

Spatial policy for 4DHC

Overview of policies in HeatNet countries



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About HeatNet NWE

This document has been developed as part of the HeatNet NWE project, which is part-funded through the Interreg NWE programme and aims to increase the uptake of 4DHC networks across North-West Europe. As part of this project, the partners developed the HeatNet Model, which will help the public sector to begin implementing 4DHC networks, and the Transition Roadmaps, which outline the partners' experience in developing six district heating pilots across North-West Europe. The HeatNet Guide to Financing gives a broad overview of the various sources available to finance district heating schemes.

For further information on these reports and on the HeatNet NWE project, please visit www.guidetodistrictheating.eu.

This report is about the spatial policies in the countries of the HeatNet pilots: the Netherlands, France, Ireland, Belgium, the UK and Scotland. It provides an overview of the relevant spatial policies and legislation in relation to the development of District Heating and Cooling (DHC) networks. The report is organized as follows. It starts with the similar spatial policies within the considered countries, followed by specific issues and legislation for each country.

Additional and more in-depth information about the spatial policies, can be found in the separate reports for each pilot-country. England and Scotland are combined in one report, as substantial parts of the legislation are identical. For Belgium, the main focus is on Flanders.

The legislation is collected by a combination of desk research and local experts from the pilot projects: Jonathan Selman (Plymouth), Eddie Conroy & Therese Pender (South Dublin), Sara Cameron & Catherine Fitzgerald (Aberdeen), Bram Pauwels, Gerda Flo & Veerle Cox (Kortrijk), Herman Eijndems (Heerlen) and Odile Lefrere (Boulogne sur Mer).

Similar general spatial policies and issues

In most of the selected countries, the DHC relevant legislation is in the process of change, ought to change in order to fit and accommodate DHC - or is outright insufficiently compatible for DHC networks.

All NWE countries have more or less integrated permitting regimes. Moreover, a large body of EU environmental legislation is transposed and valid within the national legislation framework, hence creating comparable conditions within the selected countries in this report.

In its essence, heat- and cooling networks are infrastructural projects, which have to deal with or are characterized by:

- intimately linked to municipal or inter-municipal urban developments;
- spatially aligned with road networks that connects neighbourhoods;
- density depended for its economic viability - as well as the use of buildings and their depreciation over long periods, comparable to those of most urban infrastructures.

In addition, heating networks could be defined as a local public utility - that of district heating, which would provide the elementary infrastructure (boiler rooms, pipes, substations etc.) with a special status, simplifying the complex processes in regard to planning rules. However, none of the NWE countries defines DHC as a public utility (yet), resulting in the lack of benefits other public utility services have.

Moreover, this can complicate crossing or building adjacent to canals, railways, highways, etc., mainly as unfamiliarity with DHC stokes fear of possible damages.

Crossing country borders with DHC is not possible yet.

Overview Ireland

In recent years, Ireland departed its long tradition of low density planning - and shifts towards higher density, at least in its master planning for Ireland 2040. These high density communities are linked to strong infrastructure. This National Planning Framework is a blueprint for consolidation and regeneration and sets national objectives and overarching policies for delivery of sustainable communities by 2040.

District heating (DH) currently holds less than 1% of the heating market in Ireland, yet, holds great potential for the Irish market given the high density planning. However, specific legislation for District Heating in Ireland is lacking. Promising are the several District Heating schemes, which have been undertaken by local authorities

recently. Moreover, a small number of local authorities incorporated District Heating Policy. Two Strategic Development Zones (SDZs) in South Dublin County Council where the planning conditions require that the new developments must be 'district heating enabled'. Each house and building must be capable of connecting to district heating if available (i.e. water based heating), although this is not incentivised with a ban on gas in these areas.

Grants for energy efficiency measures for individual households do not include equipment for DH connection, neither provide grants for DH substations. This hinders DH development, as customers will choose other technologies that are supported by grants, and installing these systems now locks them into these technologies for 10-15 years.

The lack of specific legislation allowing developers to obtain licenses for resource exploration, development and drilling under third party lands still remains a barrier.

Currently the legislation does not reflect the green credentials of DH, however this is currently under review by the Department of Communications, Climate Change and Environment and is expected to be updated in the middle of 2020.

Aquathermia as a heat source is not known in Ireland.

Overview France

Within NWE, France has incorporated DHC in its most advanced form in its legislation. A specific legislation is in place to stimulate DHC. Moreover, recently an action plan to promote DHC is launched.

In order to be eligible for subsidies to either build a DHC or transform an existing infrastructure into a "green" solution, a masterplan is required to describe the DHC to develop in 10-year time. This Masterplan should involve the stakeholders and should align building improvements, urban renewal and renewable development. However, one legislation works against DHC. When a dwelling has already an energy-efficiency label D or better, the grants for refurbishment are no longer granted. So social housing companies will not connect to a DHC before they have the grants, because the DHC will bring the label already up to at least D.

Achieving national targets to reduce greenhouse gas emissions requires a reduction in energy consumption and an increase in the use of renewable energy, in all sectors: building, transport, industry, etc.

Local authorities perform an essential role in planning and development regulations. This role is reinforced, partly due to the introduction of Grenelle Laws, increasing interlinkages between energy and urbanism, as well as the development of the concept of territorial energy planning.

Among the various technical solutions for enhancing energy efficiency and mobilizing renewable energies, the heating and cooling networks are set ambitious development targets for 2020: three times the number of equivalents - Connected housing (target: 6 million) and majority use renewable energy (wood, geothermal) and recovery (waste incineration, biogas).

The local urban plan (Plan Local de l'Urbanisme, PLU), a document that outlines the policy and urban planning rules at the level of the territory of a municipality or group of municipalities, is intended to reinforce the integration of energy issues in urban planning, particularly in facilitating or encouraging the development of urban forms and types of buildings with reduced energy consumption or using renewable energy.

In order to promote the use of renewable energy, territorial collectivises are entitled to classify heating networks located in their area, provided they are supplied with at least 50% of heat from renewable energy sources. New and renovated buildings located within a classified area are obliged to be connected to the heating network. But there is no obligation for existing non-renovated buildings. The procedure of grid connection is at the same time also the procedure for grid development, since the construction of a plant must occur simultaneously with the

construction (development) of the district heating grid. But the PLU can also, according to its drafting, create unjustified and unintentional obstacles to the development of certain infrastructures such as those of the heating networks.

There is a requirement for each big new urban project to study the feasibility of integrating a district heating (new or extension) along with other renewable energy technologies. Moreover, it is mandatory for every new major district heating and for every new major plant, to perform a costs-benefits analysis regarding the use of industrial waste heat and district heating.

Local government are able to set a density-threshold, below which the beneficiary of a building permit must pay for under-density. This provision aims to encourage building in higher densities, creating economic viability for the application of heat networks.

Although the legislation in France promotes DHC-networks, an important barrier to the development of DHC is the large number of different institutions constituting the French administration (deconcentrated and concentrated service).

Overview Flanders

In Flanders, there is no obligation to develop energy-plans or heat-plans.

A proposed legislation, in favour of heat networks, is still waiting for the new government to introduce a heat and cold regulator, an obligation to make heat maps, -plans, and mandatory feasibility studies within 500m of the Flemish heat map. The feasibility study is already mandatory, but the heat map isn't.

Legislation is sometimes lacking or even contradictory, creating several barriers for DHC development:

- Considering geothermal energy, it is unclear who owns the heat.
- Recovery of waste heat is not high on the agenda in Flanders.
- The use of surface water for heating or cooling is taxed.
- Heat networks cannot be integrated in zoning plans, in contrast with sewer systems and reservations for, for example, the waterway in which nothing may be other than the function that the NV waterway allows and that is not piping. Because it can obstruct possible developments with companies that have to be on the water.
- Standard underground constructions, like sewer systems, can get an exemption from the obligation to have an environmental permit, even on private land if it is on the building line or reserved strips. A heat network is not considered a standard underground construction.
- Grid operators have special privileges concerning contaminated soil. DHC is not (yet) a public utility.
- Only public utilities with public interest are allowed in the public domain. 1-on-1 connections are there for impossible. Although there might be a bright spot: innovative technologies are allowed in these residential expansion areas.
- In Flanders waste incineration is decreasing and incinerators will be shut down. However, the waste incinerators with the best DHC network might hold out.

Overview UK

Scotland and England

In England, legislation concerning DHC networks is limited, if present at all. In contrast, Scotland has a Heat Policy Statement, with a target and action plan to promote DHC.

One of the key challenges with ownership and regulation of geothermal heat considers its legal categorisation as a physical property, instead of a recoverable (raw) material such as ore or gravel. As such, 'heat' is not a legally defined entity. This causes considerable difficulties when it comes to assigning legal ownership and regulating strategies.

Revision of geothermal regulations is one of the various measures, lacking in the UK to encourage exploitation of this resource as an alternative to currently used, carbon-intensive energy sources like coal and gas. Most pressing is the absence of financial safeguards for technology users, companies and financiers. Moreover, it lacks an authority that can issue exploration and development licenses for geothermal heat that will, in law, guarantee and protect the licensee's exclusive right to develop, exploit and profit from a geothermal resource, for a specified period, i.e.:

- Protection and management of the geothermal resource and its long-term sustainability;
- Protection of the geothermal user/licensee from other external parties depleting or damaging the geothermal resource available within their property/ license area.

The only current legislation specific to DHC is the Heat Network (Metering and Billing) Regulations 2014, which describes the billing and metering for DHCs. However, this does not legislate the quality of heat, market competition or DHC monopolies.

The Heat Trust is a voluntary standard launched by industry participants, while the Association for Decentralised Energy (ADE) and Chartered Institution of Building Services Engineers (CIBSE) have produced a heat network code of practice. Both of these are voluntarily. Moreover, it is unclear how many DHC systems in the United Kingdom meet these standards and practices.

In most countries, legal procedures governing the subsurface exists and enable the development of deep geothermal resources, although they are not always tailored to geothermal energy. It usually involves a two-stage permitting process consisting of an exploration permit to find geothermal resources followed by a development license or concession to exploit the geothermal resource. As the extraction of heat from the deep geothermal sources, in most cases, also involves the use of water, either groundwater available within the deep rocks (hydrothermal systems) or water injected from the surface (petro thermal systems or Enhanced Geothermal Systems- EGS).

In the UK, the regulatory control of abstraction and discharges, required for open- loop Ground Source Heat Pump systems, is solely aimed at protecting groundwater, not regulating heat or guaranteeing the abstracted water is suitable for its intended use.

A significant proportion of environmental legislation in the UK aligns the EU laws. It remains to be seen how these Laws will be developed after the upcoming BREXIT. Although the UK, Scottish and Welsh governments have cooperated closely on measures to transpose EU environment regulation into UK and Scottish law, there are no plans for new regulatory measures yet.

The Scotland Building Act 2003 (Charging Orders) Regulations 2014 is the legislation that underpins the building regulations in Scotland, giving Scottish Ministers the power to amend UK regulations in certain matters including

furthering the conservation of fuel and power and furthering the achievement of sustainable development. Therefore Scotland has more stringent legislation and policies on decarbonisation and DHC.

There are several conflicting Scottish governmental policies, causing difficulties if governments push to deliver increased connections to district heating networks, as the government imposes charges on district heating as well. As a consequence, DHC is more expensive to install, compared to gas. Currently, Scottish District Heating regulation is in its consultation phase. Already, local authorities are required to contribute and maintain the National Heat Map for Scotland. Over time, this Heat Map should become a guidance tool about future planning of heat networks.

Considering cross-boundary issues on the local level, the Localism Act 2011 proclaims a "Duty to Cooperate", i.e. it is mandatory for local councils to cooperate with adjacent planning authorities and related organizations on strategic issues like Development Plans. With these local plans, local governments have some leverage to enforce their policies.

Regulations of (semi-)governmental agencies are sometimes overprotective or they are afraid of collateral damage (railway has to pay delay compensation to passengers when not riding on time schedule).

Overview The Netherlands

The basic principle of spatial law in The Netherlands is "decentralized what is possible, centralized what should be" and in the future the principle of decentralization of the Environmental Law. The Environment Act that will be implemented in 2021 stands for a balance between using and protecting the physical living environment. "Space for development, guarantees for quality" is the motto. The new law provides fewer and clearer rules, a coherent approach to the living environment, room for local customization and better and faster decision-making.

Because of the context dependency and approach at neighbourhood and area level for DHC networks, the central government leaves the directing role to the municipality in the first place (in cooperation with the network operator). Depending on the scale of the chosen measures to make the heat demand more sustainable (for example a regional or local heat network with a collective heat source or individual heat pumps), plans can be coordinated regionally, and agreements can be made via the Inter-administrative Program.

As part of the National Climate Agreement, which is adopted in the Netherlands in June 2019, municipalities, water authorities, provinces and network operators are currently implementing a regional energy strategy (RES). The RES is an instrument to make joint choices for the generation of sustainable electricity, the heat transition in the built environment and the required storage and energy infrastructure.

The heat transition plays a role in the spatial policy of municipalities and there are spatial instruments that can be used for this. Before mid-2020 all municipalities have to make a transition vision heat and neighbourhood implementation plans.

As soon as the new Environment Act is implemented in 2021, the Environment Act system can be used for the benefit of heat networks, for example by means of a program for making the energy supply more sustainable in a certain area, designate areas for 4DHC and make it mandatory to connect, which is currently not possible.

Although the Environment Act will make it easier to include energy policy in spatial planning and to simplify the permit process, there are currently quite a lot of laws, rules, standards and decisions that the various types of heat networks must comply with.

- DHC is possible to incorporate in zoning plans.

- The Activities decree has some rules that will help 4DHC:
 - Industry has to comply with the mandatory measures list, which says that every measure on energy efficiency you can earn back in 5 years you have to carry out.
 - The heat generated is recovered to the extent that it is technically and economically feasible. But the supervision by the environmental agencies is not very adequate right now.
- The underground is not as regulated as it should be, a structural vision is needed. There is no general depth criterion in the civil code for the use of the underground by third parties.
- Ground- and drinking water rules differ between provinces, because the fear for collateral damage differs.

Afterthoughts

The aim of responding to local or regional energy demand with measures within the same area - energy neutral areas and regions - can provide spatial benefits. For example, local or regional spatial coordination of energy demand and supply may limit the need to realize additional transport pipelines. However, the question is whether the sum of local solutions will be sufficient to meet the set climate and energy objectives. For example, some regions will not be able to meet their own energy demand, while others will have the potential to become energy suppliers.

It is crucial that the spatial policy for the energy transition does not only refer to different transition paths of wind, sun, high-temperature heat network or a low-temperature heat network in the existing physical environment for the benefit of dozens of Megawatts. The energy transition not only has an impact on the habitat; there is a mutual influence between the design of the energy supply and the habitat. A successful energy transition is therefore dependent on the way in which the habitat (not only the physical environment, but also the actors who live, work and recreate in it) influences the choice for different transition paths. Ideally, integrated and creative solutions are sought at different scales. To this end, it is important that spatial assessment at the local level is not disproportionately hampered and the transition paths are not considered separately.

It is important to consider the added value of spatial policy that makes it possible to look for solutions at different levels of scale. In addition, it is important that the spatial assessment of interests of the municipality is not curtailed by generic provincial or national rules, but by leaving as much space as possible. After all, municipalities are the government par excellence that has an overview of underlying interests and conflicts that can serve as a starting point for measures and can also make spatial policy with an eye for environmental quality. Where regional solutions are possible, the province or region can play a meaningful role as a director of municipal cooperation and possibly help with knowledge sharing so that municipalities do not have to "reinvent the wheel".

Where wind energy policy and regulations are already at an advanced stage in most countries, the policy for making the heat supply more sustainable is still in its infancy. Just as with electricity generation, there is a possibility in the heat transition to choose between large-scale and small-scale solutions. This choice depends on several factors, such as characteristics of the built environment (year of construction, building type, building density) and any sustainable or locally available sustainable heat sources and is therefore dependent on the opportunities and challenges that the physical living environment offers.

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Spatial Policy for 4DHC

Ireland



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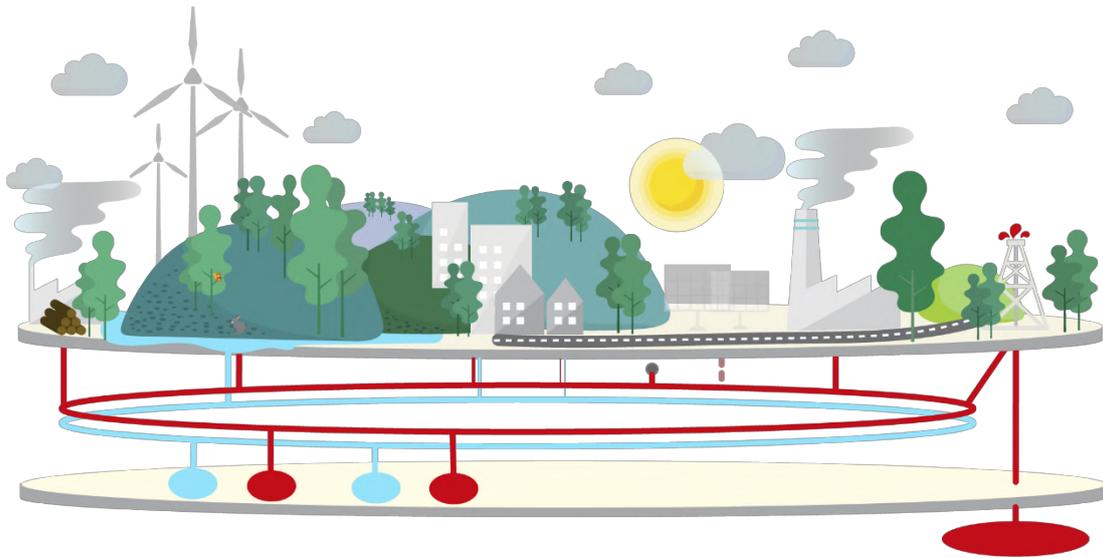
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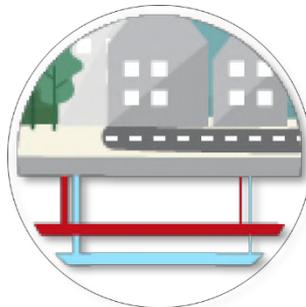


[Chapter 0-1: Overview](#)

[Chapter 0-2: Agreements & energy acts on national level](#)



Chapter 3: Spatial planning



Chapter 4: Underground and information exchange



Chapter 5: Environment



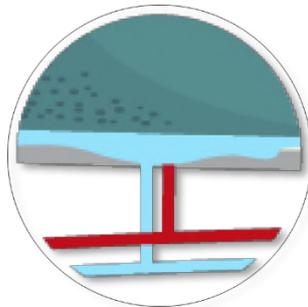
Chapter 6: Biomass and waste incineration plants



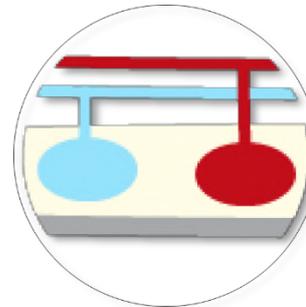
Chapter 7: Waste heat



Chapter 8: Geothermal energy



Chapter 9: Aquathermia



Chapter 10: Thermal energy storage

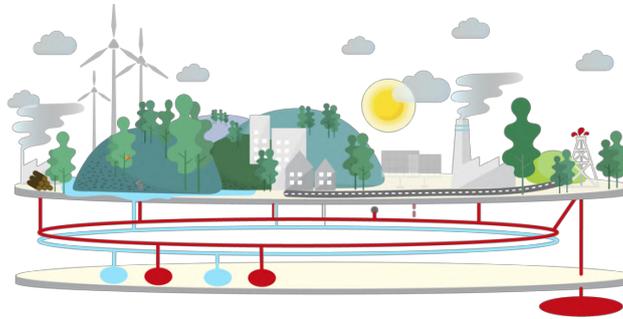
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Preface

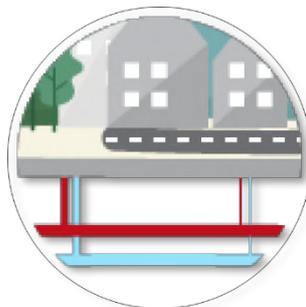
This report gives an overview of the spatial policies in Ireland one can encounter working on 4DHC-networks. For each of the pilot countries of HeatNet, this overview is made. Moreover, a summarizing and synthesizing overview report is produced.



If you want to know more about the legislation and regulations you can read the chapters that are divided in a chapter of the agreements and energy-acts on national level and the chapters below:



Chapter 3: Spatial planning



Chapter 4: Underground and information exchange



Chapter 5: Environment



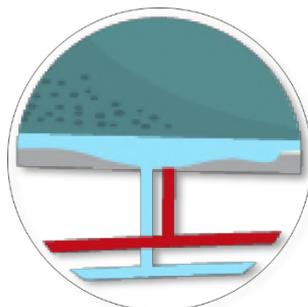
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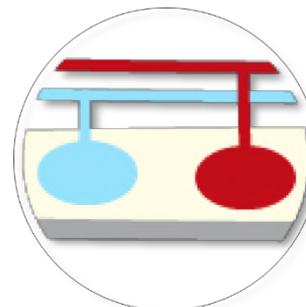
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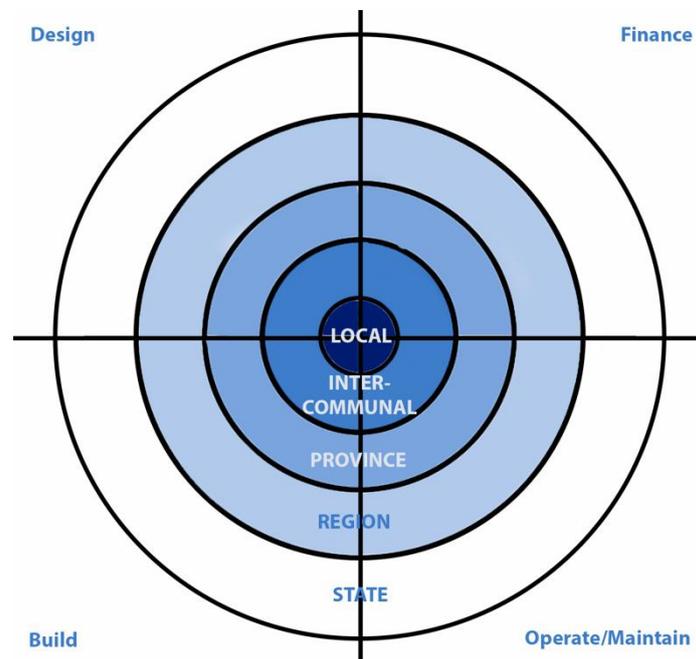


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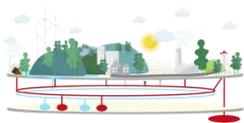


Chapter 10: Thermal energy storage

Legislation in the NWE countries can be found on different governmental levels: state, region, province, inter-communal and local. In Ireland the levels are only local and state.



To make it easier to navigate through all of these policies, in the report the bullseye marks in red the policies based on the phase your project is in: Design, Build, Finance or Operate/Maintain and the governmental level of the legislation from local in the heart of the bullseye to the state level on the outline.



Overview Spatial Policies in Ireland

This report has been prepared as a high-level introduction to Spatial Policy in Ireland as it relates to District Heating (DH). The information in this report reflects the policy environment in October 2019. In general, these reflect an understanding that DH has a significant role to play in enabling a greater proportion of heat demand to be supplied from renewable sources. Ireland has a target of 12% of heat demand to come from renewable sources by 2020 this proportion currently stands at 6.9%. Two planned DH schemes in Dublin have received approximately €25 million in government funding through the Climate Action Fund. Initial results from the 'Heat Atlas for Ireland' study suggest that up to 57% of the country's total heat demand could be covered by district heating networks, if the necessary government regulations are put in place.

The Climate Action Plan 2019 states some of the following actions regarding DH:

- Implementing a roadmap for delivering District Heating potential,
- An additional increase of 120GWh growing linearly from 2023 to 2028,
- Develop a national policy framework (including; regulation, planning, financing and research),
- Ensuring the potential of district heating is considered in all new developments and in particular strategic development zones,
- Identifying a set of early mover projects beyond the initial two schemes in Dublin.

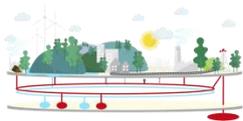
There is currently no heat strategy in Ireland. However, the Project Ireland 2040 National Planning framework does state "District heating networks will be developed, where technically feasible and cost-effective, to assist in meeting renewable heat targets and reduce Ireland's GHG emissions". The Support Scheme for Renewable Heat (SSRH) has been introduced which will help support renewable heat production for DH schemes with a capital contribution for heat pumps and a support tariff for biomass and biogas heat production.

In this report, policy relevant to the delivery and operation of a District Heating scheme is set out. Moreover, it specifically examines local policy objectives and plans developed by South Dublin County Council to initiate the District Heating operations in the County.

Following a long period of low-density planning, the emergence over recent years of high-quality master plan led mixed use higher density communities linked to strong infrastructure has been validated in Project Ireland 2040. This National Planning Framework is a blueprint for consolidation and regeneration and sets National objectives and overarching policies for delivery of sustainable communities to 2040.

District Heating currently holds less than 1% of the heating market in Ireland, however, holds great potential for the Irish market. District Heating can play a key role in reducing energy related emissions across all sectors and help to meet EU national and local level climate change targets. However, there is currently no legislation which specifically deals with District Heating in Ireland. Several District Heating schemes have been undertaken primarily by Local Authorities in recent times. EU directives identifying carbon reduction targets for 2020 set out in the National Energy Efficiency Action Plan (NEEAP) and the National Renewable Energy Action Plan (NREAP) have been important drivers in initiating these projects.

Ireland's NREAP was submitted to the EU in 2010 and established sectoral targets for electricity, heat and transport sectors of 40%, 12% and 10%, respectively. 'Energy Forecast for Ireland 2020' prepared by SEAI (Sustainable Energy Ireland), show that even with an optimistic view of the impact of current heat policies and measures, the renewable heat target is unlikely to be met by 2020.



Policy Context

National level

- The Government has developed a series of Climate Action Plans. The primary policy drivers are as follows:
- The National Mitigation Plan
- Project Ireland 2040 Plan
- Ireland's Transition to a Low Carbon Energy Future 2015-2030
- National Energy Efficiency Action Plan (NEEAP)
- National Renewable Energy Action Plan (NREAP)

National Mitigation Plan

There is no integral Energy Act in operation in Ireland that integrates spatial planning and energy. However, the Climate Action and Low-Carbon Development Act 2015 provides for new arrangements aimed at achieving transition to a low-carbon, climate-resilient and environmentally sustainable economy by 2050.

These arrangements include a National Mitigation Plan 2017 which specifies the policy measures needed to manage greenhouse gas emissions to meet national and international targets. They also include a National Climate Change Adaptation Framework (January 2018), with a view to reducing the State's vulnerability to the negative impacts of climate change and availing of any positive impacts. These 2 plans – the mitigation plan and the framework – are to be reviewed at least every 5 years.

Under the Climate Action and Low Carbon Development Act 2015, the National Mitigation Plan 2017/18 lays the foundations for transitioning Ireland to a low carbon, climate resilient and environmentally sustainable economy by 2050. The South Dublin District Heating project clearly aligns with the objectives of the National Mitigation Plan 2017 in relation to the role of local authorities, as outlined in Chapter 2: *“Local Authorities also have a key role to play in addressing climate change mitigation action and are well placed to assess, exploit and support opportunities within their administrative areas, in cooperation with each other and with national bodies, and through the involvement and support of local communities. The Climate Action and Low Carbon Development Act, 2015 provides that a Local Authority may adopt mitigation measures in relation to that local authority's administrative area.”*

See document(s): <https://emra.ie/dubh/wp-content/uploads/2015/02/Greater-Dublin-Area-Regional-Planning-Guidelines-2010-2022-Volume-1.pdf>

Project Ireland 2040; National Planning Framework

The Project Ireland 2040 is the national framework to guide high-level strategic planning and development for the country over the next 20 years, aiming to create sustainable economic, social and environmental growth. The NPF states that:

“The planning process provides an established means through which to implement and integrate climate change objectives, including adaptation, at local level. Planning legislation also requires different levels of the planning process to address climate change.”

The plan aims to slowdown the growth of Dublin, but consolidating regional urban centers, increasing density and infrastructure and decreasing low density living in the countryside.

See document(s): Project Ireland 2040 <http://npf.ie/>

The following Ireland 2040 policies are relevant to HeatNet and the South Dublin Pilot:

- National Policy Objective 54: Reduce our carbon footprint by integrating climate action into the planning system in support of national targets for climate policy mitigation and adaptation objectives, as well as targets for greenhouse gas emissions reductions.

- National Policy Objective 55: Promote renewable energy use and generation at appropriate locations within the built and natural environment to meet national objectives towards achieving a low carbon economy by 2050.
- National Strategic Outcome 08; *the Transition to a Low-Carbon and Climate-Resilient Society*. This NSO is central to the Ireland 2040 plan, and effects all other areas of the plan. The Strategic Investment Priorities 2018-2027 budget outlined for this NSO is €7.6 billion in Exchequer funding and €14.2 billion in non-Exchequer funding. Under this NSO, the plan states the Government will commit funding to “*Support new initiatives in district heating in cities and large South Dublin District Heating System: Outline Business Case for towns, with a leading role for state bodies, for example, Gas Networks Ireland and Local Authorities.*” Other investment actions outlined which align with the South Dublin District Heating project are:
 - Investment in energy efficiency of existing public building stock with a target BER of ‘B’
 - Climate Action Fund to leverage investment by public and private bodies in climate action measures
 - Roll-out of Support Scheme for Renewable Heat

EED: Energy Efficiency Directive for thermal power generation facilities >20MW

Under the requirements Article 14 of the Energy Efficiency Directive a “*Cost Benefit Analysis of the potential for High-Efficiency Cogeneration and Efficient District Heating & Cooling in Ireland*” was prepared. The findings of this analysis indicated that DH is only cost-beneficial in some areas of the country (dense city areas) and therefore there is no call for national level planning or support for DH. This analysis did not take into account 4th generation DH potential and sources of recoverable waste heat, which greatly impact the cost-benefits for DH. The results of this analysis therefore hinder the development of national level policy, strategy and supports for DH.

See document(s):

https://ec.europa.eu/energy/sites/ener/files/documents/20151221_SEAI_EED_ART14_Final.pdf

https://www.dccae.gov.ie/documents/National_Adaptation_Framework.pdf,

Energy Efficiency Action Plan

The Energy Efficiency action plan has influenced the use of energy in new buildings, introducing minimum energy requirements for new builds. This supports the use of low temperature heat supply from 4GDH systems to new developments. It has also had the effect that many new apartment blocks and commercial buildings have centralized heating systems based on CHP or other low-carbon technologies and centralized water-based systems are easier to retrofit to DH connections than those with electric or individual heating systems. The action plan also requires all public buildings to reduce their energy use by 33% by 2020, which is a driver for energy saving actions in the public sector, including looking into DH supply to replace old inefficient heating technologies.

See document(s): https://www.dccae.gov.ie/documents/NEEAP_4.pdf

Support scheme for renewable heat

The Support Scheme for Renewable Heat has been designed to replace fossil fuel heating systems with renewable energy technologies. The Scheme will contribute to meeting Ireland's 2020 renewable energy and emission reduction targets. It will focus on heat users in the Non-Emissions Trading (non-ETS) sector. This includes commercial, industrial, agricultural, district heating, public sector and other non-domestic heat users. The scheme was developed following detailed economic analysis and extensive engagement with industry. Two public consultations were also held on the design and technology to be employed.

The Scheme is made up of two support mechanisms – an on-going operational support for biomass boiler and anaerobic digestion heating systems and an installation grant for electric heat pumps.

Energy Targets

Recent legislative measures to support the NREAP targets include New Building Regulations for sustainability in new buildings which now require all new buildings, and deep retrofit upgrades to achieve near zero energy standards (NZEB) and grants are available for energy upgrades to existing residences. Support is also available for the purchase of Electric Vehicles however progress specifically in the heating sector has primarily been driven by fabric improvements and heating source upgrade.

The Department of Communications, Energy and Natural Resources outlines the pathway to 2030 in the report “Ireland’s Transition to a Low Carbon Energy Future 2015-2030”. The document sets out a framework for climate change and energy policy, which includes a vision for 80-95% GHG reductions compared to 1990 levels by 2050. For heating sector solutions, the framework envisions electricity and bioenergy will increase in the home heating and transport sectors. It also states that there will be a comprehensive heating strategy and a policy framework developed to encourage DH development. A Renewable Heat Incentive (RHI) for non-domestic buildings is in operation since 2017..

The Department of Communications, Climate Action and Environment published its Statement of Strategy for 2019-2021 and targets Q4 of 2019 for publication of a draft policy framework for the development of District Heating in Ireland. Currently, there are no guidelines, regulations, policies, frameworks or standards for DH in Ireland. This creates high risk and uncertainty when planning medium-to-large scale systems.

A National “Tariff Support Scheme for Renewable Heat” was introduced in May 2019 and includes the District Heating operations in its Eligibility Criteria.

Heating Sector

For buildings, the vast majority of energy consumption and associated emissions comes from the provision of space heating and hot water. A recent report from the Sustainable Energy Authority of Ireland (SEAI) has shown that Irish homes have the third highest CO₂ emissions per household in Europe. National level policies introduced to date have been partly successful, with 6.9% of Ireland’s heating demands now coming from renewable sources, but more than 93% still comes from fossil fuel sources, the majority of which are imported from oil and gas producing regions.

Of the total energy used in Ireland, 32.5% is used for heat, and the vast majority coming from oil and gas.

Under the National Energy Efficiency Action Plan, the public sector must meet 33% energy efficiency targets by 2020. SDCC has undertaken many energy savings measures and has achieved almost 29% of the 33% target so far. Although SDCC is on track to meet the 2020 public sector targets, the energy savings required to meet the 2030 reductions will require more radical, innovative and expensive measures.

Local Government

Development of a new District Heating Scheme requires buy in and co-operation of a large number of stakeholders. There needs to be a central facilitator to bring a project together. Local authorities or energy agencies are in an ideal position to be this DH ‘champion’ and drive the process forward.

Public sector buildings can be used as anchor tenants on new DH schemes. Securing connection to these buildings in the 1st phase of DH development decreases the risks involved in ensuring a viable heat demand is connected to the system. Public sector customers are also a reliable customer in terms of heat payments. The public sector can play a ‘lead by example’ role in developing the DH sector in Ireland. Demonstration projects using groups of public sector buildings are a way to promote and increase knowledge and awareness of DH design and operations. The South Dublin District Heating Pilot is currently acting in this role of central facilitator.

South Dublin County Council Development Plan 2016-2022

Addressing climate change mitigation is a central objective of SDCC's corporate agenda and is a central policy objective of the South Dublin County Council Development Plan 2016-2022. In the Energy chapter of the development plan, SDCC outlines the potential to use the waste heat currently generated by industry in the South Dublin area. *Policy 5: Waste Heat Recovery and Utilisation* objectives 1 to 3 promote the use of waste heat technologies and local energy partnerships with sites that generate heat and sites requiring heat.

Under *Energy Policy 6: Low Carbon District Heating Networks*, objectives 1 to 4 outline the planning policy developed by SDCC to prioritise the development of DH in low carbon DH areas of potential, to future proof the area for DH, and to ensure all new developments carry out energy analyses to explore the potential for DH development.

