane	4	0
Geothermal Energy	2	2
Waste Heat	20	16
Total	26	18

The Flemish Minister of Energy launches a new call on green heat on a yearly basis. This call is being financed by the Energy Fund. More information can be found through the following link: <http://www.energiesparen.be/call-groene-warmte>

1.2 Evaluation of the call green heat, waste heat, and bio-methane.

In 2017, the call was evaluated.

1.3 Forecast HeatNets by 2020

By 2020, the Heat Plan aims to deliver heat through heatnets of 1.000.000 MWh/jaar, to about 50.0000 families. The following table provides an overview of the existing situation and the forecast for 2020:

	Heat MWh/year	Equivalent number of families
Existing HeatNets	561.882	26.884
2020, pessimistic	900.000	45.000
2020, optimistic	1.000.000	50.000

1.4 Staff impact

To encourage the development of HeatNets, several administrations of the Flemish Government will work more closely together, namely the Flemish Agency of Energy, the department of Environment, and the administration of Spatial Economy.

1.5 Marking interesting zones to develop heatnets

These zones are defined by a heatmap and energy data. In 2015, VITO developed a heatmap, showing zones where heat is available and demanded. The map indicates zones where heatnets, heat recuperation from waste heat, and WKK are economically viable. This map is available on geopunt.be, since 3 June 2016. Based on this information, local municipalities will be supported by “Warmtenetwerk Vlaanderen” and the Flemish Energy Agency to further develop heatnets. The Flemish Government also aims to further refine the HeatMap and the data on energy, and to develop the necessary instruments.

1.6 Manual for connecting existing multi-family residences to heatnets

In order to facilitate the development of heatnets, not only new residential neighbourhoods should be connected to a heatnet, but also existing multi-family residences. A research is being launched to check viability of these kinds of projects.

1.7 Policy platforms HeatNets

In June 2017, the Flemish Energy agency will bring stakeholders of Heatnets together in a policy platform. More information can be found here: <http://www.energiesparen.be/beleidsplatform-warmtenetten>

1.8 Informing local governments

“Warmtenetwerk Vlaanderen” will provide information to local governments through the organisation of regional workshops, and develop a manual for local governments on how to implement heatnets.

1.9 Creating support for Heatnets through citizen participation

It is already possible to let citizens finance the construction of a heatnet, and this should become common practice. This happened in the city of Eeklo, where citizens participate in the financing model. Therefore, the local level is essential to develop Heatnets.

2. Transversal Measures

2.1 Garanties of origin

Research is being done on the advantage “guaranties of origin” may have, for the development of green heat projects in Flanders.

2.2 Role model of the Government

The Flemish Government as a role model on the application of green heat in its own buildings.

2.3 Measures for companies

Research is being done on the barriers of green heat projects, and the measures which need to be taken.

2.4 Green heat in renovation projects

Extra explanation will be provided on the renovation of projects.

2.5 Innovation and EPB

Innovative techniques on green heating which are implemented in buildings need to be taken into account in the EPB calculation of buildings (energy labelling). Today, not all techniques can be incorporated in current calculation methods. A solution is necessary for innovation to be stimulated.

2.6 Optimization of energy savings

Optimization is needed when heat is being produced from biomass, biogas or geothermal energy.

2.7 Efficient support of the co-generation of heat and power (WKK)

Research is being done on the extra support in investment of the co-generation of heat and power.

3. Small Scale Biomass

3.1 Expansion of call green heat for installation f 1MW or smaller.

Two measures are being proposed: the development of a pilot project, and the financial support of qualitative installations.

3.2 Sustainability criteria Biomass

Sustainability criteria are necessary on installations that produce electricity or heat from biomass.

3.3 Stimulate efficient use of biomass through the shift of support from green energy to WKK

The production of energy from biomass is currently supported by green energy certificates and certificates for WKK. However, the use of WKK is more efficient. Therefore, the certificates for WKK will be further stimulated, whereas the amount of green energy certificates will be lowered.

4. Solar Panels

4.1 Minimum share renewable energy

The use of solar panels is being stimulated by obliging a minimum share of renewable energy in new buildings. The constructor will often need to combine solar panels with another application of renewable energy to meet the minimum demand of renewable energy.

4.2 Potential for large scale applications

Large scale solar applications are much more interesting than the small scale versions. Currently, REG-subsidies exist to implement large scale projects, but extra measures are being investigated. More information of REG-subsidies (Rational use of Energy) can be found here: <http://www.vlaio.be/maatregel/reg-premies-distributienetbeheerders>

4.3 Solar map as boost

The solar map indicates which roofs are suitable for solar panels. The map can be found through the following link: <https://www.energiesparen.be/zonnekaart>

4.4 Quality Guaranty

A system of certificates has been developed to guarantee the professionalism of installers.