The project also aligns with SDCC's objective to increase economic competitiveness and attract and retain investment into the county, including EU and private investment. The SDDH system is a key project to enable SDCC to realise their vision for a decarbonised Tallaght town centre.

South Dublin Sustainable Energy Action Plan

SDCC is also a signatory to the Covenant of Mayors for Climate and Energy initiative, and as such has committed to implement the EU 40% GHG reduction target by 2030 and the adaptation of a joint approach to tackling mitigation and adaptation to climate change. SDCC is also producing a Climate Change Action Plan, in collaboration with Codema and the other three Dublin local Authorities, in order to form a regional response to the challenge of climate change. This district heating project will form a key mitigation action for SDCC.



Spatial Planning

Primary instruments of Irish spatial planning and development

The legislation outlined here is a selection of the primary instruments governing the management of the Irish planning and development system. The statutory documents listed here are available at <http://www.irishstatutebook.ie/>.



Planning and Development (Amendment) Act 2000 (as amended)

The **Planning and Development Act 2000** (as amended) forms the foundations for planning in Ireland. This Act covers a wide range of planning-related issues and combines different sets of legislation into one place.

- It sets out the detail of regional planning guidelines, development plans and local area plans.
- It explains how Ministerial Guidelines work.
- It sets out how the process of applying for and obtaining planning permission works.
- It contains special requirements for protected structures, conservation areas and areas of special planning control.
- It explains the relationship between planning and social housing supply.
- It sets out Ireland's planning appeals and enforcement processes.
- It describes Strategic Development Zones and Environmental Impact Assessment.
- It clarifies how a range of particular planning processes, including for State development, operates.
- Basically, if it needs planning permission, this Act outlines how. If it doesn't need planning permission, this Act explains why.

There have been a number of changes to the legislation since 2000, which are set out in the **administrative consolidation** (link is external) drawn up by the **Law Reform Commission** (link is external).



Planning and development regulations

The principal regulations underpinning the Planning and Development Acts are the Planning and Development Regulations 2001 (S.I. No. 600 of 2001). A number of Regulations amending the 2001 Regulations have been made, which, taken together, are collectively cited as the Planning and Development Regulations 2001 to 2018. It would be the expectation that DH pipes should be considered and treated the same as any other underground infrastructural pipe or cable and be exempt from planning permission in most circumstances under the Planning and Development Act (section 5).

An unofficial consolidation of the Planning and Development Regulations 2001- 2019 has been prepared for ease of reference by users and has no legal status.

Statutory Instruments:

- SI 116 of 2012 - Planning and Development (Amendment) Regulations 2012
- SI 583 of 2011 - Environment (Miscellaneous Provisions) Act 2011 (Commencement) (Part 5) (No 2) Order 2011
- SI 582 of 2011 - Planning and Development (Amendment) Act 2010 (Commencement) (No 3) Order 2011
- SI 476 of 2011 - Planning & Development (Amendment) (No 3) Regulations 2011
- SI 475 of 2011 - Planning & Development (Amendment) Act 2010 (Commencement) (No 2) Order 2011
- SI 474 of 2011 - Environment (Miscellaneous Provisions) Act 2011 (Commencement) (Part 5) Order 2011
- SI 464 of 2011 - EC (Amendment to Planning & Development Regulations) Regulations 2011
- SI 454 of 2011 - Planning & Development (Amendment) (No 2) Regulations 2011
- SI 262 of 2011 - Planning & Development (Amendment) Regulations 2011
- SI 201 of 2011 - Planning & Development (Strategic Environmental Assessment) (Amendment) Regulations 2011
- SI 132 of 2011 - Planning and Development (Amendment) Act 2010 (Commencement) Order 2011
- SI 477 of 2010 - Planning and Development (Amendment) Act 2010 (Commencement) (No 3) Order 2010
- SI 451 of 2010 - Planning and Development (Amendment) Act 2010 (Commencement) (No2) Order 2010
- SI 406 of 2010 - Planning and Development Regulations 2010
- SI 405 of 2010 - Planning and Development (Amendment) Act 2010 (Commencement) Order 2010

- SI 100 of 2009 - Planning and Development (Regional Planning Guidelines) Regulations 2009- Set out a number of procedural requirements in relation to the preparation of regional planning guidelines by regional authorities, including the taking into account of the National Spatial Strategy.
- SI 256 of 2008 Planning and Development (Amendment) Regulations 2008
- SI 235 of 2008 Planning and Development Regulations 2008
- SI 590 Planning and Development Act 2000 (Certification of Fairground Equipment) Amendment Regulations 2007
- SI 135 of 2007 -Planning and Development (No. 2) Regulations 2007
- Planning and Development (No. 2) Regulations 2007 (SI 135 of 2007
- SI No 83 of 2007 -Planning and Development Regulations 2007
- SI No 685 of 2006 -Planning and Development Regulations 2006 -These Regulations have two functions: (1) to update and amend the Planning and Development Regulations 2001 to make changes and updates to the development management system, and (2) to underpin the new strategic consent procedure established under the Planning and Development (Strategic Infrastructure) Act 2006. The Regulations are effective from 2 separate dates, viz, 31 January 2007 for the strategic infrastructure provisions and 31 March 2007 for the development management system provisions.
- SI 364 of 2005 -Planning and Development Regulations 2005-These regulations amend the Planning and Development Regulations 2001 to provide that a shop changing its use to an off-license would require planning permission, amends the provisions in relation to peat extraction to facilitate consideration of the need for the environmental impact assessment of projects which are likely to have significant effects on the environment and also amends Parts I and II of Schedule 5 of the 2001 Regulations.
- SI 152 of 2004 Planning and Development Act 2000 (Commencement Order) 2004
- SI 450 of 2003 -Planning and Development Act 2000(Commencement Order) 2003
- SI 449 of 2003 -Planning and Development Act 2000 (Certification of Fairground Equipment) Regulations 2003
- SI 175 of 2003 -Planning and Development (Regional Planning Guidelines) Regulations 2003- Set out a number of procedural requirements in relation to the preparation of regional planning guidelines by regional authorities, including the taking into account of the National Spatial Strategy. They come into effect from 1 May 2003.
- SI 90 of 2003 -Planning and Development Regulations 2003
- SI 149 of 2002 -Planning and Development (No2) Regulations 2002
- SI 70 of 2002-Planning and Development Regulations 2002
- SI No 600 of 2001 -Planning and Development Regulations 2001- The Planning and Development Regulations, 2001 implement the Planning and Development Act, 2000 in its entirety. They consolidate all previous Regulations made under the 2000 Act and replace the Local Government (Planning and Development) Regulations 1994-2000. The Regulations came into operation on 21 January 2002 and 11 March 2002 (as outlined in page 230 of the regulations)
- SI 599 of 2001 -Planning and Development Act 2000 (Commencement) (No 3) Order 2001
- SI 336 of 2001 - Planning and Development (Appointment of Chairperson and Ordinary Members of An Bord Pleanála) Regulations, 2001
- SI 153 of 2001 - Planning and Development Act 2000 (Commencement) Order 2001- This Order brings all sections of Part XVI (Events and Funfairs) of the Planning and Development Act, 2000 into force, except for section 239 which relates to funfairs. It also commences certain related sections in the Act, including those relating to the prosecution of offences specified in Part XVI.
- SI 335 of 2001 -Planning and Development Act 2000 (Commencement Order) 2001-Brings Chapter I of Part VI of the 2000 Act relating to the composition and membership of An Bord Pleanála into force from 20 July, 2001. Reason for Referral Form (under the Planning and Development Regulations 2001) for planning authorities, to be completed and submitted when referring a planning application to this Department in its role as a prescribed heritage body under the Planning and Development legislation.
- SI 449 of 2000 -Planning and Development Act 2000 (Commencement) (No 2) Order



Irish national spatial strategy (NSS) 2002-2020

To support the implementation of the NSS as a "big picture" framework for achieving the Government's objective of more balanced regional development, effective planning strategies are needed at regional level to provide the link between the national and local planning frameworks. Spatial planning at the regional level must work within the overall approach taken in the NSS, while providing more detail and establishing a development and spatial framework that can be used to strengthen local authority development plans and other planning strategies at county, city and local level.

This plan is about decentralizing Dublin and slowing down the growth of cities. It focuses on higher density in the cities and less living on the countryside. The trend in the size of households is smaller households. Therefore, most of the new houses within cities are apartments. And those are favorable for DHC.

Implementing the NSS requires that Regional Planning Guidelines be put in place across the country. The Planning and Development (Regional Planning Guidelines) Regulations 2003 (S.I. No. 175 of 2003) set out a number of requirements in relation to the preparation of Regional Planning Guidelines. In particular, by way of the Regulations, in accordance with powers under section 23(4)(a) of the Planning and Development Act 2000,

the Minister has specified that the National Spatial Strategy is of relevance to the determination of strategic planning policies. This means that regional authorities are obliged to take account of the NSS when making regional planning guidelines for their areas.



Planning and Development Strategic Infrastructure Act

This Act provides for the making to An Bord Pleanála of applications for planning permission in respect of certain proposed developments of strategic importance to the State, and for certain other amendments to the Planning and Development Acts 2000-2004.

The Planning and Development (Strategic Infrastructure) Act 2006 made significant changes to the way strategic infrastructure developments are determined within the planning system. This document gives guidance on the main features of the system including public participation. Strategic infrastructure development can generally be described as development which is of strategic economic or social importance to the State or a region. It also includes development which will contribute significantly to the fulfilment of any of the objectives of the National Spatial Strategy or any regional planning Guidelines for an area, or which would have a significant effect on the area of more than one planning authority.

While the procedures for all cases will not be the very same, in general, there will be a three-step process, but these do not apply in all cases:

- Consultations: where a prospective applicant for permission / approval / other consent requests pre-application consultations with the Board,
- Scoping: where a prospective applicant requests the Board to 'scope' the EIS for the project, and
- Application: where the applicant submits an application for planning permission, approval or other consent to the Board.

The purpose of consultations is to try to ensure that the subsequent application for permission/ approval is of a high standard, e.g. that correct procedures are followed and that issues relating to proper planning and sustainable development and the effects on the environment are adequately addressed from the outset in the application. It could be used to indicate if the Board foresees serious problems with the proposal or to advise the applicant on public consultation. Where a request for consultations is received by the Board, the Board will include the request in its weekly list of 'cases received'. It will also be posted on its website. When the consultations have been concluded, the Board will include it in its weekly list of 'cases determined' and post it on its website. In addition, the Board's records of any meetings held with prospective applicants during this phase will be available for inspection and purchase when the consultations have concluded.

Statutory instruments:

- SI 684 of 2006-Planning and Development Strategic Infrastructure Act 2006 Commencement-Brings sections of the 2006 Act relating to the establishment of a strategic infrastructure division within An Bord Pleanála and the provision for a strategic consent process for certain types of strategic infrastructure into force from 31 January 2007.
- Planning and Development Strategic Infrastructure Act 2006 Commencement SI 553 of 2006
- SI No 525 of 2006 -Planning and Development Strategic Infrastructure Act 2006 Commencement -Brings sections of the 2006 Act relating to the citation, commencement and interpretation of the Act into force from 17 October 2006. The remaining sections are all amendments to the Planning and Development Act, 2000.

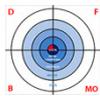


Planning Authority Development Plans

Under the requirements of the 2001 Regulations, all Planning Authorities are obliged to prepare a development plan every six years for their functional area. The Plan must integrate with adjoining plans, and incorporate the intention and requirements of Local, National and European policy and best practice.

While District Heating is in its infancy in Ireland, a small number of local authorities have in their latest Development Plans incorporated District Heating policy. Both Dublin City and South Dublin have local planning

policies to support the use of DH in their areas. South Dublin County Council have introduced policies specifically for low carbon DH.



South Dublin County Council Development Plan 2016-2022

Set out below are relevant policy extracts from South Dublin County Councils Development Plan which support District Heating development.

See document(s): [https://www.southdublindevplan.ie/sites/default/files/documents/CDP 2016-2022 \(lower res\) 0.pdf](https://www.southdublindevplan.ie/sites/default/files/documents/CDP%202016-2022%20(lower%20res)%200.pdf)

Chapter 10 – Energy and can be used to stimulate the South Dublin pilot project:

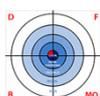
- Waste heat recovery & utilization
See chapter Biomass and waste incineration plants
- Low carbon district heating networks

The diverse mix of land uses and built environment of South Dublin County offers potential for the development of local low carbon district heating networks. District heating networks can be based on a variety of technologies and renewable energy sources, such as combined heat and power (CHP), biomass energy, geothermal or energy from waste. These schemes are particularly viable in built up areas, such as town centers, where there is sufficient heat demand and heat load diversity, including ‘anchor’ loads i.e. buildings with a high or even twenty-four-hour heat demand. Such a mixed energy profile makes local district heating networks more economically viable and can result in reduced heat losses Policy 6 Low Carbon District Heating Networks

- a) It is the policy of the Council to support the development of low carbon district heating networks across the County based on technologies such as combined heat and power (CHP), large scale heat pumps, and renewable energy opportunities including geothermal energy, energy from waste, biomass and bio-gas.
- b) It is the policy of the Council to support the development of both deep and shallow geothermal energy sources throughout the County. Deep geothermal projects are particularly suited to areas demonstrating high heat densities.

E6 Objectives:

- E6 Objective 1:
To prioritize the development of low carbon district heating networks in Low Carbon District Heating Areas of Potential.
- E6 Objective 2:
To future proof the built environment in Low Carbon District Heating Areas of Potential to aid the future realization of local energy networks and a move towards de-centralized energy systems.
- E6 Objective 3:
To ensure that all development proposals in Low Carbon District Heating Areas of Potential carry out an Energy Analysis and explore the potential for the development of low carbon district heating networks.
- E6 Objective 4:
To support deep and shallow geothermal projects at appropriate locations across South Dublin County and in accordance with the South Dublin Spatial Energy Demand Analysis (SEDA).



Local Area Plan

In addition to the requirements under the Planning and Development Regulations to prepare Development Plans, a Local Authority may prepare a Local Area Plan for any particular area in their functional area. A Local Area Plan (LAP) sets out a strategy for the proper planning and sustainable development of a specific area within a local authority and for a timescale as specified by the authority. The plan must consist of a written statement and map or maps, which set out the local authorities’ objectives for the plan area. These objectives may relate to any or all of the following:

- Land Use Zoning & Density
- Public Open Space
- Private Open Space
- Car Parking
- Provision of Infrastructure
- Conservation of Built Heritage
- Conservation of Natural Environment
- Provision of Traveler Accommodation
- Community Facilities
- Design & Development Standards.

The policies or objectives contained in a Local Area Plan must be consistent with the objectives of the Development Plan and must include information on the likely significant effects on the environment of implementing the Plan.



Local government regulations

Statutory instruments:

- SI 539 of 2001 - Local Government (Planning and Development) (Amendment) Regulations, 2001 - The purpose of these Regulations is, firstly, to remove initial afforestation from the planning control system, to coincide with the introduction of a separate statutory consent system by the Minister for the Marine and Natural Resources under the European Communities (Environmental Impact Assessment) (Amendment) Regulations, 2001 (S.I. No. 538 of 2001), and, secondly, to reduce the planning threshold for peat extraction from 50 hectares to 10 hectares.
- Local Government (Planning and Development) Regulations, 2000 (S.I. No. 181 of 2000)
- Planning and Development Act, 2000 (Commencement) Order, 2000 (S.I. No. 349 of 2000)- This Order brings into force Part V on Housing Supply and Part IX on Strategic Development Zones, certain sections in Part II on Plans and Guidelines and related and transitional sections of the Planning and Development Act, 2000 on 1 November, 2000.
- Local Government (Planning and Development) Regulations, 2000 (S.I. No. 350 of 2000)
- Planning and Development Act, 2000 (Commencement) (No. 2) Order, 2000 (S.I. No. 449 of 2000)
- Local Government (Planning and Development) (No. 2) Regulations, 2000 (S.I. No. 457 of 2000) -The purpose of these Regulations is to prescribe certain documents that must be submitted with an application for the consent of the Board to the compulsory
- Local Government (Planning and Development) (No. 2) Regulations, 2000 (S.I. No. 458 of 2000)
- SI 154 of 2001 - Planning and Development (Licensing of Outdoor Events) Regulations, 2001- The purpose of these Regulations is to set out the type of events for which a license under Part XVI of the Planning and Development Act, 2000 shall be required, and to provide for matters of procedure and administration in relation to applications for, and the grant of, licenses for events and in relation to events to be held by the local authority.

Heat Planning

At the level of local governments, the promising role of DH in enabling sustainable energy is acknowledged. This said, the assessment of local development, as reviewed in the context of this study, would improve through better understanding and recognition of the benefits, as well as the complexities associated with DH in practice.



Energy Strategies

The SEAI's 'Methodology for Local Area Renewable Energy Strategies' is a guide to create renewable energy strategies. Creating a Local Area Renewable Energy Strategy (LARES) allows a local authority to identify and assess the renewable energy resources in their region.

These strategies could be a first steps to create a local level energy strategy with long-term policy goals, and with buy-in from all key stakeholders. The impact of a local DH network could be assessed and highlighted within this strategy, and the role DH can play in reaching regional CO2 and energy efficiency goals. This document can then be used to clearly communicate to the public the societal benefits of any planned public sector actions to reduce fossil fuel use and increase energy efficiency. There are support structures available to enable regions to develop their own energy strategy, such as the EU Covenant of Mayors for Climate and Energy initiative. Local and regional authorities can become signatories to this initiative and as part of this commitment create Sustainable Energy and Climate Action Plans (SECAPs). There are currently nine Irish local authorities signed up to the Covenant of Mayors.



Local Level Energy and Planning Policy

Energy mapping and energy strategies help to integrate energy considerations into the work of the local authority planner. Planners have a key role in driving the development of DH in an area by creating tailored planning policies and coordinating works. Integrating energy, infrastructure and land-use planning is essential in order to identify synergies and opportunities for cost-effective DH systems. Forward planning is essential for DH, particularly to ensure there is suitable heat demand to connect to potential DH systems in the future. An example of this can be seen in Dublin City's North Lotts & Grand Canal Dock SDZ Planning Scheme, where all new buildings must be 'DH enabled' to allow ease of connection to the planned Dublin District Heating System.



South Dublin Spatial Energy Demand Analysis

To frame and develop robust policies in the South Dublin County Council Development Plan 2016-2022 (Municipality wide Plan), the South Dublin County Council sought to advance the EU Covenant of Mayors and South Dublin Sustainable Energy Action Plan data and methodologies in a spatially geographic manner, to further inform energy policy decisions in the County Development Plan. This approach to energy policy development and integration with Sustainable Energy Action Plans is supported by the Regional Planning Guidelines for the Greater Dublin Area 2010 – 2022. The EU Covenant of Mayors also calls for local authorities to progress SEAP methodologies and to provide greater integration with spatial planning and related actions at the local level.

The South Dublin Spatial Energy Demand Analysis represents a visualization of energy character areas across South Dublin County and acts as a robust starting point to inform the energy policies and objectives of the next County Development Plan, Strategic Development Zones (SDZ) and other local plans and strategies. In response to this spatial analysis, the SEDA highlights energy efficiency and renewable energy alternatives that should be further explored in County Development Plan policies, objectives and Development Management standards, in the context of the location of the County (within the Dublin Region) and the variety of the sectors, built environment and land uses present. Basing the SEDA on the foundations of the Sustainable Energy Action Plan methodology strengthens the capacity building and commitment of local authority staff and can increase local political support to the energy and climate change mitigation agenda (in particular by signing up to the Covenant of Mayors).

The South Dublin SEDA is the first of its kind to be prepared by a local authority in Ireland and marks a significant step forward in integrating spatial planning and planning for energy alternatives. The SEDA has also facilitated a 'bottom-up' approach to responding to challenging EU and national energy targets to 2020 and beyond.

By utilizing and advancing the Sustainable Energy Action Plan and Covenant of Mayors methodologies, it also points towards the development of a regional methodology and spatial approach to energy profiling and broadening the local canvas for planning for renewable energy, across local authority boundaries. Codema, as the energy agency for Dublin, produced Heat Demand Density analyses for the Dublin region, and have shown there are many areas suitable for DH development in Dublin.

By compiling a detailed local energy analysis, the SEDA facilitates the opportunity for further local level analysis in South Dublin County, including the development of renewable resource mapping i.e. solar roof space analysis and mapping of waste heat sources. Detailed case studies could also be carried out to ascertain the technical and economic feasibility of a range of measures.

See document(s):

http://www.codema.ie/images/uploads/docs/Dublin_City_Spatial_Energy_Demand_Analysis_June_2015.pdf
<https://emra.ie/dubh/wp-content/uploads/2015/02/Greater-Dublin-Area-Regional-Planning-Guidelines-2010-2022-Volume-1.pdf>

As a result, the energy data for the commercial, residential and municipal sectors, collated under the EU Covenant of Mayors and Sustainable Energy Action Plan 2013 methodologies, has been further progressed and refined to generate County scale tabulations and maps representing a range of energy information, including energy demand, heat density and costs across sectors.

The South Dublin SEDA reveals that there is potential for the development of both decentralized, local district heating networks and a range of on-site / in-house low carbon and renewable energy alternatives to address the energy needs of the various sectors operating in South Dublin County, in particular commercial and industrial uses. The SEDA analysis of the residential sector reveals a diverse energy profile spanning homes built over the past one hundred years, in both urban and rural environments. The Central Statistics Office (CSO) Small Areas have been used as the geographical boundaries to spatially represent the County's energy profile, resulting in a detailed level of analysis which can be refined for further studies and planning strategies.



Low Carbon District Heating Networks

In order to identify local district heating Areas of Potential, energy information has been analyzed in terms of heat density, which is the amount of thermal energy used within a defined area and is an indicator for the economic viability of district heating schemes. The South Dublin SEDA has analyzed the energy profiles of the commercial, residential and municipal sectors and has identified Areas of Potential, measured in terajoules (TJ) per square kilometer (KM²). Areas with a heat density above 250 TJ / KM² are identified as the areas of best potential for initial development in South Dublin County.

Currently there are no supports for any kind (3rd or 4th generation) of District Heating (DH) in Ireland. Codema made a guide for DH. See document(s):

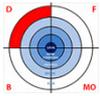
https://www.seai.ie/resources/publications/2016_RDD_79_Guide_District_Heating_Irl_-_CODEMA.pdf



Strategic Development Zones (SDZ)

In Ireland, local authorities have the powers to create specific energy policies for areas that are designated as 'strategic development zones'. Within these areas, local authorities have created policies which require all new buildings to be 'DH enabled', which means they must have a centralized water-based heating system for space heating and hot water. While this means buildings are easier to connect and require little internal modifications, it does not mean that they must connect to a DH network or that gas cannot be brought into the development. There are 2 Strategic Development Zones (SDZs) in South Dublin County Council where the planning conditions require that the new developments must be 'DH enabled'. Each house and building must be capable of connecting to District Heating if available (i.e. water based heating)

The expansion areas in these SDZs are medium density areas of around 10,000-11,000 dwellings, which have to be connected to a Heatnet and mass transportation. An example of a SDZ is the Clonburris Strategic Development Zone Planning Scheme: <https://www.sdcc.ie/en/services/planning/strategic-development-zones/clonburris-2018/>



Design Standards (for District Heating)

Currently there are no design standards for DH systems in Ireland. A good source for design guidance is the 'Heat Networks: Code of Practice for the UK' from the Chartered Institute of Building Services Engineers (CIBSE) and the UK Combined Heat and Power Association (CHPA). This best practice guide covers areas including feasibility, design, construction, installation, O&M and customer obligations for heat networks.



Statutory Requirements for Construction

In general, prior to construction, a client has requirements under the Planning, Building Control and Health and Safety legislation. Most developments require Planning consent, Building Control consents and Health and Safety Project Management.

NOTICES	APPLICATIONS	CERTIFICATES
	<p>DISPENSATION OR RELAXATION Section 4 of the Building Control Act 1990 – 2014</p> <p>(1) Subject to the provisions of section 4, a building control authority may, if it considers it reasonable having regard to all the circumstances of the case, grant a dispensation from, or a relaxation of, any requirement of building regulations in respect of buildings or works which are situated within the functional area of the building control authority and—</p> <p>(a) which are designed, constructed or carried out by or on behalf of the building control authority; or</p> <p>(b) in relation to which an application for such dispensation or relaxation has been submitted pursuant to section 4, subsection (2).</p>	<p>CERTIFICATE OF COMPLIANCE (DESIGN) Section 6 (2)(a)(i) of the Building Control Act 1990 – 2014</p> <p>Requiring the submission to building control authorities of certificates (in this Act referred to as "certificates of compliance") being certificates relating to compliance with the building regulations (subject to any relevant dispensation or relaxation already granted under section 4 or 5 or to any appeal under section 7 which has been allowed) prior to the commencement of, during, and after the completion of, the construction of any buildings, classes of buildings, works or classes of works, to which such building regulations apply</p>
<p>7 DAY NOTICE Section 6(2)(A)(iv) of the Building Control Act 1990 – 2014</p> <p>The submission (before grant of the relevant fire safety certificate) of a notice in writing to a building control authority by a person who intends to commence work on the construction of a building or an extension of or a material alteration to a building, giving not less than 7 days notice of that person's intention to carry out these works, and requiring that such notice shall be accompanied by a valid application for a fire safety certificate</p>	<p>FIRE SAFETY CERTIFICATE Section 6(2)(A)(ii) of the Building Control Act 1990 – 2014</p> <p>Requiring in respect of a building, or buildings, of a prescribed class or classes, the submission to a building control authority of an application for a certificate (in this Act referred to as a "fire safety certificate") that a building, if constructed in accordance with the plans, documents and information submitted, would, in the opinion of the building control authority, comply (subject to any relevant dispensation or relaxation already granted under section 4 or 5 or to any appeal under section 7 which has been allowed) with such provisions of building regulations as may be prescribed</p>	
<p>COMMENCEMENT NOTICE Section 6(2)(K) of the Building Control Act 1990 – 2014</p> <p>requiring the giving of notice to building control authorities of the erection of such buildings, or classes of buildings, or the carrying out of such works, or classes of works, as may be specified in the regulations</p>	<p>REVISED FIRE SAFETY CERTIFICATE Section 6(2)(A)(vi) of the Building Control Act 1990 – 2014</p> <p>Requiring where an application for a fire safety certificate in respect of the construction of a building or an extension of or a material alteration to a building has been submitted before planning permission has been granted in respect of such construction, extension or alteration, the submission, if required by the subsequent grant of such planning permission, of a further application to a building control authority for a fire safety certificate (in this Act referred to as a "revised fire safety certificate") for the purpose of ensuring that the revised design arising from the grant of planning permission (including any condition attached to it) complies with the provisions of building regulations relating to fire safety</p>	<p>CERTIFICATE OF COMPLIANCE (UNDERTAKING BY ASSIGNED CERTIFIER) Section 6 (2)(a)(i) of the Building Control Act 1990 – 2014</p> <p>Requiring the submission to building control authorities of certificates (in this Act referred to as "certificates of compliance") being certificates relating to compliance with the building regulations (subject to any relevant dispensation or relaxation already granted under section 4 or 5 or to any appeal under section 7 which has been allowed) prior to the commencement of, during, and after the completion of, the construction of any buildings, classes of buildings, works or classes of works, to which such building regulations apply</p>
<p>ASSIGNMENT OF PERSON TO INSPECT AND CERTIFY WORKS (ASSIGNED CERTIFIER) Section 6(2)(C) of the Building Control Act 1990 – 2014</p> <p>The designation of the persons or the classes of persons by whom certificates of compliance may be given, and the classes of buildings or works in respect of which such certificates may be given</p>	<p>REGULARISATION CERTIFICATE Section 6(2)(A)(vii) of the Building Control Act 1990 – 2014</p> <p>Requiring where work has been commenced or completed in respect of the construction of a building or an extension of or a material alteration to a building, and no application has been made for a fire safety certificate that is required under building control regulations for such construction, extension or material alteration to a building, the submission to a building control authority of an application for a certificate (a "regularisation certificate") which shall be accompanied by drawings of the relevant works (as they have been constructed) and a statutory declaration from the applicant stating that such works comply with the provisions of the building regulations relating to fire safety, and enabling the authority to specify in a regularisation certificate that the regularisation certificate shall not have effect unless, within 4 months after its being granted, any conditions attached to it by the authority (including conditions as to the carrying out of additional works) are complied with</p>	<p>CERTIFICATE OF COMPLIANCE (UNDERTAKING BY BUILDER) Section 6 (2)(a)(i) of the Building Control Act 1990 – 2014</p> <p>Requiring the submission to building control authorities of certificates (in this Act referred to as "certificates of compliance") being certificates relating to compliance with the building regulations (subject to any relevant dispensation or relaxation already granted under section 4 or 5 or to any appeal under section 7 which has been allowed) prior to the commencement of, during, and after the completion of, the construction of any buildings, classes of buildings, works or classes of works, to which such building regulations apply</p>
<p>ASSIGNMENT OF BUILDER Section 6(2)(C) of the Building Control Act 1990 – 2014</p> <p>The designation of the persons or the classes of persons by whom certificates of compliance may be given, and the classes of buildings or works in respect of which such certificates may be given</p>	<p>DISABILITY ACCESS CERTIFICATE Section 6(2)(A)(ix) of the Building Control Act 1990 – 2014</p> <p>Requiring the submission to a building control authority of an application for a certificate of compliance with respect to requirements under the building regulations for provision of access to a building for persons with disabilities (a "disability access certificate") and enabling the building control authority to grant such certificate if in its opinion the design of the building or the extension of or material alteration to the building in respect of which the submission is made would comply (subject to any relevant dispensation or relaxation already granted under section 4 or 5 or to any appeal under section 7 which has been allowed) with the relevant requirements of the building regulations.</p>	
<p>NOTIFICATION OF CHANGE OF ASSIGNED CERTIFIER OR BUILDER Articles(3) / 20A(2)(c) of the Building Control Regulations 1997 - 2015</p> <p>If, for whatever reason, having submitted the commencement / 7 day notice in respect of works on a building subject to paragraph (1)(b), a building owner changes either the person assigned to inspect and certify the works or the assigned builder, then the building owner shall within 14 days notify the building control authority of the change by submitting, electronically or otherwise, the appropriate notices of assignment and forms of undertaking referred to under paragraph (1)(b) reflecting the up-to-date arrangements in this regard.</p>	<p>REVISED DISABILITY ACCESS CERTIFICATE Section 6(2)(A)(ix) of the Building Control Act 1990 – 2014</p> <p>Requiring the submission to a building control authority of an application for a fire safety certificate (in this Act also referred to as a "revised fire safety certificate") or a disability access certificate (in this Act referred to as a "revised disability access certificate") if significant revision is made to the design or works of a building or an extension of or a material alteration to a building in respect of which a fire safety certificate or a disability access certificate has been granted by a building control authority</p>	<p>CERTIFICATE OF COMPLIANCE ON COMPLETION Section 6 (2)(a)(i) of the Building Control Act 1990 – 2014</p> <p>Requiring the submission to building control authorities of certificates (in this Act referred to as "certificates of compliance") being certificates relating to compliance with the building regulations (subject to any relevant dispensation or relaxation already granted under section 4 or 5 or to any appeal under section 7 which has been allowed) prior to the commencement of, during, and after the completion of, the construction of any buildings, classes of buildings, works or classes of works, to which such building regulations apply</p> <p style="text-align: right;">21</p>



Planning Consent

The developer has a requirement to acquire the relevant Planning Consent required for their development. Generally, this is achieved through application to the relevant planning authority, which is in effect the local authority, as described previously. Local Authorities have responsibility. The planning authority must make a decision on an application within eight weeks of the application being lodged. However, no decision can be made before five weeks have elapsed so as to allow the lodgments of submissions on applications. Anyone can lodge a submission or observation on a Planning Application. This is an issue of some controversy in Ireland as contentious development is often delayed or impeded by third parties. The application must follow a specific format, which includes statutory notices, the appropriate fee, a completed and signed application form, layouts and drawings to prescribed level of detail and specialist reports as required by the Planning Authority. Within the eight-week decision period the planning authority may ask the applicant to submit further information which they consider necessary to enable them to make a decision on the application. The applicant must submit this further information within a period of six months. If further information is not submitted within this time period, the application is declared to have been withdrawn. Once additional information is received

notification of a decision must be issued within 4 weeks, and can be a decision to grant, grant with conditions or refuse permission. A four-week appeals period follows this notification of decision to allow for appeal to the National Planning Board (An Bord Pleanala) by first or interested third parties. Appeals to An Bord Pleanala do not have statutory timeframes and can cause lengthy delays. A decision from An Bord Pleanala can only be appealed on a point of law, and this is through judicial review- which is both costly and lengthy.

Legislation has been introduced in recent years to simplify the planning process for large scale infrastructure and large-scale residential development in the form of Strategic Development applications, which are made directly to An Bord Pleanala. District Heating development may qualify under the SID regulations.

Generally, compliance with conditions attached to a Planning Application will be demonstrated to the Planning Authority prior to commencement to avoid costly abortive or redundant works.

The development must then be carried out in substantial compliance with the Permitted Planning design. The Planning Authority can take enforcement notice against unpermitted development.



Building regulations 2010

Building regulations are minimum standards for design, construction and alterations to virtually every building. The regulations are developed by the Department of the Environment and approved by the Irish Government. The Building Regulations cover the construction and extension of buildings and these regulations are supported by Approved Technical Guidance Documents (TGDs). The TGD's set out detailed practical guidance on compliance with the building regulations.

General compliance with the Building Regulations is monitored through the Building Control Management System (BCMS) and is managed and certified by suitably qualified individuals appointed by the client/ developer. The Local Authority administers the BCMS and reserves the right to attend site and instruct compliance with the Building Regulations.

Specific compliance with Fire, Accessibility and Sustainability is confirmed through Fire Safety Certificate (FSC) Disability Access Certificates (DAC) Applications to the Local Authority and Department of Environment developed software (DEAP/ NEAP) certification to confirm compliance.

- Part A -Structure
- Part B –Fire Safety
- Part C-Site Preparation & Resistance to Moisture
- Part D-Materials & Workmanship
- Part E-Sound
- Part F –Ventilation
- Part G-Hygiene
- Part H-Drainage & Waste Water Disposal
- Part J-Heat Producing Appliances
- Part K-Stairways, Ladders, Ramps & Guards
- Part L-Conservation of Fuel & Energy-Dwellings
- Part L-Conservation of Fuel & Energy-Buildings Other Than Dwellings
- Part M-Access & Use



Building Regulations; Part L Sustainability 2017/ 2019

Under the Irish building energy regulations Part L for dwellings (2019), and non- dwellings (2017), all new buildings must achieved NZEB standards. In order to achieve this; carbon consumption targets and carbon emissions targets have been set as follows;

- Primary energy consumption and CO2 emissions for the proposed building are calculated using NEAP for non-dwelling and DEAP for dwelling software system.
- Using the above systems, the developer shall demonstrate that an acceptable Primary Energy consumption rate has been achieved. The Maximum Permitted Energy Performance Coefficient (MPEPC) is 1.0. for non-dwelling and 0.03 for new dwellings.

- The calculated CO2 emission rate of the proposed building shall be demonstrated through the above systems that an acceptable CO2 emission rate has been achieved, the Maximum Permitted Carbon Performance Coefficient (MPCPC) is 1.15. for non-dwellings and 0.35 for new dwellings.

Compliance with these targets is achieved through the BCMS process set out above and is managed through the DEAP and NEAP software tools. Compliance is achieved through a combination of measures which include building fabric, heating, renewable energy source, airtightness and ventilation strategies.

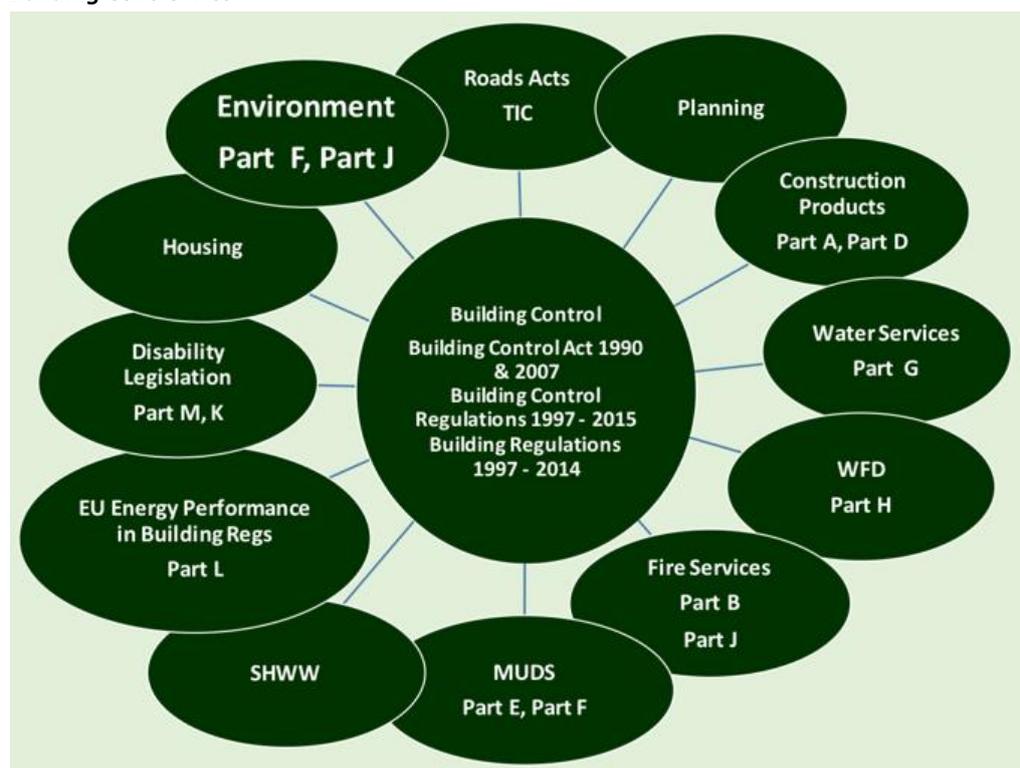
All new buildings must also ensure a share of renewable energy. When heating is supplied by DH, any waste heat used is not considered to meet this requirement, and therefore onsite renewables are required. Using low-carbon and lower-cost waste heat is therefore not an advantage for building energy ratings. Also, in many cases the losses accounted for in the first phases of DH schemes decrease the energy efficiency of the dwelling. These issues mean DH can negatively affect building energy ratings (BER) and therefore is not an attractive option for developers or households. This has impacted the roll out of DH development but is currently under review by the relevant departments.

See document(s):

https://www.housing.gov.ie/sites/default/files/publications/files/tgd_l_2017_for_buildings_other_than_dwellings.pdf

https://www.housing.gov.ie/sites/default/files/publications/files/tgd_l_dwellings_2019.pdf

Building Control Act



The Building Control Act 1990 established a statutory duty to design and construct in accordance with the building regulations. The Act also empowers a Building Control Authority to serve Enforcement Notices, to inspect works and buildings and to prosecute for non-compliance. The Building Control (Amendment) Regulations (BCAR) 2018 reinforced and enhanced the compliance measures and responsibilities of developers, designers and building control authority.

Under the Building Control Act 1990 (as amended), contractors must meet minimum technical standards where buildings may have carbon or climate relevance. This legislation gives effect to Directive 2002/91/EC on the energy performance of buildings (Energy Performance Directive). This directive includes the requirement to give

due consideration to the technical, environmental and economic feasibility of using alternative energy systems in large buildings prior to commencement of construction, which may include:

- Decentralized energy supply systems based on renewable energy.
- Combined heat and power systems.
- District, or block heating or cooling, if available.
- Heat pumps.

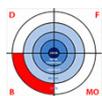
Before new buildings are occupied and before any building is sold or leased, a building energy rating certificate must be produced by the contractor or vendor, so that consumers can compare and assess the energy performance of the building. This encourages contractors to construct energy efficient buildings, which are more desirable to purchasers and tenants. While BER is separate to Part L compliance, in complying with the building regulations, all new buildings achieve a minimum BER rating of A3.



Building control

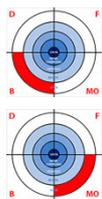
All new development must comply with the requirements of the Building Regulations. Compliance with these regulations is monitored through the Building Control Management System, FSC, DAC and DEAP/NEAP software. While some small-scale works may not be required to comply with the above control mechanism, all development must comply with the Building Regulations.

However, it is likely that the scale of development involved in the delivery of 4th generation District Heating will require full engagement with the management system. The developer has a duty to achieve statutory consent for the fire strategy (FSC), and disability access strategy (DAC) through application to the Building Control section of the relevant authority. These applications can be submitted in advance of development or under the seven-day notice instrument, which allows development to commence (after 7 days) during the consideration period. Under the requirements of the BCAR a developer is required to appoint suitably qualified persons to act as Design and Assigned Certifiers to ensure compliance with the Building Regulations. These regulations also requires a commencement notice to be issued to the BCMS along with a full set of drawings demonstrating compliance with the building regulations, draft project inspection plans and design stage certificates from all relevant consultants 14-21 days before construction work begins. The ongoing works must be inspected at regular intervals by relevant persons in accordance with the agreed inspection plans. The building control authority may attend site and instruct compliance measures. In advance of completion notice must be given to the Building Control Authority, and a full compliance set of drawings, as well as completion certificates of compliance must be submitted to the BCMS. This notice period must be given in advance of substantial completion of the building works.



Technical standards

The recent development of technical best practice guidelines for the installation of shallow geothermal energy collectors in Ireland by the Geothermal Association and the implementation of the EN Standard 17628:2015 as an Irish standard has the improved awareness in the need for best practice completion of ground source heat exchangers. Both documents are referenced in the contractor code practice implemented by SEAI for the installation of ground source heat pumps. This will facilitate the sustainable development of shallow geothermal energy resources in Ireland.



Health and Safety regulation

Health and Safety regulation in Ireland sits within a statutory framework and failure to discharge the statutory duties can carry criminal sanction, including fines of up to EUR3 million and/or imprisonment for up to two years for the more serious offences. The following contain the core health and safety legislation relevant to construction:

- Safety, Health and Welfare at Work (SHWW) Act 2005, which imposes core duties on all employers to ensure, so far as is reasonably practicable, the health and safety of their own employees and of third parties, including employees of others and members of the public.
- Safety, Health and Welfare at Work (Construction) Regulations 2006 to 2010.

- Safety, Health and Welfare at Work (Asbestos) Regulations 2006 to 2010.
- Safety, Health and Welfare at Work (General Application) Regulations 2007 to 2010.

The regulations above, set out more detailed duties in respect of certain activities and in respect of the use of certain equipment, or to manage specific risks. Health and safety regulations in Ireland is heavily influenced by EU-wide developments.

The Safety, Health and Welfare at Work (Construction) Regulations 2006-2010 require the appointment of duty holders; namely a Project Supervisor for the Design Process and a Project Supervisor for the Construction Stage whose responsibility includes specific functions to ensure that construction projects are planned, designed and executed taking health and safety into account both:

- During the design and construction phases.
- In subsequent use of the completed project.

Duties are also imposed on parties procuring construction works, and on both designers and contractors involved in construction work. See for more information: <http://www.hsa.ie/>.

The Construction Regulations require contractors to guard against the dangers from a fall or dislodgement of material in an excavation. The Safety, Health and Welfare at Work Act 2005 requires a risk assessment to be performed by contractors before undertaking excavation work. The risk assessment must:

- identify those hazards that are likely to be encountered;
- determine the control measures; and
- determine the safe system of work required to protect employees and persons affected by the activities taking place.

Control measures selected could be in the form of shoring (support for the excavation), battering (sloping the excavation) or other suitable means.

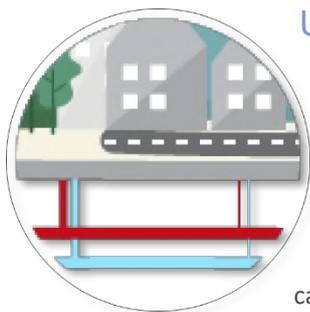
Note: The risk assessment may indicate the need to install trench supports (or other alternative protective measures) even in relatively shallow excavations less than 1.25 m deep, particularly if ground conditions are particularly poor or the nature of the work requires workers to lie or crouch in a trench.



Home energy grants

See document(s): [Home Energy Grants | SEAI](#)

Grants for energy efficiency measures for individual households do not include equipment for DH connection, neither provide grants for DH substations. This hinders DH development, as customers will choose other technologies that are supported by grants, and installing these systems now locks them into these technologies for 10-15 years.



Underground and information exchange

In development to date DH pipes have been considered and treated in the same as any other underground infrastructural pipe or cable which are exempt from planning permission under the Planning and Development Act (section 5).

A challenge which has been encountered in establishing local government led district heating schemes is the extent and nature of the role that a local authority can undertake as an energy supply company. These issues have been addressed by ensuring the not-for-profit nature of the schemes to date and the restriction of all operations within the functional area of the local authority.

Property rights

The lack of specific legislation allowing developers to obtain licenses for resource exploration, development and drilling under third party lands still remains a barrier.



Guidelines for Managing Openings in Public Roads

[Guidelines for the Opening, Backfilling and Reinstatement of Openings in Public Roads](#)

This document sets out a summary of the legal framework relating to powers of road authorities, various statutory bodies and private individuals in opening or forming openings in public roads in Ireland. The document prescribes standards in respect of the work of forming openings, backfilling and the reinstatement of road surfaces and the associated materials to be used on all roads other than National Roads. Furthermore, the document prescribes procedures and requirements in relation to the use of Map Road Roadworks Licensing (MRL) and its use for all road openings in public roads other than those carried out by a road authority.



Roadworks Regulation 97

Where the available road width is restricted by any construction work which involves the opening, excavating or breaking up of the road, or the road is obstructed by plant/equipment or by materials during the course of the work, the provisions under Regulation 97 will apply.

(a) There must be on site, at all times when the works are in progress and workers are on site, at least one person who has been issued with a valid construction skills registration card relating to either “health and safety at roadworks” or “signing, lighting and guarding”. Furthermore, the works must be supervised by a competent person who has been issued with a valid construction skills registration card relating to signing, lighting and guarding on roads.

(b) There must be at all times when road signing, lighting and guarding is being installed, modified or removed on the roadway, at least one person who has been issued with a valid construction skills registration card relating to signing, lighting and guarding on roads. This person must also regularly check that the temporary traffic arrangements identified in the Plan (configuration) remain in place for the duration of the works.

Inhouse standards of railway

When crossing a railway there are inhouse standards of the railway company.

Information coordination

Semi state bodies coordinate the stakeholders involved in energy. More information can be found at <http://www.seai.ie/>

Consumer Protection

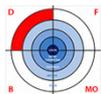
It is only allowed to have anonymized information of customers under GDPR. It is acceptable to collect personal information; however, this information cannot be retained by the organization.



Environment

Environment (Miscellaneous Provisions) Act 2011

The above Act is an amendment to the Planning and Development Acts 2000-2010. The impact of construction projects on the environment is regulated principally by the Planning and Development Acts 2000 (as amended), under which planning permission is required to develop land. An application for planning permission must describe the proposed development in sufficient detail for the relevant planning authority to assess whether the project is consistent with proper planning and sustainable development.



For projects that are likely to have a significant effect on sites protected under Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (Habitats Directive) or Directive 2009/147/EC on the conservation of wild birds (Birds Directive) (which replaces Directive 79/409/EEC on the conservation of wild birds), the application must be accompanied by an assessment of the implications of the project for the protected site in view of the site's conservation objectives.

Whatever the project, certain details regarding the construction phase are commonly provided, including details of:

- Trip generation (that is, the number of vehicles accessing the site), junction impact and traffic management to limit the impact of heavy goods vehicles, whether for removal of excavation spoil or delivery of materials.
- Hours of construction, with express reference to any nighttime or weekend activity.
- Noise, vibration and dust, with express reference to any blasting or piling.
- Construction and demolition (C&D) waste management planning, to limit the generation of C&D waste and encourage re-use and recycling.



Local Government (Water Pollution) Act

The Local Government (Water Pollution) Act 1977 (as amended), which prohibits any person from causing or permitting pollution to water, may apply. Licenses covering site-dewatering are required to discharge trade effluent into water or a sewer.



Water Services Act 2007

An Act to provide, in the interests of the common good, for the provision of Water Services; to give effect to certain Acts adopted by institutions of the European communities in respect of those services and, in addition to make provision for miscellaneous amendments to the Local Government (Water Pollution) Acts 1997 and 1990 and the Fisheries (Consolidation) Act 1959 and the Environmental Protection Agency Act 1992 and certain other enactments relating generally to the provision of water services and to provide for related matters.



Environmental Impact Assessments (EIAs)

All development proposals will require a preliminary EIAR and AA screening reports which should be included with the Planning Application to confirm the development will not have an impact on the environment. This is an evolving legislative area and an ecologist should be appointed at an early stage of the design to advise on the appropriateness of mitigating measures. For projects that are likely to have a significant effect on the environment, as defined under the Planning and Development Acts 2000 (as amended) require that the application must be accompanied by an environmental impact statement (EIS). The EIS must identify and describe the likely significant effects of the project, including during the construction phase. Guidelines have been published on the information to be contained in an EIS. Developments set out in the Planning and Development Regulations 2001 (as amended) are subject to EIS. The list of developments subject to EIS is substantial and includes all those listed under Directive 97/11/EC on the assessment of the effects of certain

public and private projects on the environment (Amended EIA Directive), such as major energy, transport, industrial, environmental infrastructure and larger residential and urban development projects. EIS may also be required for developments below the thresholds set out if the relevant planning authority considers that the development is likely to have significant effects on the environment.

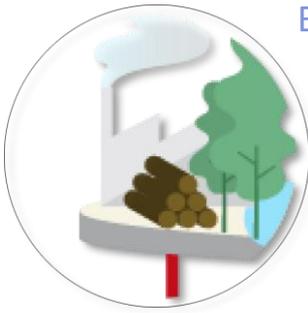
Statutory instruments:

- SI 436 of 2004 -Planning and Development (Strategic Environmental Assessment) Regulations 2004 - Transposes into Irish law the Strategic Environmental Assessment (SEA) Directive (Directive 2001/42/EC) on the assessment of the effects of certain plans and programs on the environment, insofar as the Directive relates to land-use planning. The regulations came into force on 21 July 2004.



Sustainable development

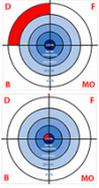
The Department of Environment, Community and Local Government's National Climate Change Strategy 2007-2012 and Green Public Procurement (GPP) policy reflect the growing importance of energy efficient and sustainable construction and development in Ireland.



Biomass and waste incineration plants

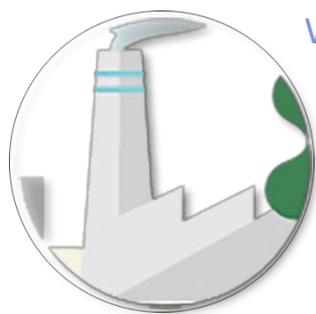
Waste

The Waste Management Act 1996 (as amended), which provides that a license is required to collect waste for reward, may apply. Only appropriate people (that is, a local authority or a person with an appropriate license) can control waste. Certain developments of contaminated land require a waste license from the Environmental Protection Agency. The removal of excavated earth/spoil from development sites is controlled under this Act.



SDCC Case Study- Waste heat recovery & utilization

The Council of South Dublin recognizes that there is much potential for the capturing and utilization of waste heat generated by premises that are currently generating un-used heat, which could be captured and re-used on-site or by premises on adjoining and nearby sites. Such waste heat is generated from processes including thermal generating stations, site power generation, industrial processes, wastewater systems and waste to energy plants. The recovery and utilization of waste heat, stemming from local kick start projects, has the potential to result in the development of a local energy network into the future.



Waste heat

Waste heat recovery & utilization

There is no legislation or policy around waste heat recovery in Ireland currently. A number of Local Authorities have included specific objectives in their Development Plans including South Dublin, Kerry.



CASE STUDY South Dublin County Council

The Council of South Dublin recognizes that there is much potential for the capturing and utilization of waste heat generated by premises that are currently generating un-used heat, which could be captured and re-used on-site or by premises on adjoining and nearby sites. Such waste heat is generated from processes including thermal generating stations, site power generation, industrial processes, wastewater systems and waste to energy plants. The recovery and utilization of waste heat, stemming from local kick start projects, has the potential to result in the development of a local energy network into the future.

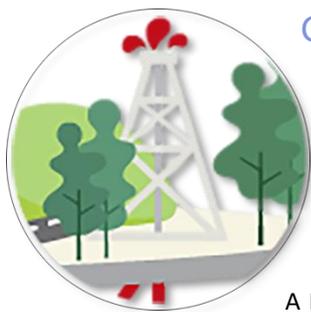


ENERGY (E) Policy 5 Waste Heat Recovery & Utilization

It is the policy of the Council to promote the development of waste heat technologies and the utilisation and sharing of waste heat in new or extended industrial and commercial developments, where the processes associated with the primary operation on site generates waste heat.



- E5 Objective 1:
To promote the development of waste heat technologies and the utilisation and sharing of waste heat, in new or extended industrial and commercial developments, where the processes associated with the primary operation on site generates waste heat.
- E5 Objective 2:
To promote the development of local energy partnerships among businesses in the County.
- E5 Objective 3:
To promote increased energy self-sufficiency across business sector



Geothermal energy systems

Deep Geothermal Systems

The current legislative framework which governs deep geothermal systems in Ireland is primarily enshrined in the Mineral Developments Acts 1940 - 1999. Mineral exploration in Ireland requires a Prospecting Licence that gives the holder the right to explore for specified minerals over a certain area.

A Prospecting Licence typically covers some 35 sq.km and is normally issued for six years, with the option of renewal if the holder has met the requirements. Some three-quarters of the country is covered by delineated licence areas. A prospecting licence holder has an exclusive right to explore the licenced area together with a right of access for exploration.

However, a prospecting licence holder does not have the right to develop or extract any minerals found within a Prospecting Licence Area without being granted a State Mining Licence or State Mining Lease. Where the minerals in question are privately owned, a State Mining Licence is required in order to develop the resource. If the minerals are State owned, a State Mining Lease is necessary.

There are also a number of onerous obligations on licence holders under the Mineral Developments Acts 1940 - 1999, these include the: protection of aquifers and groundwater generally; protection of the environment and preservation of amenities; waste management; safety of persons and animals; provision of reports, plans, maps as required; notification of claims, disputes etc; insurance; and compensation in respect of damage caused. It is also arguable that deep geothermal development also comes under the planning law regime as a major infrastructural project which would make a material change of use of land under the Planning and Development (Strategic Infrastructure) Act 2006.

Geothermal Development Bill

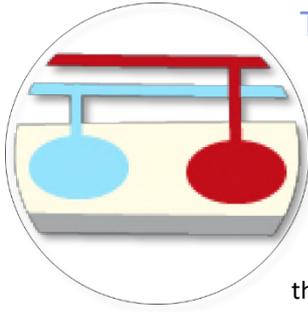
Following consultations with a working group of experts in the geothermal energy field and representatives from the Geothermal Association of Ireland, the Government approved the Heads of the Geothermal Energy Development Bill 2010 (the "GED Bill") on 13 July 2010.

The Draft Geothermal Development Bill (the Bill) defines geothermal energy in Ireland and vests ownership of geothermal energy in the State, giving practical effect to the assertion of ownership of natural resources in the Constitution (King, 2011). The Bill covers the exploration and development of deep geothermal energy resources in Ireland (excluding aspects such as district heating, market regulation and health and safety).

An extensive consultative process started in 2008 in advance of the drafting of the general scheme of the Bill and included web-based consultations, two national workshops and meetings with industry stakeholders. Draft Heads of the Bill completed in July 2010 have been submitted to the Government for approval and referred to the Attorney General and the Parliamentary Counsel for detailed drafting. This process is expected to be completed following the enactment of the Minerals Development Bill in 2017 and the on-going work on the associated regulations.

The DCCAE White Paper 'Ireland's Transition to a Low Carbon Energy Future 2015-2030' makes provisions for the establishment of a regulatory framework to facilitate the exploration for, and development of, geothermal energy resources, although the timing of consultation process for these regulations and their implementation is not yet known.

Thermal energy storage



Shallow Geothermal Systems

In practice, shallow geothermal systems have been developed in Ireland for years without any specific licences being obtained. For example, no current legislation covers the completion of boreholes for the purpose of groundwater or site investigation as these boreholes are classified as exempt developments in the General Planning and Development Regulation 2001. See:

<http://www.irishstatutebook.ie/eli/2001/si/600/made/en/print>



Also, a certain amount of flexibility exists within the current planning regime such as the Planning Development Regulations 2007 which provides an exemption for certain domestic heat pumps from Part 1 of Schedule 2 of the Planning and Development Regulations 2001. Similarly, the Planning and Development Regulations 2008 amends Schedule 2 of the Planning and Development Regulations 2001 with regard to the installation of heat pumps in industrial buildings or business premises.

The recent development of technical best practice guidelines for the installation of shallow geothermal energy collectors in Ireland by the Geothermal Association and the implementation of the [EN Standard 17628:2015](#) as an Irish standard has the improved awareness in the need for best practice completion of ground source heat exchangers. Both documents are referenced in the contractor code practice implemented by SEAI for the installation of ground source heat pumps. This will facilitate the sustainable development of shallow geothermal energy resources in Ireland.

Spatial Policy for 4DHC

United Kingdom



Researched by	Checked by	Reviewed by	First Draft	Final Draft
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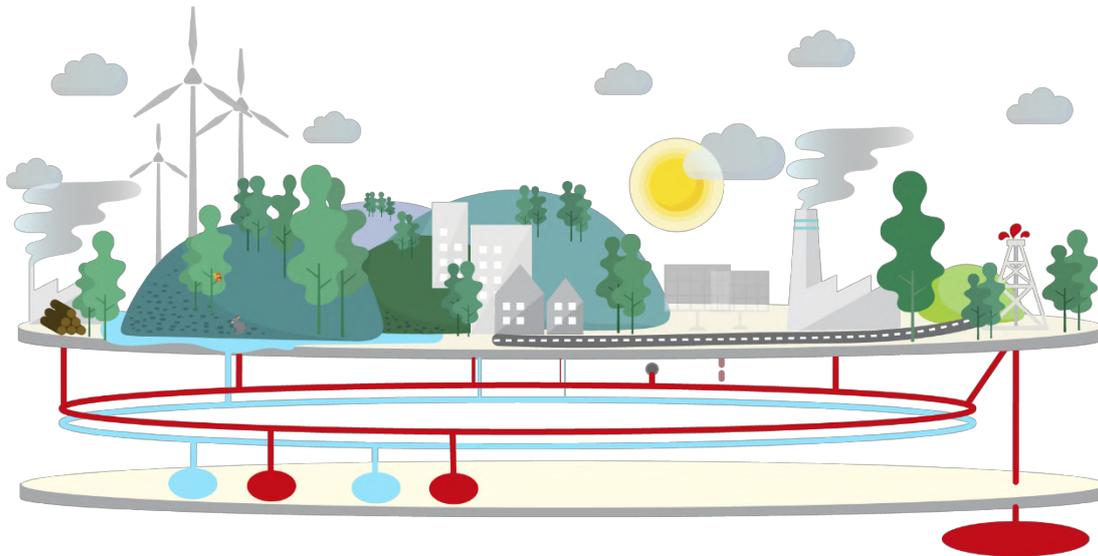
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About HeatNet NWE

This document has been developed as part of the HeatNet NWE project, which is part-funded through the Interreg NWE programme and aims to increase the uptake of 4DHC networks across North-West Europe. As part of this project, the partners developed the HeatNet Model, which will help the public sector to begin implementing 4DHC networks, and the Transition Roadmaps, which outline the partners' experience in developing six district heating pilots across North-West Europe. The HeatNet Guide to Financing gives a broad overview of the various sources available to finance district heating schemes.

For further information on these reports and on the HeatNet NWE project, please visit www.guidetodistrictheating.eu.

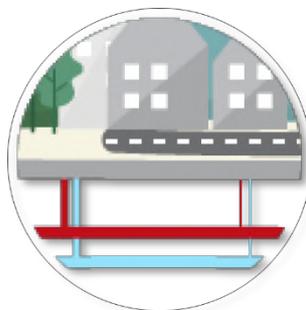


[Chapter 0-1: Overview](#)

[Chapter 0-2: Agreements & energy acts on national level](#)



Chapter 3: Spatial planning



Chapter 4: Underground and information exchange



Chapter 5: Environment



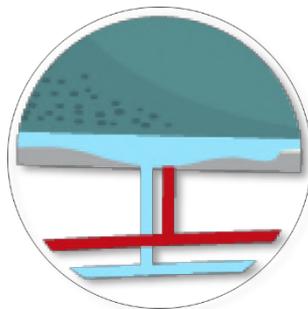
Chapter 6: Biomass and waste incineration plants



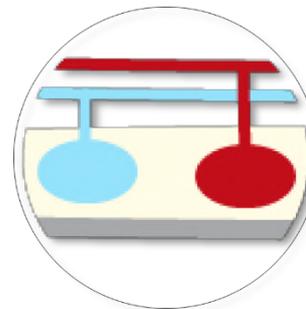
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Chapter 8: Geothermal energy



Chapter 9: Aquathermia



Chapter 10: Thermal energy storage

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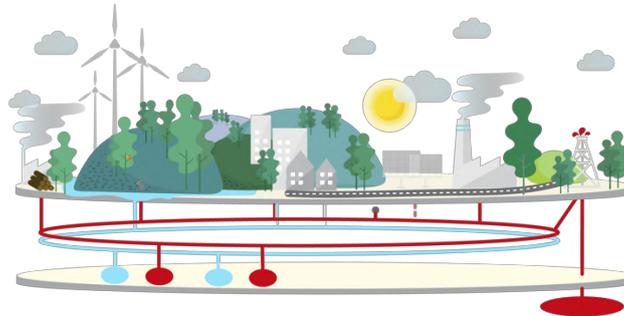
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Preface

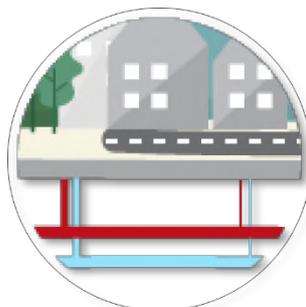
This report gives an overview of the spatial policies in the UK -with focus on Scotland and England- one can encounter working on 4DHC-networks. For each of the pilot countries of HeatNet, this overview is made. Moreover, a summarizing and synthesizing overview report is produced.



The report starts with an overview of the spatial policies. If you want to know more about the legislation and regulations you can read the chapters that are divided in a chapter of the agreements and energy-acts on national level and the chapters below:



Chapter 3: Spatial planning



Chapter 4: Underground and information exchange



Chapter 5: Environment



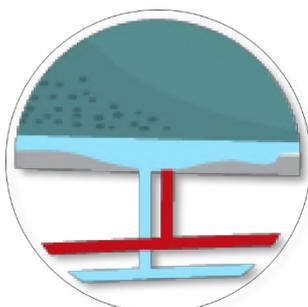
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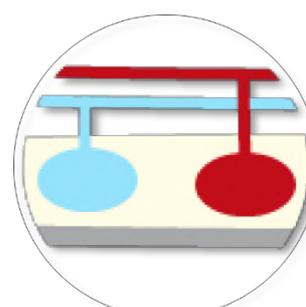
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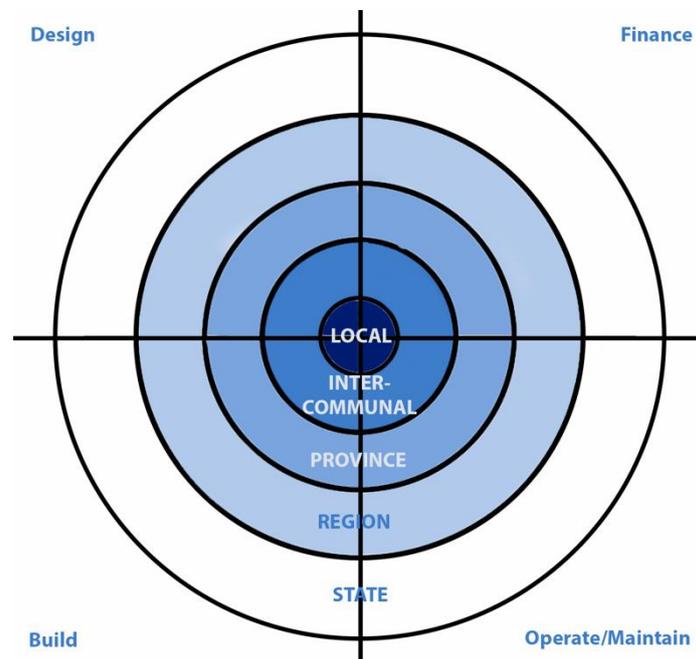


Chapter 9: Aquathermia

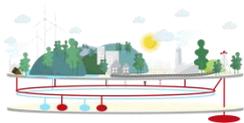


Chapter 10: Thermal energy storage

Legislation in the NWE countries can be found on different governmental levels: state, region, province, inter-communal and local. In this report the UK is state level and Scotland, England are on the regional level. Scotland and England have some different legislation.



To make it easier to navigate through all of these policies, in the report the bullseye marks in red the policies based on the phase your project is in: Design, Build, Finance or Operate/Maintain and the governmental level of the legislation from local in the heart of the bullseye to the state level on the outline. To make clear the legislation is specific for England or Scotland, the bullseye has a green border if it is about England and a blue border for Scotland.



Overview Spatial Policies in United Kingdom

District heating networks have a long and proven track-record in EU and the Nordic countries but have struggled to make headway in the UK energy market. Past technology and political climates encouraged alternative heating, and it is only in recent years that the focus has returned to district heating schemes in the United Kingdom and become a part of the government's energy and environmental plans and legislation. Legislation of district heat networks at present is extremely limited if present at all (although undergoing a review process within Scotland).

One of the key challenges with ownership and regulation of geothermal heat is that it is regarded as a physical property, not a recoverable (raw) material such as ore or gravel. As such, 'heat' is not a legally-defined entity and this causes some difficulties when it comes to assigning legal ownership and regulating it. In some countries geothermal heat is defined as a natural resource with clear rules of ownership and regulations similar to those for metals and fossil fuels.

The recent rise in exploration for shallow and deep geothermal resources internationally has seen many countries expand national legislation with the aim to protect against environmental damage. As a result, a diverse set of regulations define rules around the development and exploration process rather than managing the resource, i.e. heat/energy, itself. A practice of 'first come, first serve' will never be the optimum method to manage a valuable resource nor ensure its long-term sustainability. This can only be achieved by a revision of the regulations.

Such revision of geothermal regulations is one of various measures needed in the UK to encourage exploitation of this resource as an alternative to currently used, carbon-intensive energy sources like coal and gas. This requires that technology users, companies and financiers have some safeguards for their financial commitment and that an authority is available that can issue exploration and development licenses for geothermal heat that will, in law, guarantee and protect the licensee's exclusive right to develop, exploit and profit from a geothermal resource, for a specified period, i.e.

- Protection and management of the geothermal resource and its long-term sustainability
- Protection of the geothermal user/licensee from other external parties depleting or damaging the geothermal resource available within their property/ license area.

The only current legislation specific to DHNs is the Heat Network (Metering and Billing) Regulations 2014, which describes the billing and metering for DHNs but does not legislate the quality of heat, market competition or DHN monopolies [138]. The Heat Trust is a voluntary standard launched by industry participants, while the Association for Decentralised Energy (ADE) and Chartered Institution of Building Services Engineers (CIBSE) have produced a heat network code of practice. Both of these are voluntary, and it is unclear how many DHNs in the United Kingdom meet these standards and practices. Therefore, it is clear that the UK must push legislation and regulation around heating networks in order to provide safe, secure and competitive heating network markets in order to facilitate the 17% predicted domestic heat supply by DHNs by 2050.

A significant proportion of environmental legislation in the UK originates from EU law, which is directly applicable or implemented through national legislation. With the upcoming BREXIT a new act to create an independent regulator to police government and public agency decisions, and enforce environmental laws to at least the same standard as the EU's, is wanted. Although the UK, Scottish and Welsh governments have cooperated closely on measures to transpose EU environment regulation into UK and Scottish law, there are no plans for new regulatory measures yet.

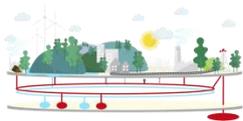
Current Policy Context:

- Promoting the creation of infrastructure to supply low carbon heat through the delivery and expansion of district energy networks.

- Support the development of resilient, efficient local energy markets through the identification and promotion of local opportunities for SMART energy infrastructure that helps to balance local supply and demand.

As yet there is no District Heating regulation within Scotland, the government is in a consultation phase on that. It is unclear when any regulation does come out and how consumers are protected and the right to redress.

Aberdeen: There are several conflicting governmental policies which will often cause difficulties where we are being pushed by the government to deliver increased connections to district heating networks, yet the other side of the government charges us rates on district heating, which is extensively more expensive than if you were to install gas. The policy position is encouraging on one side and punitive on the other, and the conflicts often result in choosing the cheaper option.



Agreements and acts on energy in the UK

The Future of Heating (2012)

A strategic framework for low carbon heat in the UK. The Strategy describes what the Government thought needed to be done to decarbonise heat to contribute to meet carbon budgets and the 2050 target (80% reduction based on 1990 levels). See [document](#).

Heat networks: Code of Practice for the UK

The code seeks to provide clear and measurable outputs which will ensure heat networks operate effectively and meet client and customer expectations. See [document](#).

Scotland's Energy Efficiency Programme

The Scottish Government has designated energy efficiency as a National Infrastructure Priority, the cornerstone of which will be Scotland's Energy Efficiency Programme (SEEP) – a 15 to 20 year programme. SEEP will help local authorities to pilot new and innovative approaches to energy efficiency. Within the SEEP local authorities will be required to develop Local Heat & Energy Efficiency Strategy (LHEES) documents which will identify areas or district heating zones which can be consented for development. District Heating regulation and Licensing would also be included.

The Heat Policy Statement

Towards Decarbonising Heat: Maximising the Opportunities for Scotland. The [Heat Policy Statement](#) sets out the Scottish Government's future policy direction for addressing the three key aspects of the Heat system: how we use it (heat demand and its reduction); how we distribute and store it (heat networks and heat storage); where our heat comes from (heat generation). It retains the level of ambition to achieve 1.5TWh of Scotland's heat demand to be delivered by district or communal heating and to have 40,000 homes connected by 2020.

Clean Growth Strategy

The U.K. clean growth strategy published in October 2017 details the expectation that around 20% of properties will be serviced by a heat network by 2050.

See document(s):

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/700496/clean-growth-strategy-correction-april-2018.pdf, [Clean Growth Strategy: executive summary - GOV.UK](#)

Plymouth: Clean Growth Strategy does not create enough certainty. Not enough fundable aspects to deliver 5th carbon budget. Working with businesses is difficult because of time frames.