5. Heat Pumps

5.1 Adjusting the calculation method of heat pumps in EPB (energy labelling of buildings)

The use of heat pumps is being stimulated by obliging a minimum share of renewable energy in new buildings. This measure counts for both new construction projects, as renovation projects. Since 26 september 2015, heat pumps need to meet regulations on eco-design and ecolabeling. The adaptation of the EPB-regulations will allow to take into account innovate techniques and systems.

5.2 Potential of large scale heat pumps

Large scale Heat pumps need to be introduced on the market, to stimulate the use of heatpumps in heatnets.

5.3 Informing: optimization of subsidies for heatnets

REG subsidies have since 2017 provided a bonus for the renovation of existing buildings, if minimum 3 different energy saving measures are being combined within a period of 5 years. REG subsidies provide 4000 euro for a geothermal heatpump, 1500 euro for an air-water heat pump, 800 euro for a hybrid air-water heatpump, and 300 euro for an air-air heatpump. All subsidies consist of maximum 40% of the bill. Subsidies are being doubled in areas where there is no gasnet.

5.4 Acknowledging impact of cost of electricity

It is being investigated if adjusted costs of electricity would remove certain barriers for several techniques, such as heat pumps.

5.5 Barriers Heat Pump

Research is being done to remove certain barriers that prevent the development/installation of heat pumps.

5.6 Promotion of role of heat pumps

Emphasis needs to be placed on the important role that heat pumps can play in a smart energy system that integrates heat and electricity.

5.4 Guaranty of Quality

A system of certificates has been developed to guarantee the professionalism of installers.

5.4 Improving data on heat pumps in the inventory of renewable energy

Currently, few heat pumps are lacking in the inventory.

6. Geothermal Energy

6.1 Adjusting the call of Geothermal Energy

The call was adjusted so heatnets with geothermal energy can receive financial support.

6.2 Developing a guarantee system for geothermal energy

Projects are being supported through the [strategic ecology-support \(STRES-fund](#) from the Agency of Innovation and Development). This support is being granted to enterprises that invest in green technology. More information on this subsidy can be found through the following link:

6.3 European project

The European project Geothermal ERA NET started on 1 January 2017. This project aims to develop installation on geothermal energy.

6.4 Geothermal energy as part of EPB

A policy framework and calculation method is being developed.

Overview of measures which will be implemented:

NR	Action	Status
	HeatNets	
4.1.1	Yearly call green heat, waste heat and bio-methane	Being executed
4.1.2	Evaluation of Call	To launch
4.1.3	Forecast HeatNets by 2020	Being researched
4.1.4	Collaboration between administrations of Flemish Government	To launch
4.1.5	Marking interesting zones to develop heatnets	Being researched
4.1.6	Manual for connecting existing multi-family residences to heatnets	Being researched
4.1.7	Policy platforms HeatNets	To launch
4.1.8	Informing local governments	Being researched
4.1.9	Creating support for Heatnets through citizen participation	To launch
	Transversal Measures	
4.2.1	Garanties of origin	To launch
4.2.2	Role model of the Government	Being executed
4.2.3	Measures for companies	To launch
4.2.4	Green heat in renovation projects	Being researched
4.2.5	Innovation and EPB	Being researched
4.2.6	Optimization of energy savings	To launch
4.2.7	Efficient support of co-generation of heat and power (WKK)	Being researched
	Biomass	
4.3.1	Expansion of call green heat	Proposal has been made, regulation needs to be changed
4.3.2	Sustainability criteria biomass	Approved
4.3.3	Support for green energy needs to shift to WKK	To launch
	Solar Panels	
4.4.1	Minimum share renewable EPB	Being executed

4.4.2	Potential large scale solar water heaters	To launch
4.4.3	Solar map as boost	Executed
4.4.4	Quality guaranty: linking EPB and certificate of installer	To launch
	Heat pumps	
4.5.1	Adjust calculation method of heat pumps in EPB	Being executed
4.5.2	Potential of large scale heat pumps	Research being executed
4.5.3	Informing: optimisation of subsidies for heatnets	To launch
4.5.4	New structure of costs and acknowledging impact of cost of electricity	To launch
4.5.5	Barriers Heat pumps	To launch
4.5.6	Promotion of the role of heat pumps	To launch
4.5.7	Guaranty of quality	To launch
4.5.8	Improving data on heat pumps in the inventory of renewable energy	To launch
	Geothermal Energy	
4.6.1	Adjusting the call of geothermal energy	To launch
4.6.2	Developping a guarantee system for geothermal energy	Being executed
4.6.3	European project	Being executed
4.6.4	Geothermal energy as part of EPB	Being researched