Standard Assessment Procedure

SAP10 – Updated to the U.K. standard assessment procedure have rightly reduced the electricity carbon factor from 0.516 kgCO₂/kWh to 0.233 kgCO₂/kWh. This is good support in electrifying heat. The same update is also potentially punitive to heat networks by use of an inflated heat loss factor.

UK Government Heat Networks Delivery Unit

UK Government Heat Networks Delivery Unit (in BEIS) support local authorities in England with funding and advice for feasibility work to develop practical schemes to the point where the return on investment is clear. £320M investment to help implement schemes, through the Heat Network Investment Project and local authorities are being asked to put forward business cases.

Climate Change Environmental Laws

Laws set to reduce carbon emissions and the efficiency and use of energy across the UK.

Climate Change Act 2008

Established in 2008, the Climate Change Act is an environmental law designed to reduce carbon dioxide emissions in the UK. Binding targets have been set that will reduce these emissions from levels recorded in 1990 by at least 80% by 2050.

Planning and Energy Act 2008

The Planning and Energy Act 2008 is a law in the UK that allows planning authorities in England and Wales to impose requirements on local planning applications regarding energy use and efficiency.

Energy Act 2020

The Energy Act 2011 relates to UK enterprise law which requires energy providers to meet certain energy efficiency requirements when providing energy to consumers. Obligations include carbon emissions reductions and home heating costs reductions.

Sullivan Report

The [Sullivan Report](#): 'A Low Carbon Building Standards Strategy for Scotland' sets out recommendations to drive forward standards and innovation.

Spatial Planning

Primary instruments planning and development



National Planning Policy Framework

The central government published National Planning Policy Framework (NPPF) in February 2019, which sets out the principle of planning in England. The content in the NPPF must be considered among the establishment of Local Plans and Neighborhood Plans which are to encourage; building a strong, competitive economy; ensuring the vitality of town centers; supporting a prosperous rural economy; promoting sustainable transport; supporting high quality communications infrastructure; delivering a wide choice of high quality homes; requiring good design, promoting healthy communities; protecting Green Belt land; meeting the challenge of climate change, flooding and coastal change; conserving and enhancing the natural environment; conserving and enhancing the historic environment; and sustainable use of minerals.

<https://www.gov.uk/guidance/national-planning-policy-framework>



National planning framework for Scotland

Based on The [Town and Country Planning \(Scotland\) Act, 1997](#) is the long-term strategy presenting the framework of Scotland's spatial development. With the background of decentralization of government and ESDP in 1999, the 1st NPF was established in 2004 followed by the 2nd in 2009, then the 3rd in June 2014 (NPF was legally recognized from the 2nd NPF). At the same time, Scottish Planning Policy was established which presented the Scotland government's policy on urban planning management and land use/development. NPF3 presents 14 national developments including development of transport infrastructure, development of major urban areas, green network, etc.

As a statutory Development Plan, local authorities (single-tiered) establishes Local Development Plan. The four major urban areas (Aberdeen, Dundee, Edinburgh, Glasgow) are to establish Strategic Development Plans which is a cross-boundary plan.

See document(s):

<https://www.gov.scot/publications/national-planning-framework-3/>



Scottish Planning Policy

Statement of the Scottish Government's policy on nationally important land use planning matters (February 2010). See: <http://www.districtheatingscotland.com/wp-content/uploads/2015/12/ScottishPlanningPolicy.pdf>



Local Enterprise Partnerships

After the abolition of RDAs, establishment policy of Local Enterprise Partnership (LEP) was presented in Budget 2010 in order to advance regional economic development. LEP is a business-lead partnership of public, private and academia of which more than a half of committee members are to be from private sector, and it takes functional economic area in account. Currently in 2014, 39 LEPs are approved to cover the whole area of England. Some of the LEP areas overlap each other.

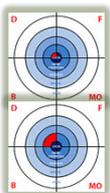
LEP also acts to gain funds through competitive bidding such as Regional Growth Fund and it cooperates with local councils in establishing Local Plan. Moreover, LEP is going to be the management authority of EU Structural Fund for 2014-2020.



Enterprise Zones

Enterprise Zone was newly established in 2011 by the coalition government (in fact, such zone existed during the Thatcher Administration). This was to support start-up and enhancement of company's economic activity by providing incentives such as giving tax benefit, simplifying procedures related to urban planning, providing support to organize broadband environment, etc. Specific areas within LEP areas are designated as EZs.





Local Development Framework

See document(s): [http://democracy.plymouth.gov.uk/documents/s20639/City centre AAP.pdf](http://democracy.plymouth.gov.uk/documents/s20639/City%20centre%20AAP.pdf)

Joint Local Plan

See document(s): [The new plan for South Hams, West Devon and... | The Plymouth Plan](#)

Draft Plymouth & SW Devon Joint Local Plan DEV34. 6 states 'Developments will be required to connect to existing district energy networks in the locality or to be designed to be capable of connection to a future planned network. Where appropriate, proportionate contributions will be sought to enable a network to be established or completed'. DEV35. 8 states 'For renewable or low carbon energy generating proposals (including energy from waste), where appropriate, the development should provide for the efficient distribution of heat off site, for the co-location of energy producers with users, and for the maximization of energy recovery or efficiency of generation'.



Duty to Cooperate

Localism Act 2011 stated "Duty to Cooperate", which is a rule that when establishing Development Plan an establishment body of a Local Plan (such as local councils) must cooperate with adjacent planning authorities and related organizations on cross-boundary strategic issues. The exemplified issues that should go through cooperation process are; homes and jobs, commercial development, infrastructure, health, security and cultural infrastructure, climate change mitigation and adaptation, etc.



Local Plan Plymouth

Current Plymouth Local Plan – Policy GR07

- Encouraging and enabling large scale uptake of retrofit insulation, and renewable /low carbon energy generation equipment and infrastructure to existing buildings and promoting other energy demand reduction measures.
- Supporting and enabling the installation of renewable and low carbon energy generation capacity, including encouraging community owned installations and identifying land for large scale renewable energy installations.

Plymouth Local Plan out for consultation – Policy DEV 34

Development proposals will be considered in relation to the 'energy hierarchy' set out below:

- Reducing the energy load of the development.
- Maximising the energy efficiency of fabric.
- Delivering on-site low carbon or renewable energy systems.
- Delivering carbon reductions through off-site measures.

Developments should reduce the energy load of the development by good layout, orientation and design to maximise natural heating, cooling and lighting. For major developments, a solar master plan should show how solar gain has been optimised in the development, aiming to achieve a minimum daylight standard of 27 per cent Vertical Sky Component and 10 per cent Winter Probable Sunlight Hours.

All major development proposals should incorporate low carbon or renewable energy generation to achieve regulated carbon emissions levels of 20 per cent less than that required to comply with Building Regulations Part L.

Developments will be required to connect to existing district energy networks in the locality or to be designed to be capable of connection to a future planned network. Where appropriate, proportionate contributions will be sought to enable a network to be established or completed.

The policy requires developers to connect to DHC network, unless they can prove the connection is not viable. It is obliged for major developments up from 10 houses and retrofitting.

Conclusion – Plymouth policy is looking to enforce a standard of DH readiness, however it is light on enforcing particularly standard within a building. This is up to leading developers to produce compliant solutions with only part DH connectability (e.g. electric space heating, centralised DHW) or completely omit connectability for things such as commercial units.

Actions – It is understood that PCC through the planning process can enforce minimum standards of building, using the influence on the greatest extent is absolutely necessary to develop the correct environment for district heating schemes to propagate. The establishment of ‘zones’ both for connection to heat networks and for building quality would begin to generate areas of buildings which are ideal for connection to low temperature networks. PCC could begin to provide secondary system guidance documentation as standard to all developments to aid connectability.

Heat Planning



Planning Guidance

[Planning Guidance, Section 6 Energy](#) - includes guidance on heating. Guidance for Domestic and Non-Domestic are separate.

Any consent that we obtain for works is normally conditional on further information e.g. planning permission, building permits. Typically we may not know the exact details until all contractors and subcontractors are on site. Therefore, we may well start work on part of a project before unconditional consents are available for other parts of the project.



Heat networks: Code of Practice for the UK

See document(s): http://www.legislation.gov.uk/ukxi/2014/3120/pdfs/ukxi_20143120_en.pdf

The code seeks to provide clear and measurable outputs which will ensure heat networks operate effectively and meet client and customer expectations. Setting minimum standards is a key step to provide greater confidence for specifiers and clients.



National Heat Map

See document(s): [Statistics at BEIS - Department for Business, Energy & Industrial Strategy - GOV.UK](#)



Scotland's Heat Map

See document(s): [Scotland Heat Mapping](#)

It is a requirement for all local authorities in Scotland to produce and maintain information for their local authority area within a National Heat Map for Scotland. Over time the Heat Map will become a guidance tool about future planning of heat networks.



Plymouth City-Wide District Energy Strategy

See document(s): <https://www.plymouth.gov.uk/sites/default/files/PlymouthCityWideEnergyStrategy.pdf>

Plymouth City-Wide District Energy Strategy- Evidence base to support Joint Local Plan. Identifies DH Opportunity areas and generic characteristics where DH should be promoted.

Plymouth City Council, City Centre AAP CC05 policy: Under Policy CC05, adopted by Plymouth City Council the municipality is able to require that schemes connect or are future-proofed and contribute towards the network development. Draft Plymouth and SW Devon Joint Local Plan Policies DEV 34 and DEV35, which require connection or co-location.



Aberdeen City Heat Network

See document(s): <https://www.theade.co.uk/assets/docs/case-studies/Aberdeen.pdf>, [Aberdeen Heat and Power Company Ltd](#)

As part of Aberdeen City Council commitment to providing Affordable Warmth to all householders, in 2002 the city embarked on a long-term programme to connect all 59 of their off-gas multi-storeys (over 8 Storeys high) to CHP District Heating or communal heating systems (where CHP was not viable). To help deliver this programme of works and develop and manage the delivery of the CHP Network and supply of heat, the council established an Arm's Length External Organisation (ALEO) Aberdeen Heat and Power, an ESCO, operating as a social enterprise, but is an independent company limited by guarantee.



Plymouth City Council, City Centre AAP CC05 policy

Under [Policy CC05](#), adopted by Plymouth City Council the municipality is able to require that schemes connect or are future-proofed and contribute towards the network development. Draft Plymouth and SW Devon Joint Local Plan Policies DEV 34 and DEV35, which require connection or co-location.

Draft Plymouth & SW Devon Joint Local Plan DEV34. 6 states 'Developments will be required to connect to existing district energy networks in the locality or to be designed to be capable of connection to a future planned network. Where appropriate, proportionate contributions will be sought to enable a network to be established or completed'. DEV35. 8 states 'For renewable or low carbon energy generating proposals (including energy from waste), where appropriate, the development should provide for the efficient distribution of heat off site, for the co-location of energy producers with users, and for the maximisation of energy recovery or efficiency of generation'. <https://plymswdevonplan.co.uk/policy>



No obligation to connect

There is a national statement that states no gas connection in 2025. It is not a legal requirement.

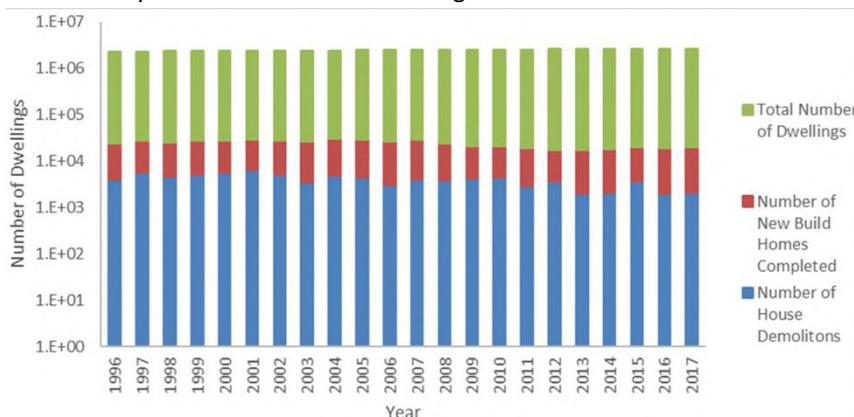
Design Standards (for District Heating)



Building Stock Legislation

The current building stock is built to comply with current legislation (Buildings (Scotland) Act 2003 and Climate Change (Scotland) Act 2009), which does not plan for a sustainable future or any future district energy integration.

The figure below shows the number of demolished properties in Scotland compared with the number of completed new build and the total number of homes. This shows that, while a significant number of properties are entering the market, very few are being removed. This means that older properties will have a significant impact on future energy efficiency and must be considered now, not in the distant future when political concern is more likely to be directed at the heating sector.



Scotland Building Act

The [Scotland Building Act 2003](#) (Charging Orders) Regulations 2014 is the legislation that underpins the building regulations in Scotland, giving Scottish Ministers the power to amend UK regulations in certain matters including furthering the conservation of fuel and power and furthering the achievement of sustainable development.

See document(s): http://www.legislation.gov.uk/asp/2003/8/pdfs/asp_20030008_en.pdf



Building regulations 2010

Building regulations are minimum standards for design, construction and alterations to virtually every new building. The regulations are developed by the UK government and approved by Parliament.

The Building Regulations 2010 cover the construction and extension of buildings and these regulations are supported by Approved Documents. Approved Documents set out detailed practical guidance on compliance with the regulations. Building regulations approval is different from planning permission and both might be needed for a HeatNet-project.

Building regulation in UK setting standards for the energy performance of new and existing individual buildings Part L 2013 includes requirements for carbon reduction and connection to a district network can provide credits, although the assumptions on DHC are too negative; the accounted losses are too high. Regulation 25A.

The UK regulations are not prescriptive enough on key heating/cooling measures such as temperatures and where specific systems are best suited. The industry relies on people adhering to best practice guidelines which is often not enough.

See document(s): [Conservation of fuel and power: Approved Document L - GOV.UK](#)

The competent authority in England is the local authority building control department or an Approved Inspector for building regulations approval.

- [Building regulation in England setting standards for the energy performance of new and existing buildings Part L 2013](#) - includes requirements for carbon reduction and connection to a district network can provide credits. Regulation 25A.



Building Regulations of Scotland in October 2019 a new handbook will be published. The Building regulations contain the technical requirements to protect the public interest.

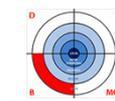
- [Building standards technical handbook 2019: domestic buildings](#)
- [Building standards technical handbook 2019: non-domestic buildings](#)



Construction (design and management) Regulations 2015

Building works come under Construction (Design and Management) Regulations 2015 (CDM 2015) and also The Management of Health and Safety at Work Regulations 1999 (see next paragraph).

Aberdeen City Council is the managing authority for road construction consent. Their authorization would be required for any temporary road blocks/deviations within Aberdeen city.



Technical standards

The chartered institute for buildings services engineers has national technical standards for heat networks: City cp1 standards. Also for ground source heat pumps and connecting buildings. It is not national legislation.



Health and safety

The Health and Safety Executive (HSE)

The Health and Safety Executive (HSE) is responsible for health and safety regulation in Great Britain including nuclear installations and mines, factories, farms, hospitals and schools, offshore gas and oil installations. The HSE is the UK's competent body responsible for the regulation of biocides, pesticides, detergents, chemicals as they are regulated by REACH, and under the Classification and Labelling regime. Other responsibilities include:

- the safety of the gas grid
- the movement of dangerous goods and substances

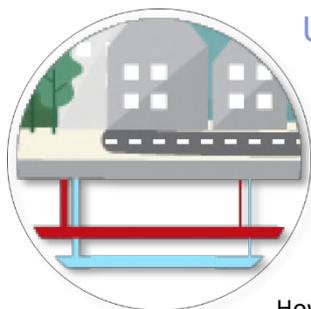




- most other aspects of the protection of workers and the public.

Local authorities are answerable to the HSE for enforcement in offices, shops and other parts of the services sector.

The HSE is responsible for enforcement of regulations under the Health and Safety at Work, etc. Act 1974, and other regulatory responsibilities that overlap with environmental issues and concerns. The HSE is also the joint competent body (with the Environment Agencies) for the Control of Major Accident Hazards Regulations 1999 (COMAH) sites.



Underground and information exchange

Right to property

Property rights: heat is not legally defined.

The permission to cross someone's land or drill under their property must be sought.

Typically, the owner of the land/property will be entitled to grant permission.

However, the title deeds may stipulate that someone else has mineral rights - 'Mineral rights are a distinctive component of Scotland's system of land ownership. In this context, mineral rights might be summarized as a type of property right covering the authority to quarry, mine or otherwise extract sub-strata materials. Compensation may need to be paid in order to secure authority to cross/dig someone's land. But geothermal heat is regarded as a physical property, not a recoverable (raw) material such as ore or gravel. As such, 'heat' is not a legally-defined entity and this causes some difficulties when it comes to assigning legal ownership and regulating it.



Data and information exchange

The Heat Network (Metering and Billing) Regulations 2014

See document(s): [CIBSE - Building Services Knowledge](#)

This regulation is to implement the requirements in the Energy Efficiency Directive with respect to the supply of distributed heat, cooling and hot water. This affects any owners of District Heating and communal heating systems, and covers requirements for notification, metering and billing. But the regulation of heat networks currently has little control over pricing mechanisms.

Customer / consumer protection

Heat is unregulated at the moment. The Heat Trust tries to come to agreements with suppliers of heat on a voluntary basis. Launched in 2015, Heat Trust puts in place a common standard in the quality and level of customer service that is provided to domestic and micro-business customers by their heat energy supplier. It also provides customers free access to the Energy Ombudsman.

See: Heattrust.org

Information on pipes and cables

There is not a central database but there are a number of organizations that act as facilitators. Registers of underground utilities are available <https://www.digdat.co.uk/> for example. They operate central portals where you can go to request pipe/cable information for the specific area that you are interested in. These organizations will contact all of the utility operators on your behalf and come back to you with the location of any pipes/cables in your area of interest. In Aberdeen the utility operators are Scottish Gas Networks (SGN), Scottish Southern Electricity (SSE), Scottish Water and British Telecom. An example is <https://www.national-one-call.co.uk/about.asp>.

Groundworks

Unexploded bombs

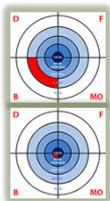
Specific for Plymouth and several other areas in the UK i.e. London, Swansea, Coventry are unexploded WWII bombs in the subsurface. This means extra time for research, before anything can be done in the underground.

Permits are not always needed

Putting pipes in the ground doesn't always need permits. Utility company's statutory authority: they have right to go in, without permits. Doubts linger for heat nets. Locally in Plymouth it works.



On the coordination of different contractors working on different projects in order to minimize disruption in the public domain are no formal policies. For example, if work to gas pipes in a road was due and we were laying district heating pipes in the same road these works would be carried out at the same time, or immediately after one another, so that the road was only closed once. We have no formal policies for this or coordinated approach, it does work like this occasionally but only on an informal basis.



Streetworks Act/Highways act

Highways England has to be consulted for all works concerning their roads. The local government like Plymouth is also the competent authority for streetworks.

Regulations of railway companies

In Scotland railway companies have to pay delay compensation to passengers if they are not able to ride according the schedule. Therefor the companies are afraid to allow works next to or crossing tracks.



Regulations of The Trust

The National Trust protects and cares for places so people and nature can thrive. They look after the nation's coastline, historic sites, countryside and green spaces, ensuring everyone benefits.

It is difficult to get consent on works along or crossing canals, rivers and coastal areas. The Trust regulates there, and they are overprotective.

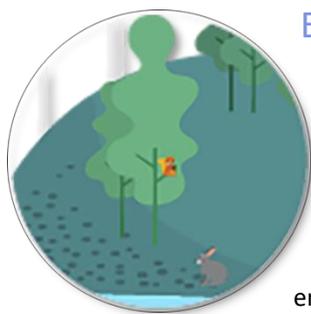


Ancient Monuments and Archaeological Areas Act 1979

Understanding historic buildings is not only important in informing planning decisions, but also in designing a redevelopment scheme. See:

<https://historicengland.org.uk/images-books/publications/understanding-historic-buildings-policy-and-guidance/understanding-historic/>

<https://historicengland.org.uk/research/heritage-counts/2019-carbon-in-built-environment/>



Environment

A significant proportion of environmental legislation in the UK originates from EU law, which is directly applicable or implemented through national legislation. With the upcoming BREXIT a new act to create an independent regulator to police government and public agency decisions, and enforce environmental laws to at least the same standard as the EU's, is wanted. Although the UK, Scottish and Welsh governments have cooperated closely on measures to transpose EU environment regulation into UK and Scots law, there are no plans for new regulatory measures yet.

The UK government passes legislation for England, and on some matters in Wales and Scotland. For all remaining matters in Wales, the National Assemblies has powers to legislate. In England the main body responsible for developing environmental policy and drafting environmental legislation is the Department for Environment, Food and Rural Affairs (DEFRA), although the Department for Business, Energy & Industrial Strategy generally handles issues relating to climate change. Apart from where the UK government has competence, the Scottish and English government develops environmental policy.



Environmental Permitting (England and Wales) Regulations 2010

The EPR 2007 brought into force the first phase of the Environment Agency's environmental permitting system and established a common permitting programme. The EPR 2010 brought into force the bulk of the second phase of environmental permitting and extended this common permitting system to cover a wider range of permitted activities and exemptions.

If a business carries out any activity or operation that is covered by the term Regulated Facility within the context of the EPR, an EP is needed. This includes all EfW facilities, but in addition:

- any 'waste operation', including waste activities which are technically linked and could include the treatment and storage of waste, e.g. MRF or waste derived fuel processor;
- a 'mobile plant' used to carry out a waste operation;
- a 'water discharge activity'; or
- a 'groundwater activity'.

An EP is a permit to operate a facility governed by the requirements of the Environmental Permitting (England and Wales) Regulations 2010 (EPR). The regulations cover a range of types of facilities including waste management facilities such as recycling and recovery facilities and EfW.

The EPR were introduced into UK law within England and Wales in 2007 and combined the Pollution Prevention and Control Regulations and the Waste Management Licensing Regulations, thereby introducing one environmental regulation system that covers all aspects of environmental regulation. In 2010 the EPR were further updated to include water discharges and groundwater activities, radioactive substances and provisions for a number of other Directives such as the Mining Waste Directive.

The principal aims of the EPR are to:

- bring Environmental Regulation across England and Wales onto a level playing field;
- provide protection for the environment by controlling and regulating pollution control and emissions to air, water and land; and
- emphasise the polluter pays mechanism by making operators liable for the condition of the land on which they operate.

The EPR introduced a tiered approach to environmental regulation based on the potential risk to the environment of the proposed activities. Authorisations can be in the form of registered exemptions; standard rules EPs and bespoke EPs. Exemptions cover those activities at the lowest risk end of the spectrum while bespoke EPs will cover higher risk activities.

Conservation Environmental Laws

Conservation of the national parks, listed buildings, monuments, countryside and right of way is another area of environmental law in the UK. The current laws that are enforced in England, Wales and Scotland:



Planning (Listed Buildings and Conservation Areas) Act 1990

First established in 1990, the Planning (Listed Buildings and Conservation Areas) Act controls laws that help to protect listed buildings and conservation areas in the UK.



National Parks and Access to the Countryside Act 1949

Under the UK Government Agency called English Nature, the National Parks and Access to the Countryside Act control the creation of National Parks and Areas of Outstanding Beauty in the UK as well as addressing public rights of way.



Ancient Monuments and Archaeological Areas Act 1979

The Ancient Monuments and Archaeological Areas Act 1979 was a law that was passed in the UK to protect any building or structure that has been classed as a monument. This makes it an illegal offence to damage a monument.



Countryside and Rights of Way Act 2000

Established to give people the freedom and right to roam uncultivated areas of the UK such as mountains, moors, heaths and downs, the Countryside and Rights of Way Act was passed in 2000.



Water

The Environment Agency's approach to groundwater protection contains position statements which provide information about the Environment Agency's approach to managing and protecting groundwater. They detail how the Environment Agency delivers government policy for groundwater and adopts a risk-based approach where legislation allows. Many of the approaches set out in the position statements are not statutory but may be included in, or referenced by, statutory guidance and legislation.

Environment Agency staff will use these position statements as a framework to make decisions. This clear approach aims to remove uncertainty and potentially inconsistent decision-making.

The Environmental Permitting (England and Wales) Regulations 2016 (EPR) require permitting of activities that may lead to the input into groundwater of hazardous substances or non-hazardous pollutants. Groundwater resources are primarily managed by abstraction licensing.

The primary aim of all of the position statements is the prevention of pollution of groundwater and protection of it as a resource. Groundwater protection is long term, so these principles and position statements aim to protect and enhance this valuable resource for future generations.

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/692989/Environment-Agency-approach-to-groundwater-protection.pdf

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/716363/abstracting-water-guide-to-getting-licence.pdf

Heat, although not a 'substance' in the physical sense, behaves in many ways analogous to water. Given these similarities, heat should be regulated in a similar fashion, i.e. where licensing decisions consider the available resource, its existing exploitation, as well as the hydrogeological and geological conditions at the exploitations site to determine how fast the resources can be replenished and where interferences/adverse impacts on the environment may occur. However, this requires a legal definition of heat, not only in the UK but EU-wide, to provide a basis for regulations. Therefore, including a definition of heat in UK law but also in the 2019 revision

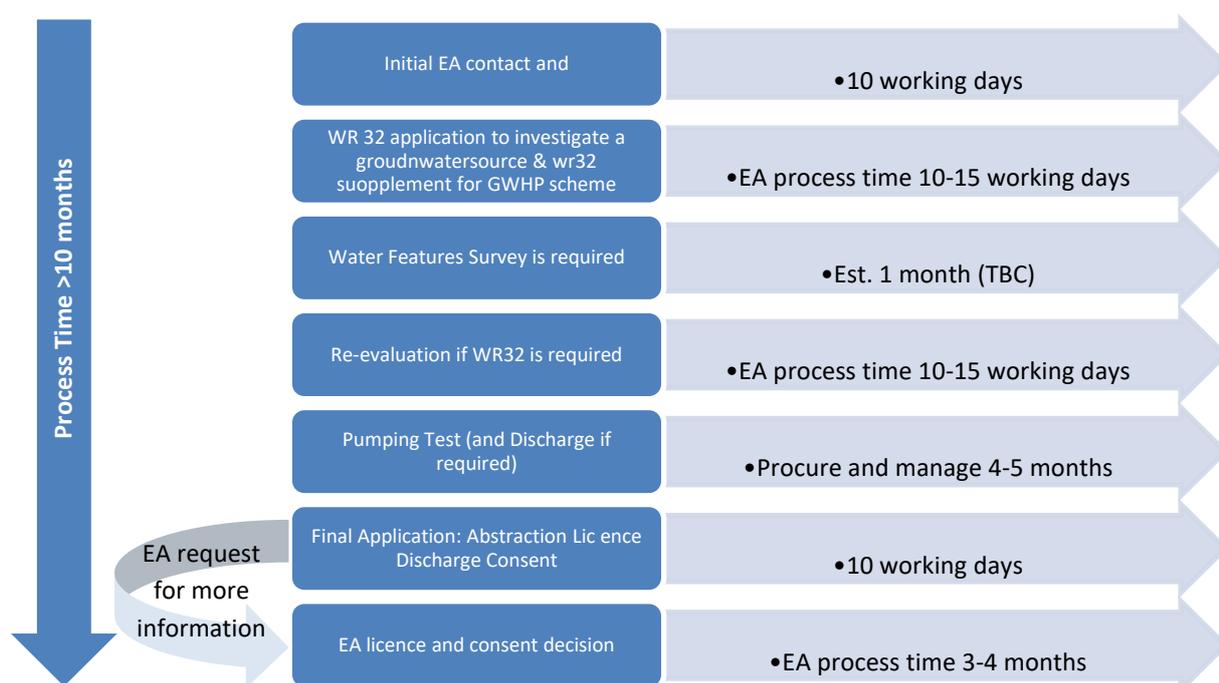
of the Water Framework Directive is a prerequisite for enabling effective regulation of heat in the UK and EU-wide.

Regulating heat in a similar way to water will require detailed resources assessments as well as the development of predictive resource management tools for geothermal heat, e.g. such as planned in France. This would require heat being legally defined as a natural resource. Doing so would enable more integrated management of heat in the wider context, e.g. in the subsurface of cities where management of different heat sources may become necessary in order to avoid inefficiencies or conflict.

Water from the sea or from underground water resources needs a permit from the environmental agency. 2 permits have to be acquired:

- Drilling and testing
- Water withdrawal and addition.

This period of permits takes about 10 months.



Pollution Environmental Laws

Pollution is a huge risk to both the environment and to our health and there are a few laws that have been passed to help reduce, prevent and control the many types of pollution that we might be exposed to.



Control of Pollution Act 1974

The Control of Pollution Act was passed to cover a number of environmental issues such as air, noise, water and atmospheric pollution as well as waste on land.



Environmental Protection Act

Established in 1974, the Environment Protection Act is the environmental law in the UK that controls waste management and emissions into the environment.



Contaminated land

Failing to deal adequately with contamination can cause harm to human health, property and the wider environment. It can also limit or preclude new development; and undermine compliance with the Water Environment Regulations 2017.

See: [cont-land-guidance.pdf](#)

See related policy in the planning framework [Conserving and enhancing the natural environment Paragraphs 170 to 183](#): paragraph 170, paragraphs 178-179, paragraph 183

Only a specific investigation can establish whether contamination is present, but there are various sources of information that can be used to help establish its likelihood, including:

Local authorities' own survey information; including information held and collected in connection with Part 2A of the Environmental Protection Act 1990 (this could include information about sites that have been inspected and not determined to be 'contaminated land' within the terms of the Act but where new development could change the level of risk).

River Basin Management Plans published by the Environment Agency, including 'protected areas', which are shown in Annex D of each plan to help understand environmental sensitivity.

Information about previous land uses contained in the National Land Use Database, including commercial databases, land condition records or in records held by the Environment Agency or the British Geological Survey (e.g. the location of 'made ground', the results of broad scale geochemical surveys or radon potential maps).

Historical Ordnance Survey maps; data readily available on [data.gov.uk](#) relating to historical landfills and other contaminative uses.

Local planning authority records, including historic environment and relevant Environmental Statements that may include updated baseline assessments.

Natural England's MAGIC site which sets out information about the environmental setting and sensitivity of the development site.

Information on the most common industrial activities and the risk of contamination is in Volume 2, Annex 3 of Guidance for the safe development of housing on land affected by contamination, published by the Environment Agency, National House Building Council and Chartered Institute of Environmental Health. More information is also available from industry profiles hosted by Contaminated Land: Applications In Real Environments (CL:AIRE).

For applicants for planning permission, early engagement with the local planning and environmental health departments, particularly if the land is determined as contaminated land under The contaminated land regime under Part 2A of the Environmental Protection Act 1990, will clarify what assessment is needed to support their proposal and issues that need to be considered in its design of a development. For example how land affected by contamination can be made compatible with sustainable drainage.

The Environment Agency will also have an interest in the case of 'special sites' designated under Part 2A of the Environmental Protection Act 1990 and all sites where there is a risk of pollution to controlled waters. Remediation will need to meet their requirements. Applicants should also check whether an environmental permit is required before development can start.



Conservation of nature, wildlife and habitats

<https://www.gov.uk/guidance/national-planning-policy-framework/15-conserving-and-enhancing-the-natural-environment>

Environmental impact assessments (EIAs)

Health and safety and planning matters are regulated separately from environmental matters, but are interlinked. For example, the clean-up of contaminated land is generally required under the planning regime (during redevelopment) rather than the contaminated land regime.

An environmental statement (ES) must be submitted with an application for planning permission or development consent for certain developments that require an EIA under the Town and Country (Environmental

Impact Assessment) Regulations (separate sets of regulations have recently been issued for England and Wales) as set out in:

Schedule 1: developments most likely to have a major environmental impact (for example, crude oil refineries, power stations and motorways) must be subject to EIA.

Schedule 2: other projects (including, for example, infrastructure) are only subject to EIA if they are likely to have a significant effect on the environment due to factors such as their nature, size or location.

The 2017 Regulations have brought about a number of reforms required by EU law such as requiring environmental statements to be prepared by competent experts.

There is an EIA regime specifically for nationally significant infrastructure projects offshore and certain other activities. Other permits may be required depending on the type of project, for example, an EP and Building Regulation approval.

If a development project is likely to have a significant effect on a European protected site (under Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (Habitats Directive) or Directive 2009/147/EC on the conservation of wild birds (Birds Directive)), an assessment of the conservation implications must also be carried out by the Secretary of State.



Permits and regulator

The authority determining the application is generally the local authority or the Secretary of State depending on the significance of the development. The authority must consider the ES in determining whether planning permission should be granted. However, it is not obliged to refuse to approve it, even if the effects are adverse (subject to certain limitations in relation to the effects on European protected sites).

The relevant authority can require an updated ES when considering an application related to a project that it has previously permitted and where, for example, the original ES is out of date.



Penalties

If a relevant authority grants planning permission or development consent and the ES was not properly considered, the permission or consent risks being legally challenged.



Environmental Permitting regime

There is an integrated environmental permitting regime (EPR) which came into force on 6 April 2008. On that date it automatically converted the previous PPC regime permits and waste management licences into Environmental Permits (EPs). On 6 April 2010, water discharge activities, groundwater activities and radioactive substances registration and authorisation were also brought under the EPR and existing consents were automatically converted.

In 2013, the EPR was amended to implement Directive 2010/75/EU on industrial emissions (integrated pollution prevention and control) (Industrial Emissions Directive) (IED), which consolidated a number of earlier EU Directives and requirements. In 2015, the EP Amendment Regulations 2015 (SI 2015/918) amended the EPR, transposing requirements under the Energy Efficiency Directive 2012 (see Question 31). Following numerous amendments since 2010, a new consolidated set of EP Regulations has come into effect from 1 January 2017.

The key activities regulated under the EPR are:

- Activities or specified installations listed in Schedule 1 to the EPR (these cover a wide range of industrial and power generation activities and include installations covered by the Integrated Pollution Prevention and Control (IPPC) regime under the IED).
- Medium combustion plants.
- Waste operations.
- Mobile plant (used to carry on either one of the Schedule 1 activities or a waste operation).
- Mining waste operations.
- Water discharge activities.

- Radioactive substances activities.
- Groundwater activity.
- Small waste incineration plant.
- Solvent emission activity.
- Flood risk activity.

The activities are regulated to differing degrees. The more polluting industries (known as Part A (1) and Part A (2) installations), including some waste management operations such as landfills and large incinerators are regulated in terms of all their emissions and energy efficiency, while lesser-polluting activities (known as Part B installations) are regulated only in relation to their air emissions.



Clean-up/compensation

The regulator can exercise the relevant powers and apply the available penalties, under the EPR (see Question 5) or request action under the Environmental Damage (Prevention and Remediation) (England) Regulations 2015, or Environmental Damage (Prevention and Remediation) (Wales) Regulations 2009, as appropriate.

Penalties

It is an offence to cause or knowingly permit a water discharge activity or groundwater activity except under, and to the extent authorised by, an EP.



Regulators: Environment Agencies

Much of the key environmental legislation in the UK is enforced by the **Environment Agency in England**, Natural Resources Wales, the **Scottish Environment Protection Agency (SEPA)** and the Northern Ireland Environment Agency (NIEA). The purpose of environment agencies is to protect and improve the environment through regulations and regulatory guidance.



Environment agencies regulate the environmental aspects of businesses and other organisations, through related environmental permitting regulations (EPR) and authorisations including emissions to air, discharges to water and disposal to land.

Activities regulated by environment agencies include:

- waste management — including storage, treatment, transfer, landfill, incineration and biowaste
- industry — including chemicals, food and drink, metals, power generation, refineries and fuels, paper and textiles, cement and minerals, construction and mining
- energy intensive industries and large public and private sector consumers of energy
- the use, storage and disposal of radioactive substances
- water companies — including abstraction, discharges and sewerage systems
- producers of packaging, batteries, waste electrical and electronic equipment and vehicles
- agriculture — including water abstraction and discharges disposal of farm wastes, disposal of pesticides, intensive farming units, and the storage of silage, slurry and fuel oil
- angling, fisheries and aquaculture — including the netting and trapping, abstractions and discharges and movements of live fish
- navigation on some waterways
- onshore oil and gas
- contaminated land
- biodiversity and wildlife protection.

Environment agencies encourage the use of environmental management systems (EMSs) such as ISO 14001 and EMAS as a way of improving environmental performance and supporting legal compliance.



Local Authorities

Local authorities have a range of enforcement duties that relate to environmental law.

Responsibility is divided between the different levels of local authority. County councils in England and Wales or regional councils in Scotland are responsible for strategic planning, i.e. setting out the planning policy.

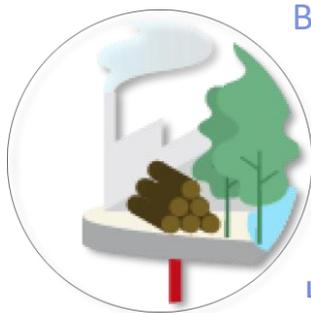
Regional councils in Scotland are also responsible for issuing consents to discharge trade effluent into sewers.

District councils have a number of environmental enforcement duties, including:

- enforcement of the system of air pollution control under the EPA 90 — the local authority inspectors have similar enforcement powers as the Environment Agency or SEPA inspectors for certain integrated pollution control processes
- enforcement of industrial air pollution measures under the Clean Air Act 1993
- service of abatement notices under the statutory nuisance provisions of the EPA 90, e.g. for noise
- enforcement of health and safety law (which is sometimes relevant to environmental management, e.g. controlling emissions of hazardous substances) in non-industrial premises
- waste collection and recycling
- granting planning permission which may be subject to environmental impact assessment or other conditions.



Local authorities also have legal powers and responsibilities for the minimisation of waste and can take action necessary to minimise the quantities of controlled waste in their area. Examples include establishing waste strategies, providing information about less wasteful products, setting reduction targets in waste contracts and introducing repair schemes for household appliances.



Biomass and waste incineration plants

Modern plants designed to incinerate waste will recover energy from the waste. A permit must be obtained from SEPA before construction of these Energy-from-Waste-plants can take place. Waste incineration with energy recovery is growing in the UK. Although still a lot waste goes to landfills, compared to other countries in the EU. See the [waste statistics UK](#).

Local Plans

Opportunities for land to be utilised for waste management should be built into the preparatory work for Local Plans, to the level appropriate to the local planning authorities planning responsibilities. For example: suitable previously-developed land, including industrial land, provides opportunities for new waste facilities and priority should be given to reuse of these sites. It is important for waste to be considered alongside other land uses when looking at development opportunities as reviews of employment land are undertaken, it is important to build in the needs of waste management before releasing land for other development or when considering areas where major regeneration is proposed the integration of local waste management opportunities in new development should be integral to promoting good urban design facilitating the co-location of waste sites with end users of waste outputs such as users of fuel, low carbon energy/heat, recyclates and soils. See:

<https://www.gov.uk/guidance/waste>,

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/364759/141015_National_Planning_Policy_for_Waste.pdf

Permitting regime for EFW-plants

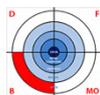
The Environment Agency in England and SEPA in Scotland take a slightly different approach in the matter of efw-plants. These differences are to be caused by four main factors:

Firstly, up until around 2010 SEPA played a coordination role in delivering the Scottish National Waste Strategy. In that previous role, SEPA would comment on the 'need' for new facilities. In cases where evidence suggested there was sufficient capacity for waste management already, SEPA would advise the council of this and may suggest that a new facility was unnecessary. SEPA no longer have this role and, like the EA, do not comment publicly on the adequacy of the waste infrastructure network.

Secondly, there are legislative differences in that the Pollution Prevention and Control (Scotland) Regulations 2012 require that SEPA, in issuing any permit, include conditions which ensure that on or after 1st January 2014, no separately collected waste capable of being recycled is incinerated or co-incinerated, and that non-ferrous metals and hard plastics are precluded from incineration. The Environmental Permitting (England and Wales) Regulations 2016 do not contain equivalent policies.

Thirdly, there are key policy differences to the management of waste in the respective nations. Scottish policy requires separate collection of waste, including food waste. This applies not only to local authorities and collectors but to producers as well – businesses have to present their waste separately for collection. In England, while there is a duty on collectors and local authorities to separately collect paper and cardboard, metal, plastic and glass, there is no equivalent duty for food waste. Scottish policy also sets a 2025 target recycling rate of 70% which applies to all waste types, sets a 2025 target for limiting waste to landfill to 5%, and restricts inputs to all energy from waste incinerators.

Finally, EA and SEPA publish separate guidance to developers about the level of information that should be submitted at planning application stage to inform our advice about permitability. SEPA's guidance is prescriptive about what information is needed in support of any incinerator application, whereas our guidance relies more on the specifics or the case, the sensitivity of the receiving environment and the judgement of the area



regulatory officers involved – more of a risk-based approach. In addition, SEPA cannot issue a permit unless any necessary planning permission is in place. There is no such requirement in England. These differences, combined with the regulatory and policy differences outlined above, may mean that SEPA demand more information at planning stage.



SEPA - Up until around 2010 SEPA played a coordination role in delivering the Scottish National Waste Strategy, working with local government to plan for waste infrastructure on a regional basis. In that previous role they used to make comments about the ‘need’ for new facilities in the context of regional plans. If the evidence suggested there was sufficient capacity for waste management already, they would advise the decision-making council of this and suggest any new facility could be unnecessary. Responsibility for the Scottish National Waste Strategy (Zero Waste Plan) now sits with the devolved Scottish Government, with infrastructure planning based on the national rather than regional need. If evidence suggests there is no need for further facilities on a national basis, the Scottish Government can review and amend planning policy as required.



Environment Agency - Determining the location and type of new waste infrastructure is principally a matter for local authorities. Development plans set the framework for development in a local authority area, including what new waste infrastructure is needed and where it should go. In turn these plans help the authority determine planning applications. EA advise local authorities on waste development plans through their role as a planning consultee. The waste data and information they acquire through their regulatory role is made freely available. They also produce tools for others to use to assess the environmental impact of different waste management/development scenarios and environmental infrastructure models to support housing growth. These help government assess the adequacy of the overall network of waste facilities.

The Environment Agency and SEPA are both statutory consultees on all types and sizes of waste incinerator on the basis that they constitute Environmental Impact Assessment (EIA) development under the respective 2017 EIA Regulations (England and Scotland).

The EA and SEPA publish separate guidance to developers about the level of information that should be submitted at planning application stage to inform advice about permitability. SEPA’s guidance is prescriptive about what information is needed in support of any incinerator application, whereas the EA guidance relies more on the specifics or the case, the sensitivity of the receiving environment and the judgement of the area regulatory officers involved – more of a risk based approach. In addition, SEPA cannot issue a permit unless any necessary planning permission is in place. There is no such requirement in England.

The National Planning Policy Framework (NPPF) is clear that the planning system should not duplicate the controls of other regulatory regimes, so EA will only recommend the inclusion of planning conditions for things they can’t control through the permit. That does not mean to say that the residual impacts of matters controlled through the permit cannot be material planning considerations. Such impacts *are* relevant to whether the proposal represents an acceptable use of the land and they can legitimately have a bearing on any planning decision.



Planning permission and permitting regime

Waste incinerators need both planning permission and an Environmental Permit before they can be operated. The norm is for developers to apply for planning permission first, before moving onto the permit application, but there is nothing stopping them from applying for the permit first. Having a relevant planning permission is not a prerequisite for a permit.

The parallel tracking of planning and permit applications is being encouraged, particularly in complex or contentious cases – although they cannot require it. Such an approach can help to identify and resolve issues which may be shared between the two processes. The aim is to avoid situations where the controls of one regime prevent a facility from being built or operated. The most common example of this is a planning permission which restricts stack height for aesthetic reasons, with a permit then requiring a higher stack to ensure suitable air

dispersion. If such an issue isn't identified until a planning permission has already been granted, the developer would need to start again and apply for a new permission – with inevitable costs and delays.



In England and Wales, waste incinerators need a permit to operate under the Environmental Permitting Regulations 2010 (as amended). The regulator of such facilities depends on the scale and nature of the plant. Smaller plants are generally regulated by the Local Authority, with the Environment Agency regulating the larger plants.



In Scotland, energy from waste plants are regulated under the Pollution Prevention and Control (Scotland) (PPC) Regulations 2012, which includes the controls required under the European Waste Incineration Directive (WID). SEPA is the regulator, irrespective of the type and scale of waste incinerator.



The Thermal treatment of waste guidelines 2014

In Scotland the Thermal treatment of waste guidelines 2014 (“the 2014 guidelines”) sets out SEPA’s approach to permitting thermal treatment of waste facilities. The guidelines apply (but without excluding other potential thermal recovery technologies) to the treatment of municipal and/or commercial and industrial waste by combustion, gasification, pyrolysis, plasma systems and anaerobic digestion (“AD”). While AD plants are not strictly thermal treatment plants, we believe the biogas produced should be used in the most energy efficient way. For this reason AD plants are included within the guidelines but only in respect of the use of the biogas. The guidelines describe what is expected from developers in order to comply with the [Pollution Prevention and Control \(Scotland\) Regulations 2012](#) (“PPC Regulations”) and provide advice on the type of information SEPA requires when determining permits.

The practical implications of the PPC Regulations and these guidelines are that plants should:

- be designed, equipped and operated using Best Available Techniques and in such a manner that the requirements of the Industrial Emissions Directive (2010/75/EC) (“IED”) are met and ensure that no significant pollution is caused;
- only recover energy from waste which has been subject to all reasonably practicable measures to recover materials for recycling.
- ensure that the recovery of energy takes place with a high level of energy efficiency.

These are the core objectives of SEPA’s PPC permitting process for thermal treatment of waste facilities.



Habitats Regulations

In some cases, proposed incinerators may fall under the habitats regulations on the basis of a likely significant effect on a European designated site. In such cases, both the Waste Planning Authority (WPA) and EA will be acting as competent authorities under those regulations. In such cases the EA endeavors to coordinate with the WPA and with Natural England, in accordance with the relevant guidance. The guidance aims to simplify the assessment process and to save time and costs for both the applicant and the competent authorities.



Interactions with other legislation

Where EfW facilities accept waste classified as animal by-products, they are required to also gain approval under the [Animal By-Products Regulations 2011 \(ABPR\)](#).

EfW facilities that only process animal carcasses, or parts of carcasses are exempt from the WID and are instead regulated by the ABPR. However, plants which process other types of ABP, such as former foodstuffs, catering waste and manure must be authorised under the [Waste Incineration Directive \(WID\)](#)⁷.



If more than 1 tonne per hour of ABP is processed, approval is via the EA in England - less than 1 tonne per hour would require approval through the Local Authority.



Permit of the Environmental Agency

Health protection is an inherent feature of the design, assessment and permitting of EfW facilities. A key issue is the sheer weight of technical information produced, and the ability for the lay person to effectively navigate and comprehend it. As an example, due to the complex multidisciplinary nature of health, it is typically not covered under a single heading within Environmental Statements (ESs), but covered by each technical discipline (i.e. air quality, noise and vibration, transport, socio- economics, water, etc.) to standards set to protect both the environment and human health. Health Impact Assessments (HIA), although not a regulatory requirement to the UK planning process, are increasingly commissioned to help address this issue. These draw out, signpost and build upon technical assessment outputs to more effectively convey health matters to key stakeholders and communities alike.

In order to operate, EfW facilities require a permit that is issued by the EA. The EA considers permit applications through comparing the data for a proposed facility with the strict emission limits set out in the EU Waste Incineration Directive (2000/76/ EC). This includes key pollutants such as nitrogen dioxide, sulphur dioxide, dioxins and total dust (including PM10s), the limits for which have been set to protect both the environment and human health. Should a permit be granted then subsequent monitoring reports must be provided to the EA to ensure ongoing compliance.

Community health protection is therefore an underlying design feature for such facilities, enforced through both the regulatory planning and permitting process, and monitored by the Environment Agency.

Depending on the chosen site location and its surroundings, various licenses may need to be applied for or considered. Some of the consents, if required, can take a considerable time to obtain or implement. Such as:

- protected species licenses;
- grid connection consent;
- building control consent; and
- environmental permit.

Protected species licences

A license is required by anyone who wishes to carry out an activity prohibited under wildlife legislation. Examples which may affect a development include:

- licenses to carry out surveys or conservation work;
- licenses to disturb or damage the habitat of certain strictly protected species; and
- licenses to possess or keep certain wildlife.

There are different types of licenses for a developer, depending on the activity involved and level of risk to a particular protected species. The licenses that need to be applied for relating to developers and commercial companies are listed on the Natural England website.

Grid connection consent

The connection application is the first step of the regulated process to gain a connection agreement. The connection application results in a Distribution Network Operator (DNO) offer of terms for connection. DNOs are obliged under their license conditions to process a connection application and issue a formal connection offer within 65 working days.

Building control consent

The building regulations apply to most building work, therefore it is important to know when approval is needed. The responsibility for checking that the Building Regulations are met falls to Building Control Bodies (BCBs) - either from the local authority or the private sector as an Approved Inspector. If you choose to use an approved inspector then you should jointly notify the local authority that the approved inspector is carrying out the building control function for the work. This notification is called an "Initial Notice". If you choose to use a local authority, the procedures are set out in the Building Regulations. Some of them relate to pre-site procedures

and others relate to procedures once work is underway on site. Further information is available at the Planning Portal website.

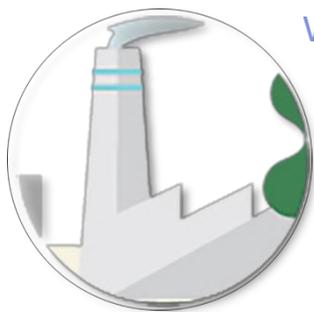
Environmental Permit (EP)

An EP must be secured from the EA in order to operate an EfW facility in England and Wales. They are the overarching mechanism for regulating EfW facilities and are issued by the Environment Agency (EA) or the facility's Local Authority (LA). The facility regulator, and therefore the issuing authority, will depend upon the scale of the proposed facility and where the activity sits within the confines of the Environmental Permitting (England and Wales) Regulations (EPR) 2010. Generally, facilities accepting waste as a fuel and with a capacity in excess of 1 tonne per hour will be regulated by the EA, and anything less than this by the LA.

If you are considering operating an EfW facility you will need to consult with the appropriate regulator on the scope and extent of the EP you will require. The appropriate regulator will require a considerable amount of information about the activity you are proposing to carry out in order to grant an EP. This guidance sets out some of that information and the process you must undergo to achieve one. The Regulating Authority requires a considerable amount of information about the activity you are proposing to carry out in order to grant an EP.

All EfW activities require an EP so operators will need to apply to the relevant Regulating Authority for an appropriate authorisation. The permit will have conditions which must be followed to prevent business activities from harming the environment or human health.

See the chapter on waste.

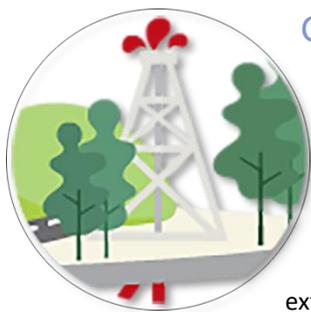


Waste heat

There are no regulations governing waste heat being used in DH other than in the case of Energy from Waste (EfW) Plants. There is a desire for the use of waste heat, in the Scottish Government's Heat Policy Statement published in 2015 it states that:

'Making use of the unused excess heat produced by Scottish business could reduce costs and be a source of income. This heat can be used for many purposes, depending on its temperature and the wider circumstances. The Scottish Government is working with SEPA, Resource Efficient Scotland, Scottish Enterprise and industry to identify sources of unused excess heat, assess their potential for recovery and help establish an evidence base for excess heat from Scottish industry (as required by Article 14 of the EU Energy Efficiency Directive 2012).'





Geothermal energy systems

In most countries, legal procedures governing the subsurface exist and enable the development of deep geothermal resources, although they are not always tailored to geothermal energy. It usually involves a two-stage permitting process consisting of an exploration permit to find geothermal resources followed by a development license or concession to exploit the geothermal resource. As the extraction of heat from the deep geothermal sources, in most cases, also involves the use of water, either groundwater available within the deep rocks (hydrothermal systems) or water injected from the surface (petrothermal systems or Enhanced Geothermal Systems- EGS). Hence, in the UK, the same requirements for environmental permissions and licences from the Environment Agency apply as for the open-loop, shallow-geothermal systems (see [thermal energy storage](#)). However, as for shallower open-loop systems, 'an abstraction licence protects the water quantity, not heat (and) the Environment Agency is not liable for any loss of heat if a new scheme takes heat away from an existing scheme.'



Hot dry rock geothermal

These are schemes where water (from elsewhere) is injected into fractured hot dry rocks, allowed to heat-up, and then taken out of another borehole. The steam or hot water produced can run turbines to generate electricity. If the schemes takes more than 20 cubic metres of water a day from an inland water or borehole to inject into the ground, the project needs:

- a groundwater investigation consent (GIC)
- an abstraction licence

In some schemes, no annual charge will apply if the purpose of the scheme is to generate less than 5 megawatts of power.

You will not need a GIC or licence to abstract heated water from a hot dry rock scheme if it is to be injected into an artificially created chamber within the underground strata. In these cases, no natural groundwater is present or affected by the process.

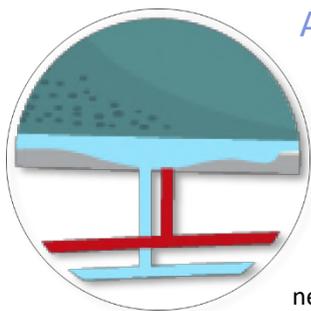


Operator's role and liability

If a scheme unintentionally discharges pollutants to groundwater, the Environment Agency may serve a notice to require a permit or prevent this activity.

There is a possibility that deep geothermal abstractions could cause subsidence or have other impacts on property. It is the developer's responsibility to assess these and recognise their liabilities for loss or damage to third parties' property.

Aquathermia



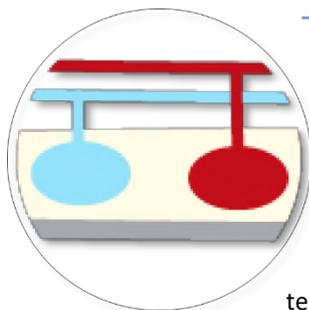
Discharges to sewers regulations are exercised by the sewerage company who is responsible for issuing and enforcing consents to discharge trade effluent into public sewers under the Water Industry Act 1991. In England and Wales these comprise 10 privatised water companies and other sewerage companies. In Scotland, Scottish Water provides water and sewerage services on the public network.



There is one example in Scotland of wastewater heat recovery at the Scottish Borders Campus.

http://www.waterprojectsonline.com/case_studies/2016/Scottish_SHARC_2016.pdf

Thermal energy storage



Government, developers, installers, consumers, businesses, investors and UK storage companies all lack regulatory clarity on the sector. The lack of information limits the ability of the storage industry to grow. An agreed 'definition' is essential for ES to grow. Geothermal applications can be classified and regulated based on the depths of the sources (e.g. shallow or deep) and the technology used for extracting heat from the ground.



Shallow-geothermal open-loop ground source heat pump (GSHP) systems pump (abstract) groundwater and return (discharge) the water back to the ground after it has been used for heating or cooling. They fall under environmental permitting and groundwater regulations, as defined by the Water Framework Directive, in EU countries, and equivalent protection rules elsewhere. While these regulations usually include limits on the permitted return water temperatures (e.g. in the UK it is $[T_{inlet} - T_{outlet}] < \pm 8^{\circ}\text{C}$, $T_{outlet} = 25^{\circ}\text{C}$), only a few countries require an assessment of the overall thermal impact of heat extraction on groundwater temperatures. Here, numerical modelling is required to predict changes in groundwater temperatures.



In the UK, the regulatory control of abstraction and discharges, required for open-loop GSHP systems, is solely aimed at protecting groundwater, not regulating heat (due to the legal issues mentioned earlier) or guaranteeing that the abstracted water is suitable for its intended use. The success of the design and operation of the ground-source heat pump system, and its impacts on the efficiency of other systems, is therefore the applicant's responsibility. Shallow geothermal closed-loop GSHP systems extract heat from the ground by circulating a heat exchanger fluid through buried pipes installed in trenches or boreholes. In the UK, installation and operation of these systems does not require any environmental permits, consents or licenses, or registration of the system, even though these systems can have considerable impact on heat availability and temperature distributions within the subsurface, specifically where groundwater flow is present and the possibility exists that they may interfere with each other. System interference is also a concern for open-loop systems, especially in city environments.

Ground source heating and cooling (GSHC) systems utilize a renewable energy source, namely the warming of the ground by solar radiation that keeps 'shallow' groundwater at its constant temperature.

Heat from deep in the Earth's interior can also warm groundwater, but this is not normally significant within 100 metres of the surface. For the purposes of these position statements, any schemes that use heat from the Earth's interior will be called 'deep geothermal schemes' and not GSHC systems.

There are two types of GSHC systems:

- closed loop – these are not regulated (however, they must not leak circulation fluid. Non-hazardous pollutants should be used as a precaution)
- open loop – these are regulated by the Environment Agency



[The Environmental good practice guide for ground source heating and cooling \(EGPG\)](#) explains the types of systems in more detail.

All open loop schemes require:

- a groundwater investigation consent (GIC)
- an abstraction license, if the volume of water abstracted is greater than 20 cubic metres per day
- an environmental permit for the discharge, if it does not satisfy conditions to be registered as exempt

Developers of open loop GSHC schemes should contact the Environment Agency at an early stage to discuss the proposed design, intended location and operation of their system.

Both closed and open loop systems can:

- result in changes in groundwater flow and quality – this can also happen during drilling and installation
- mobilize contaminants if installed inappropriately on contaminated sites
- result in undesirable temperature changes in the groundwater and for example, impact on ecology

In addition, open loop systems give rise to concerns about the:

- availability of groundwater to abstract without having impacts on existing water users or the environment – this may not be an issue if water is available, and providing the groundwater is returned to the same aquifer (this is called non-consumptive). It may be an issue if groundwater is discharged to rivers or sewers (this is called consumptive)
- adverse impacts of returning water into an aquifer, including localized mounding of groundwater levels causing flooding or impacting on adjacent structures such as scheduled ancient monuments

The Environment Agency takes into account protected species and ecosystems when considering permit applications for open loop GSHC systems.

Discharge of water to ground or surface water with a significantly changed temperature may cause pollution and so an environmental permit will be required. Where necessary to prevent pollution, temperature limits on environmental permits will be set. This allows the Environment Agency to ensure that schemes comply with the Water Framework Directive and EPR, which both recognize that heat can cause pollution and should be controlled.

If the water discharged contains any added substances to the abstracted water, an environmental permit will be required.

The risks indicated above need to be balanced against the environmental advantages of GSHC in potentially cutting greenhouse gas emissions. Where the risks and environmental advantages are not balanced, high densities of GSHC systems may not be sustainable. In the long term, they may alter the local ground or groundwater temperature resulting in impacts to the efficiency of the system or adjacent systems, and therefore alter their greenhouse gas emission savings. Ground source heat is however a technology that could help achieve UK climate change targets.



Pumping tests

Where the source of water is very deep underground (for example, more than 1km), and there are no other deep geothermal schemes in that aquifer that may be affected, the Environment Agency may not require a pumping test. In these circumstances, they may be satisfied with a desk study and conceptual model of the system, as the abstraction is less likely to cause environmental harm.

This would mean that an abstraction license before drilling a borehole can be obtained, provided there is a reasonable requirement for water, the abstraction will be sustainable, and it will not affect other legitimate water interests or features.

As a condition of the abstraction license, it is likely a pumping test has to be undertaken and provide the Environment Agency with a refined conceptual model taking account of the pumping test results once drilling is completed.



Subsequent applications from the same deep aquifer

The Environment Agency is likely to require a pumping test as part of the GIC for subsequent applications before granting an abstraction license. This is because they would need to determine that the proposed abstraction would not affect existing licensed abstractors or other protected rights.



Permits and regulator water discharge

Water discharge activities and groundwater discharge activities are permitted through the environmental permitting regime (EPR).

**Prohibited activities**

A water discharge activity covers a number of activities including discharge or entry into inland freshwaters, coastal waters or territorial waters of any poisonous, noxious or polluting matter, waste matter, trade effluent or sewage effluent.

A groundwater discharge activity includes the discharge of a pollutant that results in the direct input, or can lead to the indirect input, of that pollutant into groundwater. Undertaking these activities without an environmental permit (EP) is prohibited.

**Clean-up/compensation**

The regulator can exercise the relevant powers and apply the available penalties, under the EPR (see Question 5) or request action under the Environmental Damage (Prevention and Remediation) (England) Regulations 2015, or Environmental Damage (Prevention and Remediation) (Wales) Regulations 2009, as appropriate.

**Penalties**

It is an offence to cause or knowingly permit a water discharge activity or groundwater activity except under, and to the extent authorised by, an EP.

Spatial Policy for 4DHC

Belgium



Researched by	Checked by	Reviewed by	First Draft	Final Draft
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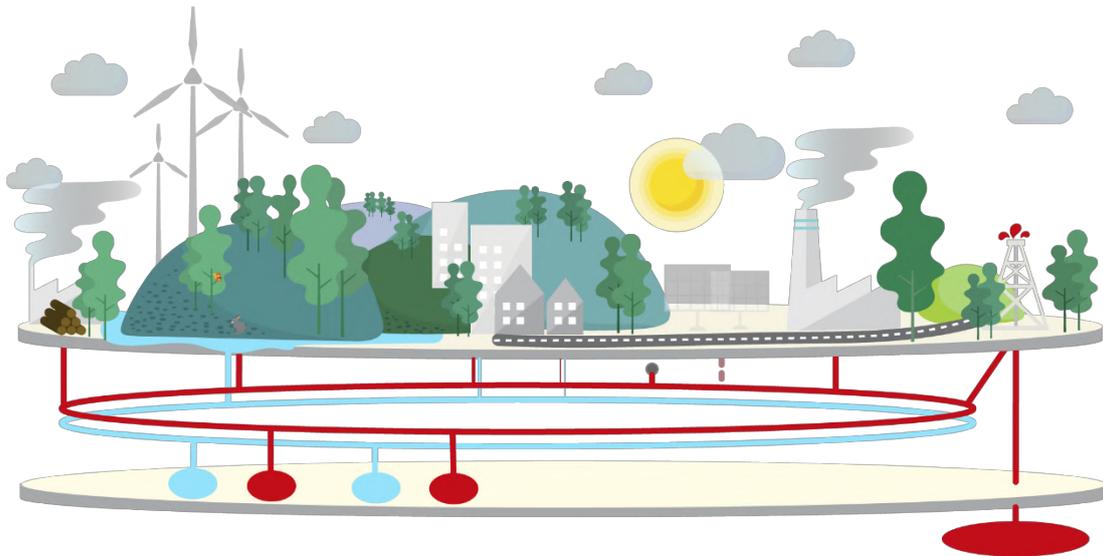
Date: June 2020

About HeatNet NWE

This document has been developed as part of the HeatNet NWE project, which is part-funded through the Interreg NWE programme and aims to increase the uptake of 4DHC networks across North-West Europe. As part of this project, the partners developed the HeatNet Model, which will help the public sector to begin implementing 4DHC networks, and the Transition Roadmaps, which outline the partners' experience in developing six district heating pilots across North-West Europe. The HeatNet Guide to Financing gives a broad overview of the various sources available to finance district heating schemes.

For further information on these reports and on the HeatNet NWE project, please visit

www.guidetodistrictheating.eu.

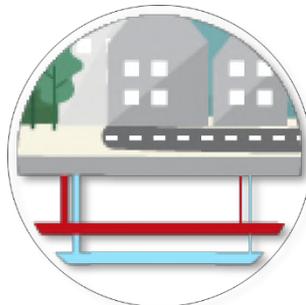


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[Chapter 02: Agreements & energy acts on national level](#)



[Chapter 3: Spatial planning](#)



[Chapter 4: Underground and information exchange](#)



[Chapter 5: Environment](#)



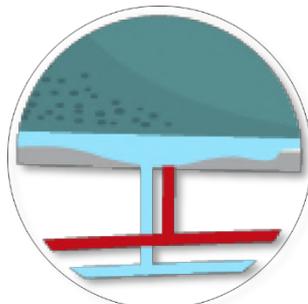
[Chapter 6: Biomass and waste incineration plants](#)



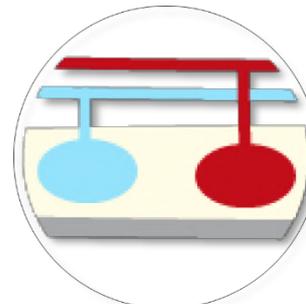
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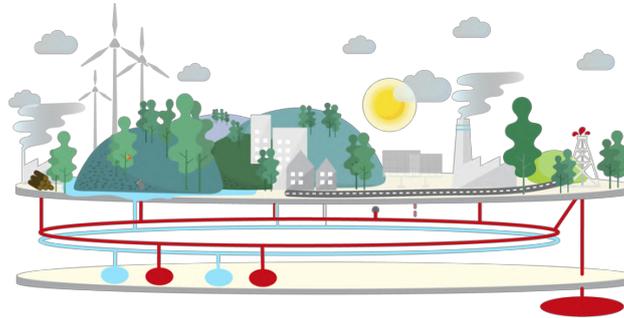
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Preface

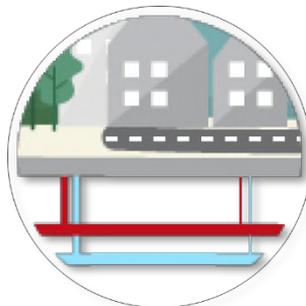
This report gives an overview of the spatial policies in Flanders one can encounter working on 4DHC-networks. For each of the pilot countries of HeatNet, this overview is made. Besides these 5 reports per country, a summarizing and synthesizing overview report is produced.



The specific legislation from the region Wallonia and Brussels were not part of this research. However, specific Flemish legislation and regulations are provided, besides the chapter on national level. The following icons help to navigate the report.



Chapter 3: Spatial planning



Chapter 4: Underground and information exchange



Chapter 5: Environment



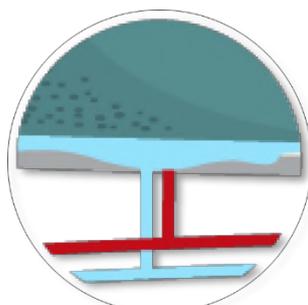
Chapter 6: Biomass and waste incineration plants



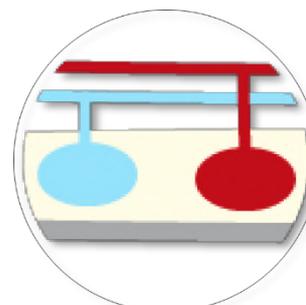
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Chapter 8: Geothermal energy

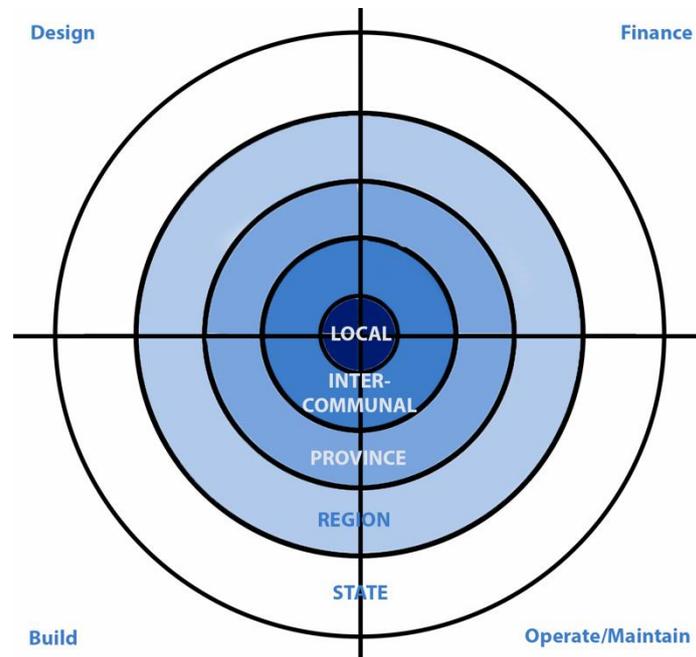


Chapter 9: Aquathermia

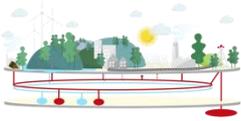


Chapter 10: Thermal energy storage

In general, DHC relevant legislation in each NWE countries can be found on different governmental levels: state, region, province, inter-communal and local. Flanders is one of the three regions of Belgium. There is legislation from the state-level, but the larger part comes from the region or local. Hence, only Flanders was part of this research.



To make it easier to navigate through all of these policies, in the report the bullseye marks in red the policies based on the phase your project is in: Design, Build, Finance or Operate/Maintain and the governmental level of the legislation from local in the heart of the bullseye to the state level on the outline.



Overview Spatial Policies in Belgium

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

Flanders supports electricity from renewable energy sources by means of a quota system, an ecological premium and a net-metering scheme. Regarding heating and cooling from renewable energy resources, the Flemish support scheme provides for a quota system. Grid operators and municipalities are responsible for the setting up of premium schemes.

Diverse policies are currently renewed, designed or under discussion, with different levels of implementation. On 28 September 2012, the Energy Regulation has been revised transposing the building obligations for heat from renewable energy into Flemish law.

On 14 October 2016, the Flemish government approved a new regulatory framework for heat or cooling networks, through an amendment to the Energy Decree and the VCRO. The regulatory framework mainly lays a legal basis for later implementation decisions. Moreover, it must still come into effect through an implementing decision of the Flemish government. As there is no central government at this moment, it is uncertain when this decision will be taken.

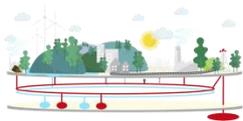
Heat distribution within buildings does not fall within the scope of the legal framework. Neither is it intended to impose regulations for in-house heat networks within industrial sites.

The emphasis is on procedures for non-payment, principles of public service obligations, consumer protection, the definition of market roles and the designation of the VREG as a regulator; In addition, there are also provisions on laying rights and expropriation rights of the local heat network operator.

Deputy Mayors for climate and for city-development and housing are very supportive on DH, but we do not know whether in new legislation, interests could be aligned. 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, creating additional uncertainty and high risk for investing in DH projects.

Each building in Flanders which is obliged to request urban planning permits or needs mandatory notification, has to meet certain energy standards. These standards are called the EPB requirements. EPB stands for 'Energy Performance and Indoor Climate'. In Flanders the EPB-legislation is not very favourable for DHC 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. Also, the use of electricity to circulate warm water in a district heating network is punished (lower E-level, even if green electricity will be used later) and there are counterproductive subsidies.



Agreements and acts on energy in Belgium

National Energy Efficiency Action Plan (2014)

See document(s): https://ec.europa.eu/energy/sites/ener/files/documents/Belgium_NEEAP.pdf

The regions have, each for its own territory, implemented the European Energy Performance for Buildings (EPB) and the Energy Efficiency 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.

Grid operators and municipalities are responsible for setting up premium schemes to support heating and cooling from renewable energy. Therefore, the amount of premium attributed and eligible technologies differs among municipalities.

In Flanders, CHP producers are eligible for CHP certificates. The amount of CHP certificates granted for 1000 kWh of primary energy saved in a qualitative CHP-facility compared to a situation in which the same quantity of electricity or heat were produced separately is multiplied with the respective technology-specific banding factor (Art. 7.1.2. §2 Energy Decree).

Energy decree

Article 2.1.1

In the context of the establishment and operation of a properly functioning electricity and gas market and taking into account the need to maintain and improve the environment, the Flemish energy policy is aimed at:

- 1 ° guarantee the functioning of the Flemish electricity and gas market;
- 2 ° to guarantee the security of energy supply in the Flemish Region;
- 3 ° promote energy efficiency, energy saving and the development of new and renewable energy;
- 4 ° promote the interconnection of energy networks.

Article 7.8.1

§ 1 If the heating, cooling or hot water supply of a building is supplied by a district heating network or by a central source that serves several buildings, a heat meter or a hot water meter is installed at the heat exchanger or the delivery point. The Flemish Government can determine conditions and further rules regarding the heating, cooling or hot water supply of a building through a district heating network or through a central source that serves different buildings.

§ 2 The Flemish Government can determine the conditions that the manager of a district heating network or central source must meet in order to be allowed to operate such a network or source.

§ 3 The manager of a district heating network or from a central source serving different buildings or consumers, shall ensure that by 31 December 2016 at the latest, apartment buildings and multifunctional buildings with a central heating / cooling source or with supply from their district heating network or central source, individual consumption meters installed to measure the heat or cooling consumption or hot water consumption for each unit.

The Flemish Government can determine exceptions for those cases where it is not technically feasible or cost-efficient to install such a meter. The Flemish Government determines the conditions that these meters must meet. The parties that gain access to the data from these meters via this decree and its implementing decrees ensure that data security is guaranteed at all times and that privacy legislation is complied with.

The Flemish Government can determine further rules concerning the transparent and accurate calculation of individual consumption and for the distribution of the costs of thermal or hot water consumption for:

- 1 ° hot water for household use;

-
- 2 ° heat from the installation of the building for heating the common areas;
 - 3 ° for heating apartments.

Flemish Regulator of the Electricity and Gas Market (VREG) -> Heat regulator

Within the new energy decree, which is yet to be introduced, the VREG will have a regulatory role: Heat regulator. The VREG - the Flemish Regulator of the Electricity and Gas Market - is made competent for the regulation, control and promotion of transparency of the electricity and gas market, the supply of heat and cold, and the operation of the heat and cold networks in the Flemish Region.

As a Heat Regulator, the VREG will be able to supervise:

- to the heat and cold provisions from the energy decree and its implementing decisions,
- to the technical regulation that will be drawn up in time,
- on the quality of the services provided by heat and cold suppliers, their payment system via advances, and the way in which they deal with complaints from household customers about their thermal energy;
- on the certainty and reliability of the energy supply via the heat networks, and on the quality of the service provided by the network managers, for example during the execution of repairs or connections;
- on the division and execution of tasks and responsibilities between heat and cold network operators, heat and cold suppliers, heat and cold customers, and other market parties in the field of district heating or cooling; and
- to the right that the heat or cold recipient has free access to his consumption data.

The Heat Regulator will be able to mediate in disputes against a heat or cold network manager.

It is given various informative and advisory duties, including the duty to inform about the operation of heat and cold networks, to compile statistics and publish them, or to request advice from the Flemish Minister of Energy, the Flemish Government, or to provide advice on his own initiative and conduct studies.

The VREG may draw up technical regulations. But according to the explanatory memorandum to the draft decree, that does not have a high priority "because there are already sufficient technical guidelines."

Finally, the VREG may request information from all persons involved in the thermal energy market. He may impose administrative fines (minimum of 1,000 euros). And as a regulator, he will be allowed to impose "necessary and balanced measures" to guarantee the proper functioning of the Flemish heat and cold networks. A mandate of director at VREG is therefore incompatible with an activity as owner or manager of a heat or cold network, as a heat producer that is not a self-generator, or as a heat or cold supplier. The incompatibility rules are also being tightened for VREG staff.



Spatial Planning

Primary instruments planning and development

Flemish Codex Spatial Planning

Traditionally, the uses of the topsoil are governed by the spatial planning regulations (Flemish Codex Spatial Planning - VCRO), whereby the various destination zones are used to determine whether certain functions are compatible with the planning destination given to the area where they were allocated structures or structures. This planning is done on the basis of spatial structure plans (policy-based) and spatial implementation plans (tangible assessment framework). In other words, spatial planning regulates where something is allowed.

Principal permit requirement

Specifically, this is mainly governed by the urban development permit requirement that is imposed in Article 4.2.1. VCRO. Under that provision, nobody is allowed to:

1° carry out the following construction works, with the exception of maintenance works:

- erecting or placing a structure,
- the functional bringing together of materials that create a structure,
- demolishing, rebuilding, renovating and expanding a structure;

In practice, an installation that is used for geothermal (underground) applications will quickly fall under this permit requirement.

To start, there is an obligation to obtain an urban development permit for a construction, i.e. a building, a building, a permanent establishment, a paving, a publicity establishment or signboard, whether or not consisting of sustainable materials, built into the ground, grounded attached or supported on the ground for stability, and intended to remain standing or lying on the ground, even if the property can be dismantled, moved, or is completely underground. It follows from this definition that a purposeful construction that is attached to or in the ground - even if it is completely underground - is in principle subject to a permit requirement.

In addition, a substantial change in relief is subject to a permit requirement, although the nuance here also means that the nature and function of the site must also change.

In view of the above, it can already be decided that an assessment will follow whether the installation itself can be licensed. This assessment takes into account a double criterion: on the one hand, it is checked whether the application is compatible with urban development regulations or land development regulations, in so far as this has not been validly deviated from.

On the other hand, the application must also be in accordance with good spatial planning. The first criterion in particular has the effect that a geothermal application requiring a permit will not be possible in all destination zones, since certain destination zones are in principle incompatible at a planning level with the construction of such an installation. This applies all the more if this installation also requires an environmental permit or notification, now the Decree of the Flemish government of 28 April 2000 (determining the categories of companies for which and the areas within which Article 5.6.7, §2, first paragraph, of the Flemish Codex Spatial Planning cannot be applied) excludes the possibility that a foreign environmental permit can be granted in green areas, nature development areas, flood areas and forest areas.

Exceptions

Irrespective of the aforementioned obligation to obtain a permit, it could be argued that an urban development permit is not required under certain conditions.

As a departure from the principle of a permit requirement, the Flemish Government has determined the cases for which an exemption applies to the planning permit requirement. The so-called "Exemption Decree" of 16 July 2010 stipulates that no urban development permit is required, the "usual underground constructions", provided that they are not located on the building line or in a reverse lane. This exception remains subject to a

series of conditions that are included in this Decree and applies to actions in, at or near homes or other buildings (and in the public domain). In addition, use can only be made of the exception to the extent that these acts do not conflict with the requirements of municipal spatial implementation plans, general construction plans, special construction plans or land development permits that are not included in the municipal list on the basis of Article 4.4.1., § 3 VCRO.

To the extent that the geothermal installation would be considered a "usual underground construction", no urban development permit would therefore be required. Note that it has already been ruled several times that a heat pump can be considered a "usual underground construction" and therefore exempted from an urban development permit.



Residential expansion areas

You are not allowed to construct anything in a residential expansion area, unless it is in the public interest. So 1-on-1 connections are impossible, because that is not a public utility. This rule makes heat exchange between two adjacent properties very difficult if the properties are crossed by a public road. As is the case in Kortrijk where on the one side street a crematorium and the other side street the university lies. The heat from crematorium can heat the university. But crossing the public domain and a biodiversity research area, which has specific environmental issues made it impossible to make a 1-on-1 connection, even if you could see a university as a public utility. There might be a bright spot: innovative technology is allowed in these areas.

See: VCRO [HOOFDSTUK VII. De aanleg en het beheer van een privédistributienet \(ing. decr. 8 juli 2011, art. 35, l: 26 augustus 2011\)](#)



Planning the underground?

With regard to geothermal energy, it must also be established that no direct testing is carried out in any way as to whether certain geothermal applications are permitted in the subsurface. The only test that is currently conducted is done indirectly via the environmental permit instrument. The granting of an environmental permit, assess the environmental hygiene compatibility, as well as the nuisance (of the device) alignment with local planning regulations. However, two important comments must be made:

- The assessment of planning compatibility is only done for the (destination of the) surface. Hence, there is no assessment of the use of the surface and possible interference with another use of the surface.
- Moreover, this test only applies to installations that are considered to be an inconvenient installation in accordance with the Environmental License Decree. Hence, there is no assessment for small-scale applications that do not fall under the scope of the Environmental License Decree.

It must therefore be stated that the subsidence of the subsurface can still be considered a regulatory gap. More specifically, no instrument or regulation is currently available on the basis of which potential operators / users of a geothermal installation can determine whether their intended use could conflict with another geothermal application or with a different use of the subsurface (for example gas storage). In many cases, nothing is known about other applications, so to that use conflicts may arise at a given moment.



Provincial spatial implementation plan (PRUP), Provincial spatial structure plan (PRS), Municipal spatial structure plan (GRS)

When drawing up a Municipal Spatial Implementation Plan (GRUP), guidelines on a conditional connection obligation, a boiler room at ground level and / or reservation strips for heat pipes may be useful.

A connection obligation to the heat network may be applicable to works on buildings that require a permit (this is included in both the urban conditions and the GRUP explanatory note). This is of course only possible on condition that the construction of a heat network is planned and that the developer / manager of this heat network can timely submit a detailed quotation for connection, taking into account the tariff principle "no more than usual".

For individual homes, the RUP can include the requirement that the fire place is at or near ground level and is easily accessible from the public domain (e.g. on the street side).

Reservation strips in the public domain facilitate the later construction of a heat network. The RUP can impose to provide these strips, including strips for their connection to the buildings.

If the technical design of the heat network still requires space for heat production and / or transfer stations, the RUP can also impose on the developer to provide the necessary space.



Regulations of De Vlaamse Waterweg NV/Infrabel/Agency of road and traffic

The Vlaamse Waterweg nv is an agency of the Flemish government that manages the waterways in Flanders. Kortrijk case: NV de Waterweg decided that no district heat network may be installed under a bridge or in a bridge. One of the reasons mentioned was the different lifespan and safety of district heat network and bridge. But also the liability would be difficult. As it is a difficult matter, they decided the answer was "No".

The lifespan of a bridge is 50 years. After the 50 years the safety can't be trusted, so pipes have to be removed. This means high costs. But also a bridge especially made for pipes crossing highways has to take into account that those roads have reservation strips for future expansion, which rises the investment. The AWV (agency for road and traffic has legally anchored zones of 30m from the drainage zone of the roadway. That explains the enormous distance of companies to the highway.

In Kortrijk a maze of parties with whom agreements must be made when passing the river Leie. The problem with the Leie is the Ringroad r36 with bridge and a tunnel for pipes and cables. Besides the issues with the Flemish Waterway NV, the AWV, there was the railway bridge of Infrabel, and also in short distance a tunnel. Fluvius the distribution company for gas, electricity and glass fibre owns this tunnel. Fluvius is not interested in DHC networks and sees it as a competitor. So the tunnel can't be used.

The quay of the Leie consists largely of sheet piling. This makes a simple tunnel impossible. A new U-shaped tunnel must be created, which makes the development incredibly expensive. Rivers can therefore be avoided. Waterways not navigable by inland navigation now have the idea of laying pipes directly in the water.



Flemish Waterway reservation lane (but this also applies to other administrations)

The Flemish Waterway NV does not allow heat transport pipelines from the waste incineration plant under the cycle path along the Leie. They are not willing to make a zone reservation. It is seen as a mortgage on the use of the territory. Water-bound companies have priority here.

Heat Planning



Organization of the operation of heat and cold networks in the Flemish region

The Title 4.1 of the VCRO is about the organization of the operation of DHC Networks.

Article 4/1.1.7 makes easements on property possible for the domain manager of heat and/or cold.

Article 4 / 1.1.9. (01/04 / 2019- ...)

The exercise by the heat or cold network manager of the right stated in Article 4 / 1.1.7 cannot prevent the owner, tenant, domain manager or holder of a real right to the property in question in his right of fencing, demolishing, rebuild, repair or build.

If the owner, tenant, domain manager or holder of a right in rem wishes to exercise such a right as stated in the first paragraph, the heat or cold network manager must remove and move the underground pipes and the above-ground pipes placed on vacant land. or adjust if they hinder the implementation of the rights stated in the first paragraph. The owner, tenant, domain manager or holder of a real right to the property in question provides the heat or cold network manager concerned with this request at least six months before the planned start of the works. The costs for removing, moving or adjusting are at the expense of the heat or cold network manager in question.

The heat or cold network manager concerned can reclaim those costs from the owner, tenant, domain manager or from the holder of a right in rem if he has not yet started work within a period of three years after the request for removal, relocation or adjustment.

Article 4 / 1.1.10. (01/04 / 2019- ...)

- § 1. Heat or cold grid managers authorized for this purpose by the Flemish Government may, in accordance with the regulations on expropriation, expropriate property in their own name and for their own account that are necessary for the direct realization of their purpose, with the exception of the regional public domain. The expropriations stated in the first paragraph will be demanded with application of the common law expropriation procedure or the administration of justice in urgent circumstances.
- § 2. By way of derogation from paragraph 1, the Flemish Government can grant the heat or cold grid manager domain authorizations, permits for private use or domain concessions on the regional public domain by ordering the domain manager appointed by it or by decree.

Article 4 / 1.1.13. (01/04 / 2019- ...)

- § 1. The heat or cold network manager has the right to use the public domain for the construction and maintenance of pipelines above or below the public domain and the associated equipment if he has a prior domain authorization from the domain manager. The conditions that the domain administrator considers useful for the granting of domain admission apply.
- § 2. As a departure from the procedure stated in paragraph 1, if for the planned work stated in paragraph 1 both a domain permit and an urban development permit are required, the application for a domain permit is combined with the application for an urban development permit. Both applications are submitted together with the licensing administrative body.

Article 4 / 1.1.14. (01/04 / 2019- ...) For reasons of general interest, the domain manager may add or modify conditions of the domain admission at any time or oblige the heat or cold network manager to remove, relocate or relocate underground or above-ground pipes and supports placed on the public domain to fit. The heat or cold network operator concerned implements this within a reasonable period after receiving the request. The costs for removing, moving or adjusting are at the expense of the heat or cold network manager involved.

See: [VCRO TITEL IV/1. DE ORGANISATIE VAN DE UITBATING VAN WARMTE- EN KOUDENETTEN IN HET VLAAMSE GEWEST \(ing. decr. 10 maart 2017, art. 14, l: 1 april 2019\)](#)



Heat Plan 2020

See document (s): <http://ebl.vlaanderen.be/publications/documents/107963>

By 2020, Belgium has the objective of obtaining 13% of gross final end use from renewable energy sources. A cooperation agreement has been concluded with the other regions and the federal government, with the distribution of the Belgian objective to be achieved. In the context of this distribution, the 2020 sub-objectives in the 2020 Energy Plan must be updated and aligned with the Flemish contribution. There is still a gap between the production forecast for green energy and the policy document on production objectives from the 2020 Energy Plan, which requires additional measures in the short term. To this end, the Flemish Government approves the 'Heat Plan 2020', which contains the additional measures.



In Flanders it is not obliged to develop energy-plans or heat-plans. Several 'forerunners' in Flanders are developing a 'heat policy' and 'heat-plans'. For example, the province of East-Flanders has a heat policy which was approved by their deputation. They continue their work by developing local heat plans for municipalities. Also, 'Warmtenetwerk Vlaanderen' is part of 'ODE' or the 'Organisation of Sustainable Technology' in Flanders. They made a guide for local municipalities to develop district heating. In this guide it is recommended to make local heat plans.



Flemish Heat Map

A heat map was made for Flanders, but the resolution of this map was very poor. The 'Pan-european thermal atlas' proved to be more useful than the Flemish heat map. As a result, local municipalities need to make use of the open source data provided by 'eandis', the net operator for gas. Other net operators such as Infrac do not have open source data, which makes the mapping of local heat sources and demand very difficult.

Mandatory feasibility study within 500m Flemish Heat Map

Since January 31, 2008 it is mandatory for new buildings with an area larger than 1000 m² to check whether an alternative energy system is cost-effective. This also applies to the connection to a heat network (transposition of the European directive on the energy performance of buildings). This mandatory feasibility study applies within a zone of less than 500 m away from the designated locations on the Flemish heat map. The techniques to be investigated, depending on the building destination and floor area, are shown in the table in Annex I of the Ministerial Decree.

More info: <http://www.energiesparen.be/epb/haalbaarheidsonderzoek>

Energy-intensive companies participating in the (voluntary) energy policy agreement (EBO) are thereby committed to conducting potential studies for qualitative CHP and heating and cooling networks.

More info: <http://www.ebo-vlaanderen.be/Pages/de-ebos.aspx>



Obligation to connect

Article 2.3.2, §2, first paragraph of the VCRO provides:

"The municipal council may adopt urban development regulations for the matter described in article 2.3.1, in article 4.2.5 and in article 4.4.1, § 3, second paragraph, for the entire territory of the municipality or for a part of which it limits determines in compliance with the urban development regulations adopted by the Flemish Government and the provincial council".

Article 2.3.1, first paragraph, 2 ° of the VCRO reads as follows:

"The Flemish Government can adopt regional urban development regulations for part or all of the region. These regulations contain the necessary urban development regulations to ensure:

(...)

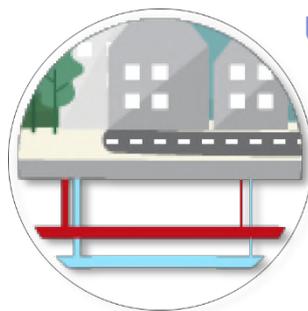
2 ° the thermal and acoustic quality of the buildings, the energy savings and the energy recovery, the development of collective energy facilities that must be connected if necessary;

(...)

4 ° the construction of facilities, in particular the water, gas and electricity supply, heating, telecommunications, waste water and rainwater collection, waste collection and wind turbines; "

(...)"

It follows that the obligation to connect to a heat network or sewerage system can be imposed in a municipal regulation. It is important to mention that this is about a connection obligation and not an obligation to purchase heat. In principle, users can therefore use their own additional heat supply (for example an electric radiant heating).



Underground and information exchange

Right to property

- easement on real estate
- building lease
- ground lease
- domain concession



Easement on real estate

If a private party is the initiator of the installation of a DHC-Network, the same rules apply as for the installation of telecom cables, etc. The initiator has to get easements on the public domain owned by the government. It is only possible to get easements on specific streets. If you change your plans and need other streets, you have to go through the procedure again. These are lengthy procedures.

Concession

A concession is required for the installation of heat network pipelines in the public domain if the government is the initiator, in the category “concession procedure for public works within the utility sectors”. This can be assigned per project with a geographical definition of the area or for the entire territory of the municipality.

The concession can involve various sub-assignments: design, construction and / or operation of the heat network. A split into heat supply and heat distribution is also possible, with different durations (e.g. 20 years for delivery and 40 years for distribution). An awarding guide describes the detailed conditions for awarding the concession and the procedure to be followed (see Eeklo's example).

Concession versus easement

These property rights only apply to municipal lands. In order to distribute heat, you need to have rights in rem in immovable property. In the city of Eeklo the property rights are defined by the concession, because the city is the initiator. This means that the company who won the tender, has the citywide right to install heat pipes in the public domain. This procedure takes a lot of time. It is easier to acquire easements. If a local government has policies on DHC networks, the major of the town can transfer the easement to the initiating company. Although these easements can be given to more than one initiating company and there is a risk of multiple distributing companies, in many cities that risk is near zero. For instance, in Oostende the underground has hardly any space left for new networks.

Private property

For passing private properties business agreements have to be made with each landowner. As an example of the difficulties that can arise to get those agreements, the case of Kortrijk. In Kortrijk they wanted to go 200 meters over private land. Land owned by Infrabel, the rail-managing company. They wanted to acquire the rights to go over track plots. However, it turned out that 4 different sub-rail companies were the owners of these plots. This became a Kafkan dead-end street, which ultimately led to a more expensive detour across the public domain.

[See: paragraph on organization of DHC in the VCRO](#)



Ownership and use of geothermal heat

In the first instance, some explanation must be given about the ownership status of geothermal heat. The question arises to what extent this heat belongs to the owner of the (upper) land, either to the operator who can use the heat or to the state. The issue of ownership of geothermal heat can be approached from various, already existing concepts within federal and Flemish regulations. Depending on the approach, this approach naturally leads to different results.

In the first instance one could argue that the geothermal heat is a "res communis" (i.e. a case that serves the use of all and where no one is allowed to obstruct the others in that use by exclusive appropriation). In other words, geothermal energy is treated analogously to water, air and light in such an approach, since these can also be considered as renewable energy sources. Thus the geothermal heat is the property of the community.

On the other hand, one could argue that ownership over a land extends to what is on and under the land (Article 552 of the Dutch Civil Code), including geothermal heat. Thus the geothermal heat belongs exclusively to the landowner. There are, however, important exceptions to this general rule. For example, Article 716 of the Dutch Civil Code stipulates that the ownership of a treasure belongs to those who find it in its own property, while one half belongs to the finder and the other to the owner of the property if it is owned by someone else's property found it. It should be noted, however, that the latter does not apply if a third party specifically searches for "treasures" on another person's property. In addition, the question arises to what extent "geothermal heat" can be considered as a treasure. After all, a treasure is described as "any hidden or buried property on which no one can prove his right of ownership and which is discovered by mere coincidence" (art. 716, paragraph 1 BW). This scheme could therefore also be applied (by analogy) to determine the ownership status of the geothermal heat. In the latter case, the geothermal heat would therefore be partly owned by the landowner and partly by the extractor.

A third potential starting point can be found in the Decree of 8 May 2009 concerning the deep subsurface that stipulates in article 3 that all hydrocarbons that are naturally present in the deep subsurface (i.e. the subsurface from a depth of at least 100 meters below the earth's surface) are the property of the Flemish Region. The ownership of these hydrocarbons, however, passes to the holder of the extraction or exploration license when they are withdrawn from the subsurface. The holder of the extraction license must pay a fee to the Flemish Region for this. The ownership of the hydrocarbons that are removed from the subsurface as a sample or formation test in the context of an exploration permit, however, passes to the holder of the permit free of charge. By analogy with these regulations, ownership of the geothermal heat could in principle be placed with the Flemish Region, with the possibility of transfer of ownership if the geothermal heat is extracted from the subsurface.

The ownership of the geothermal heat can therefore, depending on the needs, be placed with the entire community, an exclusive owner or the Flemish Region. The various tools for this can already be found in various existing regulations.

	Geothermal heat <400 a 500m	Geothermal heat >400 a 500m
Ownership geothermal heat	Property of owner surface	Property of Flemish Government
Right of usage geothermal heat	The owner can use geothermal heat himself - if necessary, user compensation can be paid to the owner of the surface for use geothermal heat from the subsurface (cf. windmills or renting roofs with solar panels).	Right of use of the geothermal energy is transferred from the Flemish Region to the holder of the right of use / license holder / operator - if necessary, this holder of the right of use / license holder / operator will have to pay a usage fee if above ground right of use is necessary for application in deep subsurface.

Data and information exchange



Generic Information Platform Public Domain Decree

Compulsory delivery of data. The decree provides for the mandatory delivery of data in GIPOD. GIPOD = generiek informatie platform openbaar domein. The obligations in the decree apply to planned works, events or other

intakes on public roads. The obligation to enter, coordinate and collaborate is bigger the greater the anticipated nuisance for road users.

At the end of 2016, the Flemish Government approved an implementation decision. This stipulates that the use of the GIPOD must become increasingly intense. For example, from July 2016 it was already mandatory to include category 1 works (larger than 50 m²) in the GIPOD.

From 1 June 2021, works between 3 and 50 m² with serious nuisance and all works with a diversion must also be registered in the GIPOD at least three weeks before the start of the works. For all other public domain intakes that cause serious nuisance, you must enter them at least two weeks in advance. If a diversion applies, it must be registered 3 weeks before the start in the GIPOD.

Intake type	... without diversion	... with diversion
Working Cat 1 (x > 50m ²)	6 months *	2 months
Working Cat 2 (3m ² < x < 50m ²)	3 weeks	
Working Cat 3 (x < 3m ²)	Not covered by decree	3 weeks
Other intakes	2 weeks	3 weeks
Diversions	n/a	3 weeks



Database Flemish Underground (DOV)

- hotline drilling
- GEOpoint Flanders
- hotline archeology



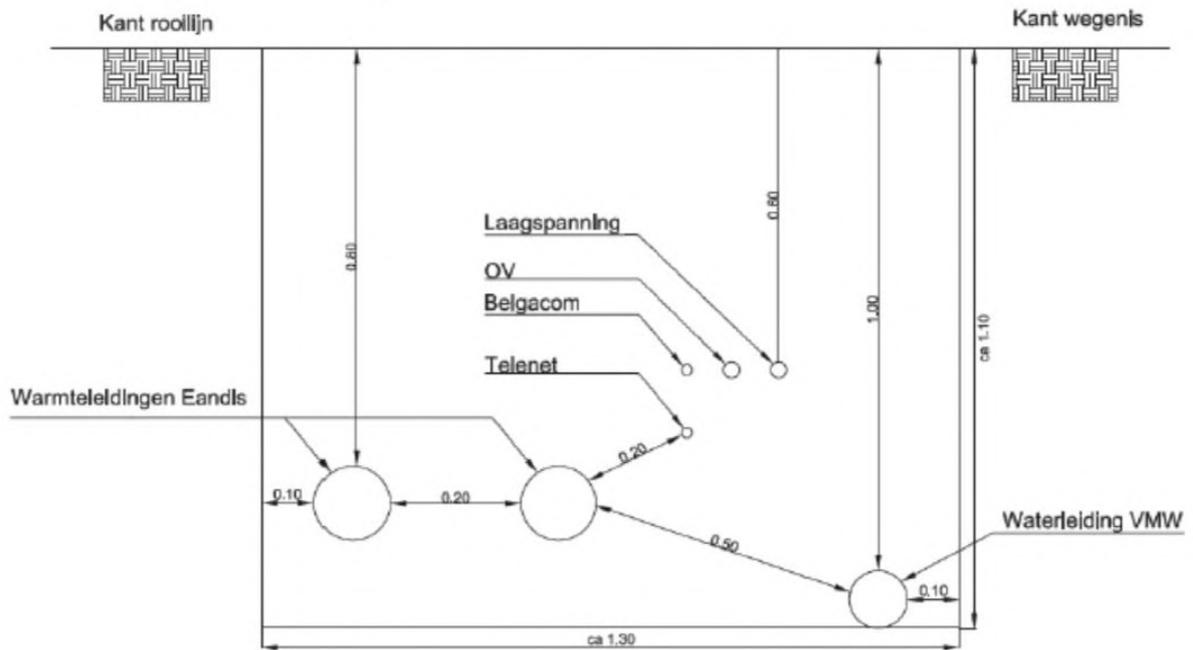
Decree concerning the retrieval and exchange of information about underground cables and pipes (KLIP-decreet)

See document(s):

<https://overheid.vlaanderen.be/sites/default/files/media/documenten/informatie-vlaanderen/producten/KLIP/documenten/Besluit%2520houdende%2520het%2520KLIP-decreet%252014%2520maart%25202008.pdf?timestamp=1517955906>

KLIP (servicers transport piping)

- See document(s): fetrapi.be
- Plan application study phase
- Plan application execution of groundwork: start execution within 40 days
- KLIM (federal portal for information on cables and piping)

Regulation on piping arrangements

Grondprofiel met schikking van ondergrondse leidingen
(bron: voorschriften Eandis voor warmtenet Hooglede)

Figure 0-1: ground profile with piping arrangement by regulation of Eandis



Environment

Environmental permit

In principle, an environmental permit is required for the construction of both above-ground and underground structures.

On every private plot is an environmental permit needed. There are different levels of the environmental permit.

The private home is at city level, in other words a Class 3. Class 2 is at provincial level. A Class 1 company has environmental aggravating activities and is also on provincial level. The higher the class, the more time the permit procedure takes.

Environmental license decree of 28 June 1985 and amendments: based on class of the nuisance installation there is a reporting obligation for class 3 and an environmental permit obligation for class 1, 2.

Underground construction:

- Article 10, 4 ° of the Exemption Decree provides for an exemption from the obligation to have an environmental permit for the following acts in the public domain: "usual underground structures and connections". A sewer can be considered as a usual underground construction on the public domain.
- Article 2.1.1 ° of the Exemption Decree states that an environmental permit is also not required for "usual underground constructions if they are not located on the building line or in a reservation lane". This would mean that for a sewerage project no environmental permit is required for the construction of underground structures on the private domain.

Above-ground constructions:

There are no exemptions from the exemption decision for the construction of above-ground constructions and an environmental permit will always have to be applied for.

The decrees and decisions governing the environmental permit are:

- Decree of 25 April 2014 on the environmental permit (Decree);
- Flemish Codex Spatial Planning (VCRO);
- Title IV and V of the Decree of 5 April 1995 contain the general provisions on environmental policy (DABM);
- Decision of the Flemish Government of 27 November 2015 implementing the Decree of 25 April 2014 concerning the environmental permit (Decision) and its appendices (forms);
- Decision of the Flemish Government of 13 February 2015 on the designation of Flemish and provincial projects in implementation of the Decree of 25 April 2014 concerning the environmental permit, with the Flemish list as Annex 1 and the provincial list as Annex 2;
- Decree of the Flemish Government of 1 June 1995 concerning General and Sectoral provisions relating to Environmental Safety (VLAREM II), including the classification list as Annex 1 from now on;
- Decision of the Flemish Government of 16 May 2014 concerning additional general and sectoral environmental conditions for GPBV installations (VLAREM III);
- Decision of the Flemish Government of 14 April 2000 determining the functional changes requiring a permit.

More information about the permit can be found at: [Omgevingsloket \(Environment Counter\)](#)

EIA decree (deep geothermal energy)

Environmental Impact Assessment; Decree 18 Dec 2002, supplementary to Decree 5 April 1995

It has already been demonstrated that environmental licensing legislation already provides a fairly comprehensive framework for the commissioning, operation and shutdown of geothermal installations, with a

view to limiting and avoiding impact, risks and nuisance with regard to people and the environment. However, this does not prevent certain more large-scale projects from being subject to more far-reaching regulations. These large-scale projects are mainly situated in the deeper subsurface, now that in Flanders only in certain areas at greater depth is there sufficient potential to be exploited on a large scale.

With such large-scale projects, the Decree on General Provisions on Environmental Policy must in any case be taken into account, and more particularly Title III "Environmental impact and safety reporting". Environmental Impact Assessment (EIA) can be described as the procedure that may or may not lead to the preparation and approval of an environmental impact assessment of an intended promotion and, where appropriate, its use as an aid in decision-making about this promotion (m.e.r.). The aim of environmental impact and safety reporting is - in deciding on actions that can cause significant environmental impacts and / or that can cause a major accident - to place environmental importance and safety and human health on an equal footing with social, economic and other social interests.

Proposed projects, before a permit can be requested for the activity subject to a permit that is the subject of the project, are subject to an environmental impact assessment in the cases specified in Chapter III of the DABM. Specifically, the initiator of a geothermal project (i.e. the applicant or holder of a permit) must prepare an EIA for those categories of projects listed in Annex I and Annex II of the EIA decision:

- for the categories of projects included in Annex I, this is an obligation that cannot be deviated from;
- for projects listed in Annex II to the EIA decision, the initiator can submit a reasoned request for exemption to the competent administration.

Specifically with regard to geothermal energy, an EIA project is mandatory in the following cases:

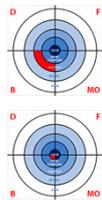
- Annex I, 2 a: thermal power stations and other combustion plants with a heat capacity of at least 300 megawatts;
- Annex I, 15: activities for the extraction or artificial replenishment of groundwater when the annual volume of extracted or supplemented water is 10 million m³ or more;
- changes or extensions to existing installations, as a result of which the above-mentioned threshold values would be exceeded.

Annex II then contains a number of categories for which an EIA project must in principle be drawn up, but for which an exemption can be requested:

- Annex II, 2d: deep drilling, including geothermal drilling from a depth of 500 m;
- Annex II, 3: energy companies, such as industrial installations for the production of electricity, steam or hot water with the exception of nuclear power plants, with a heat capacity of 100 to 300 megawatts;
- Annex II, 10 m: construction of certain large-scale underground pipelines;
- Annex II, 10 o: works for the extraction or artificial replenishment of groundwater:
 - groundwater abstraction or artificial supplements to groundwater if the capacity is 2,500 m³ per day or more;
 - extraction of groundwater if the capacity is 1,000 m³ per day or more and the activity is located in or may have a significant impact on an area as indicated in implementation of the Decree on measures to protect the coastal dunes of 14 July 1993 or if the activity can cause significant damage to the natural features of a special protection area;
- Annex II, 14: pilot projects of operations falling within the scope of Annex I.

The end result is ultimately a project EIA. This is a public document in which, of a proposed project and of the alternatives that can reasonably be considered, the expected consequences for people and the environment in their mutual cohesion are analysed and evaluated in a systematic and scientifically justified manner, and on which significant environmental effects can be avoided, limited, remedied or compensated. In this way, the

(licensing) government is able to judge in an appropriate manner whether the proposed project can be realized without this entailing unacceptable hindrance for people or the environment.



VLAREM

In Flanders, the application of geothermal projects is subject to a VlareM environmental permit. VlareM 1 determines the permit requirement (notification or permit) and the class of the permit (class 1, 2 or 3) and VlareM 2 determines which environmental conditions are set for these establishments.

(<http://www.emis.vito.be>)

For classes 1 and 2 a permit is required, for class 3 only a notification to the municipality where the works are being carried out. A class 1 environmental permit is requested from the permanent deputation of the provincial council and for class 2 from the municipality where the works are being carried out. The design process according to the approval periods must be taken into account as no work may start without an environmental and / or building permit. The VlareM legislation is divided for open (groundwater) and closed systems (soil heat exchangers). A heat pump with vertical floor heat exchangers is therefore covered by an environmental permit (depending on the heat pump capacity and depth of the floor heat exchangers (above 50 m).

The VLAREM regulations stipulate that for certain permit applications, the feasibility of the CHP application or the use of residual heat (via a heat network) must be investigated. This concerns permit applications for large new combustion plants or power plants, and for heat networks. If the benefits are higher than the costs, the energy efficient options must also be applied.

See:

- Environmental license decree with implementation decisions (VLAREM I, II): regulation and code of good practice for nuisance activities during the realization of a geothermal project, granting permits;
- Implementation decisions: VLAREM I (class 3, including heat pump with power > 5kW, soil exchangers up to local depth criterion) and VLAREM II (general and sectoral environmental conditions during operation and code of good practice), including large shallow systems, systems deeper than depth criterion, use substances in closed ground heat exchanger;
- Soil remediation decree of 27/10/2006 and changes aimed at sustainable soil management. Implementing Decree: Vlarebo;
- Decree on sustainable management of material cycles and waste materials 23/12/2011. Implementing Decree: Vlarema.

The following headings in the VLAREM can be distinguished:

- Section 3: Waste water and cooling water
In a number of cases, part of the groundwater or cooling water used is discharged at specific times.
- Section 12: Electricity
Large-scale applications can have an installed total capacity of 100 kW and more to produce electricity. In addition, transformers and accumulators are also used.
- Section 16: Gases
Geothermal applications also use a physical treatment of gases. More specifically, air conditioning systems and other cooling systems can be pointed out, all the more so that the new VLAREM update train specifically provides for the inclusion of heat pumps in this section³².
- Section 17: Hazardous substances
If hazardous substances are used in a closed system, then it is checked whether these substances appear on an attached list (Appendix 2 VLAREM I).
- Heading 52: Discharge into groundwater
This means the indirect discharge into groundwater, as well as other actions that are not classified elsewhere and that may contaminate the groundwater. Any direct discharge into groundwater of hazardous

substances referred to in appendix 2B to VLAREM I, as well as any indirect discharge of hazardous substances referred to in list 1 of the same annex, is prohibited under the decree of 24 January 1984 concerning measures for groundwater management and its implementing decrees. Any direct discharge into groundwater of non-hazardous substances, on the other hand, is considered to be an artificial supplement to groundwater (heading 54).

This section will therefore mainly apply to closed systems that make use of certain (hazardous) substances that may end up in the groundwater in the event of a leak or disaster.

- **Heading 53: Groundwater extraction**
Drilling of groundwater extraction wells and groundwater extraction that is used for cold-heat pumps, including pumping back, are considered installations subject to licensing according to the pumped flow rate.
- **Section 54: Artificial replenishment with groundwater**
In certain systems (such as KWO with doubles) it becomes (a part of) it groundwater pumped back into the subsurface.
- **Section 55: Drilling**
The essence of geothermal energy is the use of the subsurface. Depending on the desired application, drilling must be done to get into the surface. This section was geared to geothermal energy through the decision of the Flemish Government of 15 July 2011 implementing the Decree of 8 May 2009 on deep underground.

Once the operator has obtained an environmental permit (or has made a report), this does not mean that the facility can then be used undisturbed. After all, the operator is always obliged to comply with the general and sectoral environmental conditions. These conditions can be found in VLAREM II. In addition, the special conditions imposed in the environmental license must be observed. Note that special conditions can also be imposed on the operator when reporting.

Reference can also be made to the general environmental duty of operators, on the basis of which they must always take the necessary measures to prevent damage and nuisance (art. 22 Environmental Permit Decree in conjunction with 43, VLAREM I).

Without being exhaustive, various rules are imposed in the environmental conditions with regard to the physical treatment of gases, discharges into the groundwater, extraction of the groundwater, its artificial replenishment and drilling in the subsurface.

With regard to these sectoral conditions, it should also be emphasized that the recent VLAREM update train will already entail a considerable number of changes with regard to geothermal installations. More specifically, changes are foreseen with regard to groundwater abstractions for thermal energy storage in aquifers including backpumps (art. 5.53.6.2. VLAREM II). This includes:

- the prohibition to operate such a facility in a type I or II protection zone for groundwater abstraction;
- the obligation to dimension, design and maintain groundwater extraction according to a code of good practice;
- at least a five-year inspection and maintenance by an expert in the matter;
- the obligation to inject groundwater into the same aquifers as the one from which it was extracted;
- sufficient overpressure, automatic monitoring, the measuring devices and the like;
- compulsory regeneration by mechanical means and the manner in which the waste can be discharged.
- A number of conditions are also imposed on drilling, the most important of which relate to:
 - the prohibition to drill (if deeper than 2.5 m) in type I or II protection zones of groundwater abstraction;
 - conducting bores in accordance with the rules of good workmanship as included in the code of good practice for drilling;
 - dimensioning, designing and maintaining according to a code of good practice;
 - Slight overpressure of the groundwater system and no unnecessary piercing of important aquifers;

- the sealing and filling of boreholes to prevent contamination of the groundwater layers, as well as the decommissioning (with water that meets environmental quality standards).

The above shows that more and more attention is being paid to dimensioning, design, implementation and maintenance in accordance with a code of good practice for drilling. This code of good practice can be found in appendix 5.53.1. VLAREM II.

Finally, these conditions also show that the shutdown and decommissioning are subject to a number of minimum requirements, with a view to avoiding contamination of the subsurface and groundwater.



VLAREL

Following on from this quality control on the way in which drilling is tackled, the competence of the drilling companies is also an essential point. For that reason, it is currently being considered to subject the drilling companies to the so-called VLAREL regulations.

The recognition of environmental experts, which is currently regulated by the Decree of the Flemish Government of 19 November 2010 establishing the Flemish regulations on recognitions relating to the environment (VLAREL), is important in the context of a geothermal project, now similar recognition is currently being drawn up for drilling.

The decision distinguishes two types of recognition requirements. As a general recognition condition, it is imposed that the natural persons mentioned in the recognition application must not have received a criminal conviction three years prior to the recognition application. In addition, special recognition requirements are imposed for each type of expert with regard to training and knowledge. Regarding the latter criteria, no specific information is currently known with regard to the approved drilling companies, but it is expected that, among other things, conditions regarding the knowledge, skills and experience of personnel, as well as requirements for the materials to be used, can form part of the conditions for being recognized as a drilling company.

The recognition is in principle of an indefinite duration but can in certain cases be suspended or withdrawn (for example because the applicant no longer meets the recognition conditions).

In addition to the recognition requirements, VLAREL also sets certain usage requirements first. For example, when carrying out his activities, the recognized expert must work objectively and independently, any certificates and findings must be sufficiently clear and comprehensive, the expert must comply with the codes of good practice and he is obliged to take out civil liability insurance.

For the concrete implementation of these conditions and criteria, however, it is necessary to wait until the VLAREL is supplemented with a certification scheme for drilling companies.



Soil Decree and Vlarebo

On 27 October 2006, a new legal framework for soil remediation and soil protection was introduced in the Flemish region: the Soil Remediation and Protection Decree. In addition, in December 2007 there was the renewed implementation decree, the Vlarebo, the Flemish Regulations on soil remediation and soil protection. Together, since 1 June 2008, they have replaced the previous regulations, the Soil Remediation Decree, and are continuing to build on the same guidelines. Only the part about soil protection is new.

The Soil Remediation Decree consists of two important parts. The curative part deals with soil remediation and builds on the principles of the previous regulations. The preventive part about soil protection is rather a framework with instruments for a good protection policy. The Soil Decree and the Vlarebo have an analogous structure; the chapter numbers and titles are aligned.

The use of excavated soil among others (Chapter XIII Soil Decree) may apply if drilling is to take place on a contaminated site (the so-called "suspect grounds"), whereby soil is being moved. In addition - if concessions are used - the regulations regarding the transfer of land may also apply.

Distribution managers have special privileges concerning contaminated soil. They are allowed to return the contaminated soil. Private companies have to remove contaminated soil on their own account. Even if the

contamination was not expected on the location. Therefore it is best that DHC networks are acknowledged as a public utility.



Waste policy

[See chapter biomass and waste incineration plants](#)

Integrated Water Policy Decree of 18 July 2003 with amendments and implementation decision of the Water Assessment;

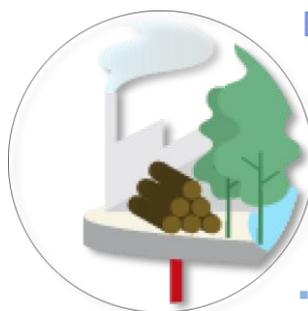
- Environmental quality standards for surface water, aquatic soils and groundwater of 21 May 2010;
- Decree on measures for groundwater management of 24 Jan 1984;



Groundwater decree

With regard to geothermal energy, it is primarily relevant that the Flemish Government can prohibit, on the basis of the Groundwater Decree for the protection of groundwater, direct or indirect discharge, depositing and storing on or in the soil of substances that can contaminate. Alternatively, these acts are regulated or subject to a permit. The so-called groundwater permit has now been included in the environmental permit.

The groundwater levy is also of great importance. This concerns a levy on the extraction of groundwater. The taxpayer is any natural or legal person who has exploited one or more of the groundwater abstractions listed in the decree in the year prior to the tax year in the territory of the Flemish Region. Note that a derogation applies to groundwater abstractions that are used for cold-heat pumps, on condition that the groundwater is fully reintroduced into the same water-bearing layer after flow of the cold-heat pump (Article 28b, § 2, 8 ° Groundwater Decree).



Biomass and waste incineration plants

Biomass

Biomass gets punished in the energy efficiency.

Biomass residues include waste and residual fractions of biomass that:

- are not used for which the biomass was originally intended or produced,
- are released and can be mobilized and
- for which a different, useful use is desired; e.g. unsold vegetables / fruit, residual streams from the food industry, animal by-products, organic waste, scrap wood, residual streams from the timber industry or streams resulting from the management of gardens, parks, roadsides, nature and landscape.



The table below provides an overview of the various biomass (waste) flows and whether or not they are eligible for green energy certificates, via incineration with energy recovery or fermentation with the production of biogas.

Flow	Green power certificates via fermentation	Green power certificates via incineration
Animal fat category 1	No	Yes
Animal fat category 2	Yes, after processing method 1	Yes
Animal fat category 3	Yes	Yes, limited quota and deviation from incineration ban
Animal meal category 1	No	Yes
Flour, category 2	Yes, after processing method 1	Yes
Animal meal category 3	Yes	Yes
organic waste	Yes	No
Fine green waste from private individuals, horticulturists, business sites ...	Yes	No
Prunings of public greenery	No, technically not feasible	No, unless conditions are met in the context of coppice management
(Roadside) cuttings	Yes	No
Residual wood from exploiting forests for wood production (no waste)	No, technically not feasible	Yes
Woody energy crops	No, technically not feasible	Yes
Wood dust and shavings	No, technically not feasible	Yes
A-wood	No, technically not feasible	No
B and C wood waste	No, technically not feasible	Yes
Sieve overflow after composting	No, technically not feasible	Yes
Woody fraction of green waste	No, technically not feasible	Yes, if originating from composting with quality monitoring and test certificate for compost and a deviation from the incineration ban
Olive seeds, rice husks	Yes	Yes
Coconut briquettes, pellets	Yes	Yes
Plant scraps	Yes	Yes
Coffee waste	Yes	Yes, if there is a deviation from the incineration ban
Used frying fats and oils	Yes	Yes, if there is a deviation from a combustion ban

Vegetable oils and fats from the food industry (neither from private individuals nor from the catering industry)	Yes	Yes
Organic-biological fraction of residual waste (household and industrial waste)	No	Yes
Organic-organic textile waste	Depending on the current	Yes
VLAREMA-compliant sludges for MS / BVM	Yes	No
Sludges not in accordance with VLAREMA for MS / BVM	Depending on the current	Yes
Other organic-biological waste	Depending on the current	Depending on the current

More info and preconditions:

- table for the allocation of green energy certificates from VREG + announcements from VREG
- OVAM, Bio team

Category 1 and derived products from category 1

Category 1 material and derived products resulting from the processing of category 1 material must, in accordance with Regulation 1069/2009 on animal by-products, be disposed of in one of the following ways:

- as waste from incineration
- disposed of as waste or recovered by co-incineration
- by depositing
- by deprived

The waste policy in Flanders is based on the processing hierarchy. The dumping and incineration prohibitions, among other things, result from this. The dumping ban from VLAREMA has the result that the dumping of category 1 material is not permitted in Flanders, since incineration and co-incineration (which is higher in the processing hierarchy) is possible.

When Category 1 material is burned or co-incinerated, energy will always have to be recovered and the installation must meet the conditions for biomass waste incineration. A number of processors of category 1 material use a thermal boiler to burn in category 1 material (mostly fats) (as biomass waste), in order to meet the large energy demand of the processing.

Europe offers the possibility of burning category 1 material (incineration but not as waste). To date, no conditions have been set for this in Europe. It is important for OVAM that it is demonstrated in the first instance that it is no longer waste; then you can see under which conditions you can do nothing.

Category 3

Regulation 1069/2009 provides far more options for processing category 3 material.

Because in the processing hierarchy the reuse of material is above incineration with energy recovery and landfilling, both are in principle excluded for category 3 material. In VLAREMA, however, the possibility is given to deviate from this dumping or incineration ban. An individual deviation is required for most flows.

A regulation has been worked out for category 3 animal fat and used frying fats and oils. Electricity generation through incineration is, after all, a realistic alternative that has certain ecological benefits and that is also economically attractive as a result of the incentive measures for green electricity in Flanders. <20 MW plants receive 10 years of support in the form of an allowance. It is a recurring income. That's why there are hardly any large district heat plants in Belgium such as in the Netherlands.

In 2009, a contingent of category 3 animal fat and used frying fats and oils was released for incineration with energy recovery for the first year. The intention is to review the situation annually and adjust the quota if necessary.



Waste incineration quota

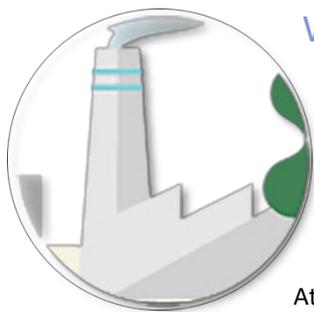
The OVAM determines the garbage quota of households. This is decreasing every year, so that no new waste incineration plants are added or even get closed. This quota does not apply to industrial waste.

Crossing country borders with DHC

Heat networks can't cross country borders yet.

Just across the border between Lille and Kortrijk one of the biggest waste incineration plants of France can be found. As there is not much to be found in the French surroundings of the plant to heat, the heat of this plant can easily be used to give Kortrijk enough heat.

The problem is differences in regulations in shareholding in both countries and to lack of European legislation on heat networks. There is some regulation on electricity, but not on heat. It is not so much a prohibition on cross-border transmission of electricity, but the system is set up in such a way that the transmission system operator (TSO), the manager of the high-voltage network, is the only one with the mandate to transmit electricity cross-border. In the [proposal for the directive of the European parliament and of the council on common rules for the internal market in electricity, article 16 citizen energy communities](#). This article gives communities the right to exchange energy generated within the community itself. And that is also allowed across borders.



Waste heat

Industrial waste heat

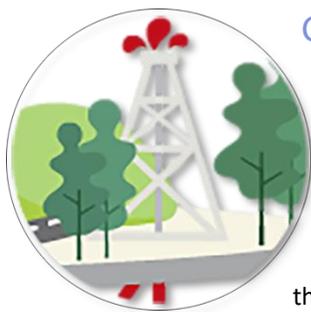
Currently, Belgian policy is primarily focused on the production of green electricity through green electricity certificates. Waste heat recovery is not really on the agenda.

At present, most major industrial players have already optimized their heat consumption and because it relates to such important items it would be incredibly stupid to ignore them.

Things are somewhat different for small and medium-sized companies. Until recently, the economic and energetic context did not lend itself to investing in energy-efficient installations.

Small consumers in particular pay more for their energy than large industrialists. Many realize that it is at the level of heat recovery that they can save a lot on primary energy purchases. But the difficulty is to come to the fact that they realize that this investment is paying for itself and is not regarded as an expense without consideration.

It should be added that heat recovery makes much more sense if the heat is immediately reused in the industrial process. But the heat can also be used for additional heat needs, such as company space heating. This can lead to situations in which the furnace produces a lot of waste heat, while at the same time, an outdated fuel boiler can hardly heat the adjacent rooms. Then you are in a situation that you consume twice instead of the desired one. This can be achieved by recovering the heat from the chimney and injecting it again into the heating circuit. And the investments will of course be recovered even faster because the proximity between the heat source and the place of reuse play an important role. In Flanders therefore they first think of the possibilities to valorise the heat directly on the production line before concentrating on a nearby heating installation.



Geothermal energy systems

Deep Underground Decree VCRO

In de Codex the Deep Underground Decree can be found. The detection and extraction of geothermal heat (ing. Decr.25 March 2016, art. 27, I) has to be determined by the Flemish Government. Permits for the detection and extraction of geothermal heat (ing. Decr.25 March 2016, art. 28, I) has to be determined by the Flemish Government. The extraction has to follow the work plan for extraction.



Permits, indicated by VEA, must be applied for in the following cases:

- If a very large heat pump is used (with a total installed power of the heat pump of more than 200 kW);
- if groundwater is pumped around (with extraction and injection well), this applies to the open systems that directly use groundwater;
- if the vertical ground heat exchanger is used as a source and was drilled deeper than the on-site depth criterion;
- if a horizontal or vertical ground heat exchanger is used with a heat-bearing material medium with hazardous substances as referred to in appendix 2B of Vlarem I.

If there is no obligation to obtain a permit, a notification will often have to be made. This is the case in the following situations:

- the heat pump has a total installed buoyancy of more than 5 kW;
- use is made of a vertical ground changer with a depth up to the room depth criterion is drilled (if deeper than 50m a permit requirement applies).



Urban planning permit

Requirement for the drilling and above-ground installations (imposed in article 4.2.1 VCRO). Possible exception if installation falls under 'usual underground construction'.

Spatial structure plans at regional, provincial, and local level

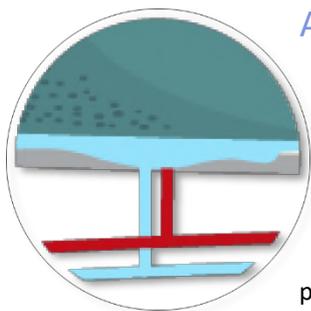
[See in chapter spatial planning](#)



Urban development agreement and regulations (e.g. buffer zones)

[See in chapter spatial planning](#)

Aquathermia.



Open water

In Flanders there are many places to get heat from rivers. But there is a fee that keeps aquathermia on a hold: Cooling water fee = fee for using river water as a source of heat pump. You pay a certain fee per m³ of water. This especially applies to cooling water. But also set as a source for a heat pump, you have to pay per m³.



Riothermia

For the extraction of heat from the municipal sewer system, the local situation must always be considered, in particular who is appointed as a sewer manager and what authorizations this has to give further shape to the development of a sewerage project. In the first instance, contact can be made with the local administration and the appointed sewer manager. For the final preparation and distribution of roles / responsibilities / liabilities, the statutes, municipal decisions and management agreements must be requested / reviewed.

Sewers have a specific legal status. Sewage is a good that is regarded as (artificial) public domain property. Domain goods are goods of the legal persons governed by public law (e.g.: municipalities, intermunicipal companies). In order to be able to serve fully the public interest and to give priority to the operation of public services, these goods are usually subject to a special legal regime. The distinction with private property does not have a legal basis but was further completed by case law and legal theory.

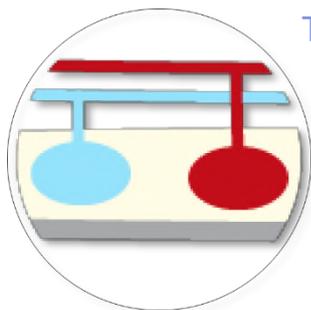
The status of public domain property means, for example, that in principle a municipality cannot grant so-called privative rights (such as rent, leasehold, building) on these goods. Delegation of sewerage management to intermunicipal partnerships (and further subsidiaries) is possible.

However, there are exceptions to the principle that no privative rights can be granted to sewers. Under certain conditions an authorization can be obtained for the installation of a heat exchanger with attachments in the sewerage through the following legal constructions:

- Domain concession;
- Business rights;
- Sui Generis agreements (Latin for of its own kind, and used to describe a form of legal protection that exists outside typical legal protections -- that is, something that is unique or different.)

With regard to the acquisition and granting of real rights based on the public domain, real rights can be established on public domain goods insofar as those rights are not (apparently) incompatible with the destination of those goods.

Thermal energy storage



Open systems

For extracting (and whether or not infiltrating) groundwater, an environmental permit is required within the framework of Vlarem. The following Vlarem 1 sections apply for open systems:

Categories (Vlarem 1)

- Vlarem I section 53.6

Drilling groundwater wells and groundwater extraction used for cold heat pumps, including pumping back, with a pumped flow rate of:

- Less than 30,000 m³ / year: class 2 * At least 30,000 m³ / year: class 1

- If it is not a closed system (if not all the pumped-up groundwater is injected back):

Vlarem I section 53.8

Drilling of groundwater extraction wells and groundwater extraction, other than those referred to in sections 53.1 up to and including 53.7, with a pumped flow rate:

- 1 ° of less than 500 m³ / year: class 3
- 2 ° from 500 m³ / year to 30,000 m³ / year: class 2
- 3 ° of 30,000 m³ / year or more: class 1

- Vlarem I section 54.1

The artificial replenishment of groundwater in a direct manner (via drilled wells) class 1 or Vlarem I section 54.2 The artificial replenishment of groundwater in an indirect manner (via water basins or ponds) class 1.

Environmental conditions (Vlarem 2)

- Vlarem II chapter 5.53.6.2.1

Groundwater abstractions are prohibited in a type I or II protection zone of groundwater abstractions intended for public water supply. See <http://dov.vlaanderen.be> to be consulted.

- Vlarem II chapter 5.53.2

The extraction and infiltration filters must be in the same aquifer, since no different groundwater layers may be connected to each other. The same water-bearing layer means the same layer both physically (so no separating layer between) and chemically (think of fresh and salt water or iron-rich and low-iron water). For that reason, clay plugs must be provided at the level of the separating layers or cementation between the inserted pipes and the borehole wall. In addition, there must also be a monitoring well for each filter in the relevant part of the aquifers, so that a monitoring can be carried out.

- Vlarem II chapter 5.53.3

A flow measurement must be placed so that the volume pumped up can be totaled. The meters must meet the requirements as stated in this chapter. At least two flow meters must be placed, so that the net pumped up power can be determined, namely one on the extraction filter and one on the infiltration filter.

Charges

However, a number of pumping of groundwater is exempt from tax. These are pumps for which alternative solutions are not immediately available in the context of rational use of water (from: the Belgian Official Gazette (35239) of 30.12.1997 and the Ministry of the Flemish Community, 19/12/1997. Decree containing provisions to guide the 1998 budget - Chapter IV - Environment; Section 4. - Groundwater):

- water that is pumped up with a hand pump
- water used for domestic use
- water originating from source drainage, on condition that the water is returned to the same aquifer.

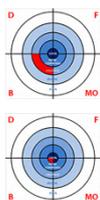
Art.21. In Article 28ter of the Decree of 24 January 1984 concerning measures concerning groundwater management, inserted by Decree of 20 December 1996, the following changes are made: 2 ° to § 2 a 5 °, 6 °, 7 ° 8 ° and 9 ° added as follows:

"8 ° groundwater abstraction used for cold-water pumps, on condition that the groundwater is fully reintroduced into the same aquifer after flowing through the cold-water pump;"

Note: For pumping up groundwater in the context of a typical geothermal doublet, there are as yet no legal provisions or exceptional measures.

Closed systems

The installation of closed systems with vertical or horizontal floor heat exchangers are also subject to the Vlarems legislation.



Categories (Vlarem 1)

For ground-water systems with soil heat exchangers, Vlarem I section 55.1 applies. Vertical drillings for the construction of monitoring wells and for purposes other than those referred to in sections 53.54 and 55.2:

- Up to a depth of 50 m from ground level: class 3
- From a depth of 50 m or more from ground level: class 2

This means that reporting up to a depth of 50 m is only mandatory on standard forms via the municipality (class 3). From 50 m permit requirement through the municipality (class 2) as with the water / water systems.

Vlarem I section 52

Any direct discharge into groundwater of hazardous substances referred to in Annex 2B to Title I of the Vlarem, as well as any indirect discharge of dangerous substances referred to in list 1 of the same Annex, is prohibited under the Decree of 24 January 1984 concerning measures for groundwater management and are implementing decisions. Groundwater from other than hazardous substances is considered as an artificial supplement to the groundwater.

The same section also states that if substances from Annex 2B of Vlarem I are required, a class 1 permit is required if an indirect discharge is possible. Because the risk of a leakage can never be completely excluded, this means that a class 1 permit is mandatory if hazardous substances as referred to in appendix 2B are used in the heat transfer medium of the bottom heat exchanger.



Environmental conditions (Vlarem 2)

Vlarem II chapter 5.55.2

The borehole is sealed above to prevent contamination of the groundwater layers. It is forbidden to connect different aquifers. In particular, clay plugs must be placed at the level of the separating layers or the space at the level of separating layers must be cemented.



In the case of a bore with a depth of more than 50 m in relation to the ground level, the operator must provide the following information to the Water department of the Environment, Nature, Land and Water Management department at the latest ninety days after drilling:

- the purpose of the drilling;
- the drilling report with a description of the nature of the bored layers;
- the geological description of the layers, if known;
- the technical description of the equipment of the borehole;
- the depth of the groundwater at rest after the well development in relation to the ground level; Annex 8, Part 3, page 50
- the measures that have been taken to prevent pollution of the environment in general and groundwater in particular;
- the location on a map on a scale of 1/250 with indication of references that can be observed on the site.

Vlarem II chapter 5.55.3

This lays down which actions are mandatory when decommissioning such a bore, namely covering and, if necessary, filling to prevent contamination.

Spatial Policy for 4DHC

The Netherlands



Researched by	Checked by	Reviewed by	First Draft	Final Draft
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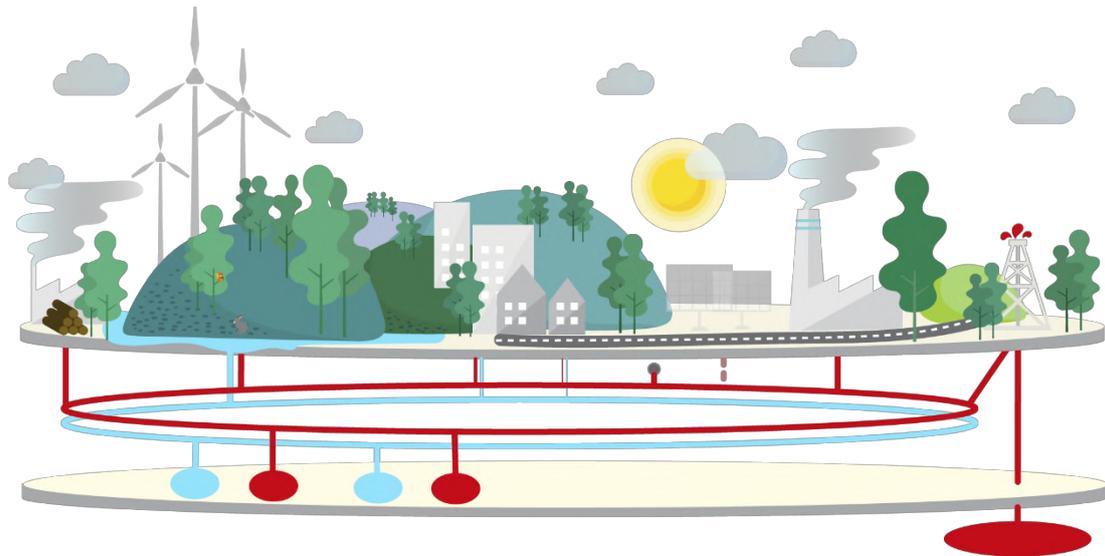
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About HeatNet NWE

This document has been developed as part of the HeatNet NWE project, which is part-funded through the Interreg NWE programme and aims to increase the uptake of 4DHC networks across North-West Europe. As part of this project, the partners developed the HeatNet Model, which will help the public sector to begin implementing 4DHC networks, and the Transition Roadmaps, which outline the partners' experience in developing six district heating pilots across North-West Europe. The HeatNet Guide to Financing gives a broad overview of the various sources available to finance district heating schemes.

For further information on these reports and on the HeatNet NWE project, please visit www.guidetodistrictheating.eu.

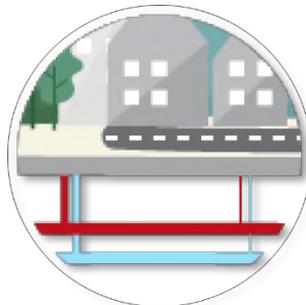


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Chapter 4: [Underground and information exchange](#)



Chapter 5: [Environment](#)



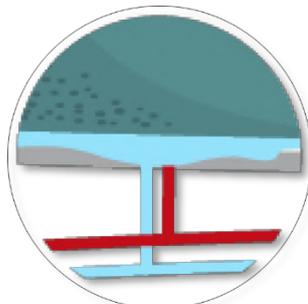
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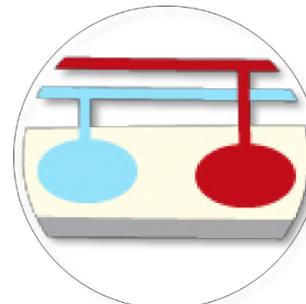
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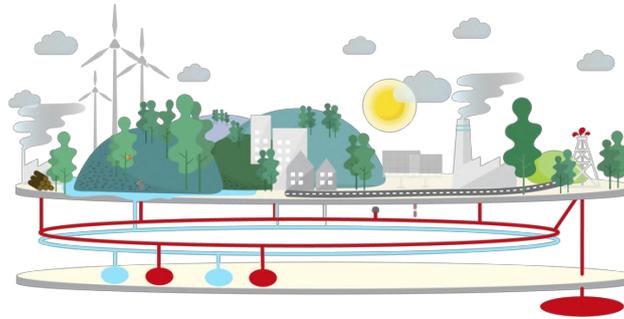
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Preface

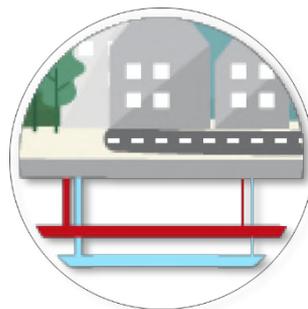
This report gives an overview of the spatial policies in The Netherlands one can encounter working on 4DHC-networks. For each of the pilot countries of HeatNet, this overview is made. Moreover, a summarizing and synthesizing overview report is produced.



The report starts with an overview of the spatial policies. If you want to know more about the legislation and regulations you can read the chapters that are divided in a chapter of the agreements and energy-acts on national level and the chapters below:



Chapter 3: Spatial planning



Chapter 4: Underground and information exchange



Chapter 5: Environment



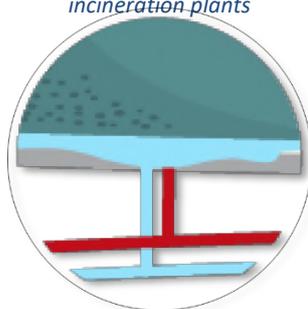
Chapter 6: Biomass and waste incineration plants



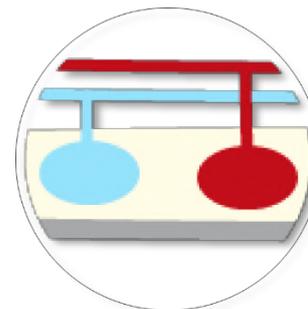
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Chapter 8: Geothermal energy

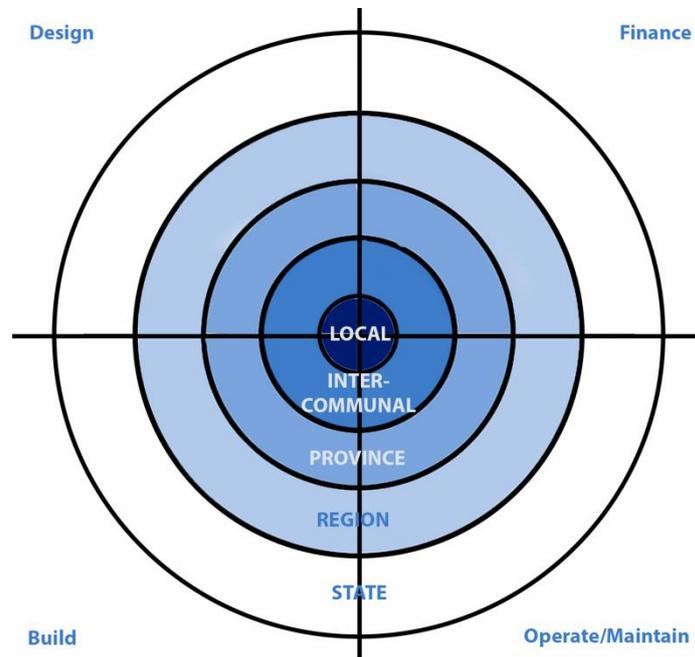


Chapter 9: Aquathermia

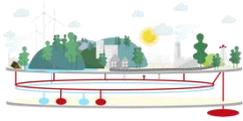


Chapter 10: Thermal energy storage

Legislation in the NWE countries can be found on different governmental levels: state, region, province, inter-communal and local. In the Netherlands the region in this context is not applicable. What in The Netherlands is usually called region, is in this report the intercommunal level.



To make it easier to navigate through all of these policies, in the report the bullseye marks in red the policies based on the phase your project is in: Design, Build, Finance or Operate/Maintain and the governmental level of the legislation from local in the heart of the bullseye to the state level on the outline.



Overview Spatial Policies in The Netherlands

The legal framework with regard to the heat transition must still largely be given shape in the Netherlands in 2019/2020. The spatial policies for 4DHC are mainly covered by the Construction Law. Construction Law is the set of legal rules in the Netherlands that aim to regulate and guarantee building processes. Construction law provisions are partly public-law, with regard to urban development issues, and private-law in terms of agreements between client, architect and contractor. Construction law covers issues such as:

- Contract law: rights and obligations of the building contractor. (See also Civil Code)
- Architectural law: rights and duties of the architect.
- Spatial Planning Act from which Zoning Plans occurs: These types of plans in the Netherlands describe what can happen to the space in a certain municipality (function and use). In addition, the zoning plan provides a spatial framework within which may be built.
- 2 Housing Act: Originally set up to make it impossible to occupy poor homes and to promote the construction of good homes.
- Building Regulation: regulations that, in addition to the technical regulations laid down in the Building Decree, include rules for the application of fire safety installations as a condition for a building permit. Since January 30, 2012, Uniform Administrative Conditions apply to the execution of works that are anchored in construction law.
- Building Decree: collection of building regulations that all structures in the Netherlands, such as homes, offices, shops, hospitals, etc., must meet as a minimum.

Legislation for the habitat regulates the installation and connection to the heat network, as well as its contribution to energy efficiency assessment of buildings and installations within the meaning of the Environmental Management Act. Building requirements and requirements based on the Environmental Management Act are important. Spatial planning law also has an influence. The Spatial Planning Act still forms the framework; a diversity of (sectoral) laws, decisions and regulations also play a role. That will soon be the Environment Act, which will make new instruments possible.

An important obstacle to making the heat supply of the built environment more sustainable was the obligation for the network manager to realize a gas connection for everyone who so requests. The Energy Transition Progress Act (VET Act), among other things, amended the Gas Act, so that the starting point is now that new buildings are not to be connected to the gas network and therefore is connected by an alternative heat supply.

For existing gas connections, the intention is to replace the gas connection obligation and the "right to a gas connection" derived from it by a "technically neutral heat right", which amounts to a right to a connection to the locally available heat supply.

Because of the context dependency and approach at neighbourhood and area level, the central government leaves the directing role to the municipality in the first place (in cooperation with the network operator). Depending on the scale of the chosen measures to make the heat demand more sustainable (for example a regional or local heat network with a collective heat source or individual heat pumps), plans can be coordinated regionally and agreements can be made via the Inter-administrative Program.

As part of the National Climate Agreement, which is adopted in the Netherlands in June 2019, municipalities, water authorities, provinces and network operators are currently implementing a regional energy strategy (RES). The RES is an instrument to make joint choices for the generation of sustainable electricity, the heat transition in the built environment and the required storage and energy infrastructure.

The heat transition plays a role in the spatial policy of municipalities and there are spatial instruments that can be used for this. As soon as the new Environment Act is implemented in 2021, the Environment Act system can be used for the benefit of heat networks, for example by means of a program for making the energy supply more sustainable in a certain area.

Traditionally, the choice between a gas and heat network falls under the authority of the municipality. For example, the municipal council can draw up a heat plan for the construction of a heat network for certain areas. This is a decision that is taken for a period of ten years and which includes the number of connections planned for that period. The heat plan also includes the degree of energy efficiency and protection of the environment when connected. This is based on the energy efficiency of the distribution network and the generation efficiency of the heat transported over the network.

When a heat plan has been established for a specific area, this has two legal consequences. Firstly, there is a connection obligation for new construction to the heat network in the area concerned if the number of connections to that distribution network planned in the heat plan has not yet been reached at the time of submitting the application for a building permit and the termination distance does not exceed 40 meters or exceeds 40 meters and the connection costs do not exceed a connection distance of 40 meters. An exception to this obligation can be made on the basis of the principle of equivalence from the Building Decree. An alternative heat supply must then have at least the same degree of energy efficiency and environmental protection as is achieved with the degree of energy efficiency and environmental protection included in the heat plan for that connection.

In addition to creating a connection obligation to the heat network, the adoption of a heat plan has the consequence that pursuant to the Gas Regional Network Operators Division (Gas RNB) small-scale consumers in the area of the heat network are not entitled to a connection to the gas distribution network.

Because the option of the heat plan only relates to areas where a heat network is or will be located, and is aimed at new construction, this instrument offers only limited options. With the entry into force of the Environment Act, rules relating to the connection to energy distribution networks are included in the Environment Plan.

For the time being, government policy focuses on the integration of large-scale energy infrastructure, such as wind on land and sea, but also on collective heat networks. But at the same time, energy consumers are increasingly able to generate their own energy, for example by means of solar panels, or to meet their heat requirements by means of heat pumps or biofuels. A cooperative trend has emerged in which people unite with a neighbourhood or a street to come up with small-scale solutions to become energy-independent.

For the energy transition, the choice for a specific sustainability measure must be viewed in close connection with its spatial aspects. The chosen sustainability paths can be recorded and enforced via the spatial set of instruments. This has created an implicit connection between energy policy and environmental law, whereby environmental law can, in a certain way, become at the service of the energy transition.

A spatial policy that makes it possible to look for solutions at different levels of perspective can be of added value. In addition, it is important that the spatial assessment of interests of the municipality is not curtailed by generic provincial or national rules, but by leaving as much space as possible. After all, municipalities are the government par excellence that has an overview of underlying interests and conflicts that can serve as a starting point for measures and can also make spatial policy with an eye for environmental quality. Where regional solutions are possible, the province plays a meaningful role as a director of municipal cooperation and helps with knowledge sharing. The RES (regional energy strategy) in the context of the Climate and Energy Agreement is the vehicle. Here, local and regional opportunities and barriers are mapped out and developed into a strategy for making the energy supply more sustainable.

Such an approach also fits in better with the basic principle of spatial law "decentralized what is possible, centralized what should be" and in the future the principle of decentralization of the Environmental Law. The Environment Act stands for a better balance between using and protecting the physical living environment. "space for development, guarantees for quality" is the motto. The new law aims to provide fewer and clearer rules, a more holistic approach to the living environment, but also room for local customization and better coordinated and faster decision-making.



Figure 1-1: transition to the new environmental law

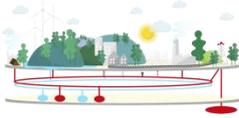
The Environment Act (Omgevingswet), which is projected to be enforced in 2021, offers new instruments. Replacing the wide array of regulations and laws related to spatial development, the new Environment Act bundles these in one law. With this, the Environment Act will replace a series of laws, including the General Environmental Law Provisions Act, Air Pollution Act, Spatial Planning Act, Water Act, Environmental Management Act, the Housing Act, et cetera. Moreover, it aims to provide more policy freedom for municipalities and provinces.

Pending the replacement of existing laws by the Environment Act, a rather large group of laws, rules, standards and decisions are in place which various types of heat networks must comply with.

Depending on the type of heat source / heat storage, there are specific rules for:

- Deep geothermal energy
- Aquathermia
- Riothermia
- Waste heat
- Thermal energy storage (TES) open system
- TES closed system
- Heat from waste incineration

In addition, there are all sorts of relevant laws and regulations with regard to the (built) environment, construction, privacy, energy. In addition, there are specific (local) rules from Water Boards, ProRail, Rijkswaterstaat, Central Government Real Estate Agency and municipalities.



Agreements and acts on energy at National Level

- **Government Agreement (Regeerakkoord 2017)**
In the latest Government agreement (2017) the ambition is to have only natural gas free new buildings in 4 years' time.
- **Climate Agreement (Klimaatakkoord juni 2019)**
The Climate Agreement is an agreement between many organizations and companies in the Netherlands to combat global warming. The most important gas that heat up the earth are carbon dioxide (CO₂), methane and laughing gas. The agreement contains six hundred measures to reduce these greenhouse gas.
- **Energy Agreement (2013 with year-program 2018)**
The Energy Agreement is an agreement between national government and 40 public and private organizations on measures to reach the 2020 EU climate goals. It has a separate pillar on heat: prioritization of cost-effective use of waste heat and development of regional heat plans.
[See document\(s\): SER](#)
- **Energy agenda (2016)**
See document(s): [Energieagenda: naar een CO₂-arme energievoorziening | Rapport | Rijksoverheid.nl](#)

Act Progress Energy Transition (Wet VET)

At the beginning of May 2018, it was definitively announced (via the Bulletin of Acts and Decrees 1) that new-build homes must be free of natural gas by 1 July 2018. This concerns all new-build homes that are submitted for an environmental permit on or after 1 July 2018.

Homes that were submitted for a building permit before July 1, 2018 or that already have an environmental permit, can still be supplied with natural gas. Network operators also want to encourage those projects to use natural gas if possible. In the context of the Climate Agreement, a grid operator has a voluntary disclosure scheme for natural gas for new construction projects, whereby developers have the option of breaking open contracts where natural gas is provided for, but a sustainable alternative is also a possibility if they still want to make these construction projects free of natural gas.

The Energy Transition Progress Act (VET Act) forms the basis for the ban on natural gas in new construction. The House of Representatives has abolished the gas connection obligation for small-scale users of new buildings by means of an amendment to the Progress Energy Transition bill (VET bill). The legislation does allow the Municipal Executive of B&W to make exceptions for compelling reasons of general interest and still provide a gas connection ("No, unless"). A ministerial regulation sets out what is meant by compelling reasons of general interest. The law applies to:

- small users (= less than 40 m³ / h gas consumption).
- all new construction, so also for a single home in built-up areas.

The amendment consists of two parts:

- a. new construction cannot be connected to the gas transmission network. An exception to this main rule can only be made if the building to be built is located in an area that has been designated by a college of mayor and aldermen as an area where connection to the gas transmission network is necessary for compelling reasons of general interest, including social costs and benefits, connections strictly necessary. Further rules are set for this by ministerial regulation;
- b. to provide the mayor and aldermen the opportunity - in addition - to designate areas where there will no longer be new connections, because there is or will be a heat network or other energy infrastructure that is sufficient for the supply of heat. A college of mayor and aldermen can only decide in these areas to connect

to the gas transport network if compelling reasons of general interest, including social costs and benefits, make connections strictly necessary. Further rules are set for this by ministerial regulation.

Subsection a ensures that new construction is delivered gas-free. In most cases, there are enough proven alternatives for new construction to provide the heat supply, which are affordable and offer comfort. This does not only apply to new-build homes, but also to all small-scale consumers, and therefore also to smaller businesses. Limiting to the residential function has the disadvantage that a network manager remains obliged to connect one or a few small businesses in a neighbourhood. This means that construction or expansion of the gas transmission network may still have to take place. This is not in line with the transition to natural gas-free and is cost-inefficient. Exceptions to the general principle that new construction will be delivered gas-free (part a) are possible if the municipality takes a well-founded decision to designate an area where the connection obligation does apply. It must then substantiate that there are compelling reasons in the general interest, including the social costs and benefits that make an exception necessary. This exception is necessary because it is not always possible to build natural gas-free everywhere. A heat network is not possible or available at all locations. The installation of a heat network for a few homes is often not financially feasible. The possibility of using a water-to-water heat pump (source of groundwater or soil) also depends on the location, as well as an air-to-water heat pump (including outside fan).

Subsection b gives municipalities the authority to designate areas where the applicable connection obligation for network operators will lapse, even if a gas transport network is present. Municipalities have insight into the local wishes and possibilities and can therefore best determine which energy supply fits best. They can also give local accountability for the choices made. The authority can be used to designate areas where a heat grid or other energy infrastructure is or will be located that can meet the expected heat demand. As a result of the designation, that area will gradually become gas-free, because no new connections will be made, and existing connections will no longer be replaced if necessary. Under the current law, this decision can only be taken on the proposal of network operators and if there is or will be a heat network in the designated area. What is new is that this authority is placed with the mayor and aldermen and expanded so that it can also be used to transfer to an energy infrastructure that can meet the expected heat demand in an area. Such a decision requires customization.

Heat Act

See document(s): [wetten.nl - Regeling - Warmtewet - BWBR0033729](https://www.wetten.nl/wetgeving/warmtewet/BWBR0033729) , Kamerstuk 34627, nr. C | [Overheid.nl > Officiële bekendmakingen, Instrumenten handreiking Warmtewet - Aedes.nl, <https://www.acm.nl/nl/onderwerpen/energie/energiebedrijven/warmte/warmtenetten-aanmelden>](https://overheid.nl/bekendmakingen/instrumenten/handreiking/warmtewet)

Regulation on heat networks is in the Heat Act. It is set up to protect the consumers with a connection of less than 100 kW heating capacity. Tariffs for heat are based on the principle that the costs for a household with district heat should not be higher than the costs of an individual condensing gas boiler. The ACM is the regulating body, which also sets the tariffs. For larger customers, the heat price is free. In the Heat Act there is regulation on maximum tariff for consumers, a permit needed for delivery of heat, financial dispensation when delivery of heat is disrupted and costs of metering.

You are a heat supplier if you manage one or more heat networks. The Heat Act makes no distinction between major city suppliers, housing associations, Owners' Associations (VvEs) or other suppliers.

In Article 43 Our Minister may, in agreement with Our Minister of Infrastructure and the Environment, impose requirements on a producer with regard to the useful use of residual heat. Further rules may be laid down by or pursuant to an order in council; these may also relate to the imposition of a levy for the discharge of residual heat or to a prohibition thereof.



Spatial Planning

A lot of disciplines are involved in the spatial planning of a heat network: municipalities, housing corporations, industry, inhabitants, and utilities like gas, electricity, glass fibre, heat, and etcetera. In a lot of places in The Netherlands the gas-network has to be improved or replaced as private homeowners can't be obliged to connect to other means of heating (except electricity). Heat storage needs more and more space. Moreover, glass fibre network are expanding, the electricity network

is increased, roads have to be made climate adaptive etc. As a result, this puts the underground and public space under pressure, none the least as each intervention has their own planning process. Spatial planning has a prominent role and a lot of laws and regulations can be found on this theme.

Spatial needs of the heat network in Heerlen

The peak load determines the diameter of the backbone. That diameter can be reduced, when within a cluster the heat is being exchanged between buildings. Address the weakest link in the system, like monuments. Do not dimension at 90 degrees if there is a HT-network. Monuments do not need high temperatures, but more power volume. 70 degrees is enough for those buildings.

Between the backbone and the clusters boiler vessels are placed. Boiler vessels heat up for the 2 hours individual homes need hot tap water, which means the overall temperature of the system can be lowered for the rest of the day.

Heerlen the heat network is laid down with pipes of $\varnothing 250$. To connect factories, clusters, offices, etc. so-called SKIDS are designed. These basements are prefabricated to minimize nuisance for the neighbourhood. It is placed within half a day. The spatial need for the SKIDS is 30x30m for maintenance, connecting pipes, parking space for a truck. A cluster basement needs approximately 100 m². There are 2 SKIDS needed for 1 basement. The size of a skid of 4,5*15m is determined by the means of transport. It can be transported without difficulties along the road, although it needs special transport. The installation to connect for instance an office is 4x6,5m and 3m high. It is a prefabricated unit, which easily can be moved and placed elsewhere, when not needed anymore. If possible, multiple buildings are connected in a smart way.

The SKID can be seen as a big sewage. In Heerlen it is treated like that in the process to acquire permits.

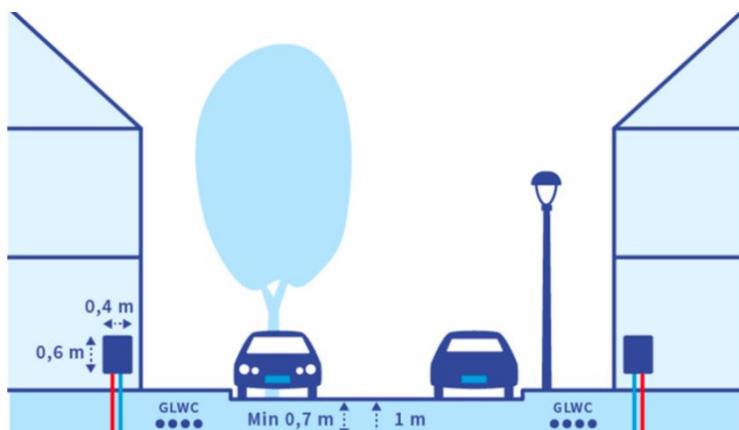


Figure 1-1: general scheme of heatnetwork in a street with gas, electricity, water, communication, sewage

The SKID can be placed in the roadside, on the edge of a plot, underground or partially deepened. It can be used to sculp the landscape. In Heerlen a SKID was placed on the edge of the plot of the swimming pool, under the slope of the sunbathing lawn.

There are/were specific spatial issues during the development and construction of the heat network. Crossing a drink water extraction area with a pipe of 250 meters length, crossing a Natura 2000 area, crossing a bridge of the province, crossing a railway, the use

of municipal land. Besides that, there was at one point a fault line in the underground, through which mud sprayed from the soil.

It depends on the specific province whether a heat network is allowed through a drink water extraction area. In the Province of Limburg, it is possible, but in South-Holland it is prohibited, even in the groundwater protection area.

Primary instruments planning and development



General Provisions of Environmental law (Wabo)

The [Wabo](#) was introduced on 1 October 2010 to simplify the procedures for permits. Various permits are bundled in one permit: the environmental permit.



Resolution Environmental Law (Besluit omgevingsrecht)

The provisions of the Wabo are further elaborated in the [Environmental Law Decree](#). Such as the permit requirement and the appointment of the competent authority. The requirements for a permit (free building) can be found in [Annex II](#) of the Environmental Law Decree.`



Ministerial regulation on Environmental Law (Regeling omgevingsrecht)

The Wabo stipulates through the [Ministerial Regulation on Environmental Law \(Mor\)](#), which documents (such as building plan) and data (such as strength calculation) are required for the permit application.

Supervisors on Environmental Law

- Inspectorate for the environment and transport
- Environmental departments

There are 29 environmental departments (regional implementation services) in the Netherlands. These environmental departments are commissioned by municipalities and provinces to provide permits, supervision and enforcement in the field of the environment. Some environmental departments perform extra tasks, such as construction and home supervision or advice on, for example, energy or nature. The environmental services have expertise available for all these activities.



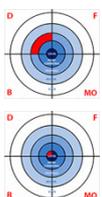
Spatial Planning Standards 2012

Regulation of the Minister of Infrastructure and the Environment, of 11 July 2012, no. IENM / BSK-2012/55325, laying down digital standards for spatial planning.



Spatial Planning Act (Wet op de Ruimtelijke Ordening)

A structural vision is drawn up by the municipality, the province and the government. In the structural vision, the government describes where building can take place, where it must remain green and who has decision-making authority. Furthermore, the government imposes few restrictions and places responsibility for spatial planning with the provinces and municipalities. Provinces indicate a strategic policy for the municipalities in their structural vision. A municipality can only deviate from this if there is good justification for it. Municipalities can also decide to (partially) revise a structural vision. The province uses its own structural vision to test the plans of the municipality against it, just as the government tests the plans of the province against their structural vision. The intention is that the structural visions are coordinated with each other and serve as a starting point for zoning plans, integration plans.



Spatial Development Strategy (Structuurvisie)

On the basis of the Spatial Planning Act, each municipality and province established 'long term' structural visions (structuurvisie) and zoning plans, articulating an integrative perspective, priorities and actions concerning the spatial development of its territory. A spatial development strategy can also relate to the subsurface and

therefore to the policy that is pursued with regard to the spatial distribution of geothermal energy systems. However, a spatial development strategy only binds the municipality itself, not citizens or businesses.



Zoning plan (Bestemmingsplan)

A zoning plan has three parts:

- An explanation. This defines the characteristics of the outside area, a village center or a city or district. In addition, the policy frameworks of the government, province or municipality that are relevant to the plan area are included in the explanation. Any relevant (environmental and sustainable) aspects and the developments for the plan area are also mapped, like external safety (pressure, noise). The explanation is mainly to clarify the intention of the plan.
- An imagination or plan map. This is a map with cadastral background on which the various (sub) destinations that apply to the planning area are visually displayed.
- The rules or regulations. The rules regulate the use that is possible for the individual destinations. In addition, it is recorded whether construction is allowed within the destination and under what conditions.

Both the imagination and the rules are part of the legal framework of the zoning plan. The explanation is more of a supportive nature.

A zoning plan is legally binding citizens and businesses. It is the only spatial plan that contains directly effective provisions for citizens and businesses. Zoning plans can also relate to the subsoil, although not much use is yet made of it.

The zoning plan contains a spatial planning map on which authorized allocations are indicated. In addition, the plan contains rules that must be followed when building and using land and buildings. The construction of a geothermal energy system does not fall within the "building" activity, because a geothermal energy system is not a building. The construction of a geothermal energy system does fall within the term "use of land". Rules can therefore be set in the zoning plan for the construction of geothermal energy systems.

The spatial planning map and the rules are a basis for building an environmental permit. If a requested environmental permit building does not comply with the zoning plan, that environmental permit must in principle be refused. However, it is possible to give permission for acting contrary to a zoning plan via the same environmental permit. If that is permissible with regard to good spatial planning, the building permit can nevertheless be granted.

It is possible that a permit requirement has been introduced in the zoning plan for the construction of geothermal energy systems: the environmental permit for construction activities based on art. 2.1 paragraph 1 under b Wabo (previously the construction permit). If the zoning plan contains such a permit requirement and an OBM or environmental permit is requested for a geothermal energy system, permission must also be requested for the construction activity in the same application. After all, it is an inseparable part of the project (art. 2.7 Wabo).

For zoning plans that were brought into procedure after 1 January 2010 (if draft zoning plans are made available for inspection), these must be made available digitally.

Backbone and SKIDS are not planned in the zoning plan. They are treated like the sewage-system.

Opportunity map underground



Municipalities have the option of designating interference areas through the so-called "Opportunity map underground". In doing so, they map the areas with the greatest opportunities for thermal energy and combinations with other functions, and thereby weigh up to what extent further subsidence of the subsurface is required to prevent negative interference. Moreover, with the arrival of the Environment Act in 2021,

municipalities will soon have the opportunity to make an even broader assessment. Through the municipal environmental visions and plans, the implementation of which is currently being prepared by several municipalities, the subsurface is included at an early stage in the preparation of spatial plans.



Integration plan

In the Netherlands, an integration plan is a zoning plan of the province or state in the Spatial Planning Act (*Wro*), with which the use of a certain area can be legally appointed. This possibility has existed since the entry into force of the *Wro* on 1 July 2008.

With the help of an integration plan, a zoning plan (by the state or province) or provincial integration plan (by the state) can be overruled. This is regulated in articles 3.1 to 3.33 of the *Wro*. It is therefore a legal means by which the interests of these higher governments can nevertheless be enforced when a policy of a lower government crosses these interests. Policy from integration plans must be implemented in integration plans or zoning plans of local authorities, which as a result for this part of their integration plan or zoning plan are excluded from making their own policy.

An integration plan can only be established if there is a 'provincial interest' (with the province) or 'state interest' (with the state). What this means exactly is not defined in the *Wro*, but is determined by the relevant province or the government itself. If, within the framework of a plan, a conflict arises between a lower and higher government about the legal status of these interests, this can be fought out with the Council of State.

Examples of possible projects of national importance are the construction of a defence site, the construction of a nuclear power plant or the construction of a large infrastructure project, such as the Betuwe Route in the past.

Another possibility to put the municipal zoning plan out of operation is the use of a designation, which makes the municipal zoning plan inoperative at a certain conflicting point. This can be done proactively (in advance by forcing a draft zoning plan), active or reactive (afterwards). The State can also, by means of a designation, force the province to issue a designation to a municipality.



Crisis and Recovery Act

The essence of this law is that new and / or adapted procedures are aimed specifically at employment and sustainability. The Crisis and Recovery Act contains two categories of measures:



- Measures for defined lists of projects and powers
These measures have been worked out in the *Cra* and only apply to the projects designated under the *Cra*.
- Amendments to special laws
These changes are worked out in the special laws and apply to all projects to which the special laws apply.

The Crisis and Recovery Act (*Cra*) gives governments the unique opportunity to experiment with the coming Environment Act. Much that will soon be possible with the Environment Act, is already possible with the *Cra*. At the start of 2017, around 230 municipalities worked with the *Cra*. Projects can be registered for the *Cra* twice a year.

The *Cra* was created in 2010 to combat the crisis. The law ensures faster implementation of spatial plans and encourages innovative and sustainable projects. This includes the construction of roads and business parks and the construction of houses and wind farms. An important measure from the *Cra* is the reduction and acceleration of appeal procedures.

The *Cra* fits in well with the plans to simplify environmental law. Experimenting with the Environment Act gradually became an important motive for the *Cra* projects.

An example is the "zoning plan with broadened scope" from the *Cra*. This can cover many more topics than a zoning plan under regular legislation. Examples are safety, health, the environment, landscape or urban values,

the appearance of buildings, sustainability and nature protection. This is comparable to the integral nature of the environmental plan from the Environmental Act. The zoning plan with a broadened scope therefore already gives municipalities the opportunity to work with the system of the environmental plan.

The duration of the *Cra* has since been extended until the entry into force of the Environment Act. Ultimately, the *Cra* will be absorbed by the Environment Act.

Below is an overview of the laws that have been amended with the help of the *Cra*:

- Article 3.1 Awb
- Article 3.2 Electricity Act 1998
- Article 3.3 Gas Act
- Article 3.4 City and Environment Approach Interim Act
- Article 3.5 Implementation Act on the General Provisions of Environmental Law (31 953)
- Article 3.6 of the Spatial Planning Act
- Article 3.7 Mining Act
- Article 3.8 Nature Conservation Act 1998
- Article 3.9 Expropriation Act
- Article 3.9a Reconstruction Concentration Areas Act
- Article 3.10 Emergency Road Expansion
- Article 3.11 Telecommunications Act
- Article 3.12 Route Act
- Article 3.13 Temporary law on the purchase of immovable property
- Article 3.14 Water Act
- Article 3.15 of the General Provisions on Environmental Law
- Article 3.16 of the Rijkswaterstaat Works Management Act
- Article 3.16a Accessibility and Mobility Act
- Article 3.17 Soil Protection Act
- Article 3.18 Noise Pollution Act
- Article 3.19 Aviation Act
- Article 3.20 Act of 18 December 2008, amending the Aviation Act
- Article 3.21 Environmental Management Act
- Article 3.22 Economic Offenses Act
- Article 3.23 Flood Protection Act
- Article 3.24 of the Spatial Planning Act
- Article 3.24a Spatial Planning Act (amendment applies after the entry into force of the Wabo)
- Article 3.25 of the Urban Renewal Act
- Article 3.26 Municipalities Preferential Right Act

Additional requirements with new area development

With new area development, a municipality can set additional requirements for the energy performance of areas or set certain requirements for land exploitation. When a municipality is actively involved in project development, it can also issue a tender or concession grant for the realization of a heat network. If the municipality is the landowner, it can also make agreements under private law with a party that homes are connected to a heat network. However, this cannot be enforced.

Limited possibilities for existing construction

For the existing building, the municipality currently has no options to legally promote connection to a heat network. There are, however, plans that a municipality will be given the authority to indicate which district will use natural gas at what time and which heat source is the most logical replacement for each district. It is not yet known how this will be regulated by law.

“We give municipalities the responsibility and the necessary powers to decide on the local energy supply at local level, in cooperation with the network operator. Municipalities must take the lead in the local transition of the heat supply. They can best estimate the local circumstances and effects for the timing and direction of the transition [...] the municipality [indicate] how, at what pace and with what instruments sustainability is shaped.” - (Ministry of Economic Affairs, 2016)

“Part of the planned approach is that by the end of 2021 every municipality would have developed a plan for all districts and areas within its borders where an alternative heat supply must be realized when. This plan must then land in the environmental vision and the environmental plan. For the neighborhoods that start before 2030, it is indicated which alternative energy carrier is chosen, which energy infrastructure is required for this and how the sustainability of the longer term is guaranteed.” - (Ministry of the Interior and Kingdom Relations, 2017)



Environment and Planning Act (Omgevingswet 2021)

See document(s): [Home | Omgevingswetportaal](#)

The Environment Act aims to balance the user needs and the protecting the physical living environment. "space for development, guarantees for quality" is the motto. The new law sets out to provide fewer and clearer rules, a coherent approach to the living environment, room for local customization and better and faster decision-making.

The Environment Regulation is the ministerial regulation to the Environment Act. The Environmental Regulation bundles the rules of circa 75 existing ministerial regulations.

The Environment Act, which is planned to be enforced in 2021, offers new instruments:

- **Environmental Vision**
The environmental vision is an integral vision with strategic main choices of policy for the built environment for the long term. This vision is set by the government, by the provinces and by municipalities for their household and territory. In concrete terms, this means that an environmental vision deals with the coherence between all spatial themes, including water, environment, nature, landscape, traffic and transport, infrastructure and cultural heritage.
- **Environmental Plan / Water Boards Regulation / Environmental Regulation**
The environmental plan is the elaboration of the environmental vision and contains the rules and instruments needed to put the environmental vision into practice.
- **Environmental Values**
A government can also set environmental values for its territory; these are specific target values (for example with regard to air quality or noise). These target values do not yet have to be achieved. If a government does not yet meet the value, it is obliged to draw up a program. Programs are sectoral and indicate which activities a government undertakes on a specific topic to achieve a goal (for example, an environmental value).
- **Programs**
- **Environmental Permit (current WABO and Flora-fauna exemptions, etc.)**
The environmental permit is an instrument with which a government can test whether activities have acceptable consequences for the physical living environment. Examples are the permit for expanding business parks or cutting down a forest. The Environment Act can be used to integrate energy policy into spatial policy. The possibilities that the objectives and instruments of this law offer. Because the entry into

force is foreseen, it is certainly possible - certainly in combination with the regional energy strategies - to see how the instruments for the energy transition can be deployed.



Spatial Economic Development Strategy

Thinking about a spatial strategy for data centres stems from the conversations about data centres during the events of the Spatial Economic Development Strategy (REOS) together with the Dutch Data Center Association (DDA), research on the future of the sector in the Amsterdam Metropolitan Area (MRA) and media reports on (alleged) bottlenecks in the energy infrastructure. The subject has been put on the REOS Administrative Consultation meeting of 14 June 2018, where it was agreed that a spatial strategy for data centres would be used to 'jointly and strategically deal with the growth of data centres and to seek connection with the energy transition including the use of residual heat'. See document(s): [Ruimtelijke Strategie Datacenters | Rapport | Rijksoverheid.nl](#)



Housing Act

When a corporation wants to make homes more sustainable, the tenants of this corporation will soon come around. There are different levels of organization: The tenant organization is the official body that represents the interests of all tenants of a corporation. They have an official voice in determining the strategy of a housing association, also in the field of sustainability. They are also party to concluding performance agreements between municipality and corporation.

At a lower level you have individual tenants. If a corporation wants to carry out work in a home, and if there is a higher rent for this, the individual tenants must give their consent to this work. Only when 70 percent of a complex agrees with the work and the new rent, can a corporation start performing this work.

The Housing Act is currently being evaluated.



Heritage Act

Heritage Act will become part of the Environment Act.



Portfolio strategy / strategic stock policy

When searching for suitable buildings to connect to a heat network, the portfolio strategy of housing associations is an important source of information. The strategic stock policy is one of the most important policy themes at corporations. The aim of that policy is to connect products and services as well as possible to the wishes of current and future customers. The stock policy must naturally fit within the organizational and financial frameworks of the own organization and within the external frameworks within which the corporations operate, such as government policy, municipal policy and developments in the housing market. With the strategic inventory policy, the corporation analyses the policy environment, it interprets market developments, neighbourhood visions and customer wishes, and it assesses corporation ownership on rental and operating risks and on the suitability of its own objectives. Based on this, decisions are made about desired customers, housing portfolio, return and usefulness and need for connection to a heat network.

Heat planning



Local Heat Plan

Heat networks are included in: sustainability vision, heat (transition) vision, heat plan or energy vision. The heat transition vision is obligatory for municipal councils in 2021. It is a more specific vision of the regional energy strategy.

The heat plan is a decision of the municipal council on the construction of a distribution network for heat in a certain area, in which for a maximum period of 10 years, based on the number of connections to that distribution network planned for that period, the degree of energy efficiency and protection of the environment, based on

the energy efficiency of that distribution network and the generation efficiency of the heat transported over that distribution network, is included when connected to that distribution network.

This may only be deviated from if it is demonstrated that the alternative heat supply achieves the same energy efficiency and environmental gain as connection to a heat network. The heat plan is valid for a maximum of ten years. The preparation of a heat plan is not mandatory. A province can also prepare a heat plan. The heat plan must specify the period for which the heat plan applies (up to ten years), for which area the heat plan applies, how many connections are required for a healthy operation of the existing heat network and the degree of energy efficiency achieved by connecting to the heat network.

This last point in particular is important because it can be used to test whether an alternative solution can be qualified as equivalent on the basis of the principle of equivalence. In that case, no connection obligation applies. In general it can be said that no connection obligation applies if an alternative offers at least the same degree of energy efficiency and protection of the environment as a connection to the heat network. If the municipality does not prepare a heat plan when constructing a new (part of a) heating network, or forgets to re-establish the existing heat plan in time, then no connection obligation applies. For new construction, in many cases a connection obligation applies if a heat network is available within 40 meters of the construction to be built. This obligation mainly applies to the healthy operation of the heat network.

This obligation to connect was previously included in municipal building regulations. It clearly stated in which cases you were required to connect to the heat network. However, since the introduction of the 2012 Building Decree, the connection obligation has been included. Since the 2012 Building Decree offers the possibility of deviating from rules on the basis of the principle of equivalence, this led to much discussion. The minister has solved this by amending the Building Decree on this point in 2013. (letter from the minister to the 2nd Chamber) Since then, the rollout of new (parts of) heat networks has only been subject to a connection obligation if this has been laid down by the municipality in a so-called heat plan.



Provincial Environmental Plan

An example is the LEKTA (Limburgse Energie en Klimaat Transitie Aanpak). The Province of Limburg made an energy and climate transition approach.



Regional energy strategy or -vision

See document(s): [Indeling regio's voor regionale energiestrategieën bekend | Nieuwsbericht | Klimaatakkoord, Nationaal Programma RES - Regionale energietransitie](#)

In the Inter-Governmental Program (February 2018), the governments agreed to work out a "multi-year programmatic national approach with country-wide Regional Energy Strategies (RES)". Decision-making on RES takes place via the environmental policy of municipalities, provinces, central government and the policy of the water boards.

The aim of the RES is to work with social partners to come to regionally supported choices for the generation of sustainable electricity, the heat transition in the built environment and the storage and energy infrastructure required for this. Despite this curtailment, industry (with residual heat for the built environment), agriculture and land use (solar meadows and wind turbines as new space users) and also mobility (new charging infrastructure for electric transport) cannot be seen in isolation from the task for the built environment and the sustainable environment. electricity generation. Where necessary, these mutual relationships are utilized in the RES.

Two regions have been formed in Limburg. The South Limburg region will independently develop a Regional Energy Strategy. The regions of North and Central Limburg have taken the decision to work together on one Regional Energy Strategy. With these RESs, Limburg makes explicit its joint ambition, strategy and objectives in

the 2 areas. For both RESEs, we assume that we have our own strengths and possibilities. In Appendix 2 you will find a further explanation of the intended product of the RES.

The Province embraces the RES process based on the conviction that this can accelerate the generation of sustainable energy in Limburg and widen responsibility and support for the energy and climate transition in Limburg. She wants to enter this process with the discussion partners on the basis of equality, with an eye for everyone's roles and responsibilities and on the basis of what binds us. From its role as a regional government, the Province opts for the following personal commitment in the process:

- the Province contributes to the creation of the Limburg RESsen, by participating in preparation and implementation of the Limburg RESsen and by making substantive contributions based on provincial policy;
- the Province guarantees the coherence between the development of RESs and the environmental visions;
- from a facilitating role, the Province is willing to support the municipalities in taking up their responsibilities in the RES;
- the Province will facilitate the alignment of Limburg interests with the State
- the Province plays a coordinating role towards network managers;
- the Province sees a role for itself as a process manager in establishing joint agreements and intended results;
- the Province provides the connection between the RES regions and securing coordination, where cross-regional issues are involved (for example, infrastructure, lobby coordination, etc.);
- ensuring the involvement of citizens in the RES process. The securing of these provincial roles and insertions will take place in the Starting Notes for the two Limburg RESs, which will be drawn up by the cooperating parties before the start of the RES process.



Transition Vision Heat

According to the Climate Agreement draft, municipalities are the directors of the heat transition for the built environment. Together with property owners, residents, network operators and local authorities, they must have a transition heat vision ready by the end of 2021. It contains proposals for sustainable natural gas-free heating and cooking. The Transition Vision Heat provides direction in the approach. It also contains a neighbourhood-by-neighbourhood step-by-step plan that provides guidance for all parties for planning.

Guideline

The government supports municipalities in their assessment process. A guideline will help to draw up the Heat Transition Vision and the implementation plans at the neighbourhood level. That is why the Heat Expertise Center (ECW) published the Guideline in October 2019. This is a tool for municipalities to determine their own transition vision. This consists of a technical-economic analysis based on the Vesta MAIS model of the Netherlands Environmental Assessment Agency (PBL). This gives the national costs and end-user costs of various (heat) options at the neighbourhood level for the whole of the Netherlands.

Neighbourhood implementation plan (WUP)

The Regional Energy Strategy (RES) must be ready six months after the signing of the Climate Agreement (this is expected to be 2020, but that is not yet certain). The Transition Vision Heat should be ready by the end of 2021 and the implementation plans will follow at the neighbourhood level. In practice, the paths can run side by side and together.

The implementation strategy and the Transition Vision Heat are determined together with the residents and building owners from the neighbourhood. The social costs, costs for residents / building owners and the local situation are taken into account.

Design standards (for DHC) and regulations



National Building Decree (Bouwbesluit)

See document(s): [Artikel 6.10 Aansluiting op het distributienet voor elektriciteit, gas, en warmte | BRIS Bouwbesluit Online](#)

Building code (Bouwbesluit 2012): Article 6.10 describes that a house will get a mandatory connection to a heat network when the network is present within 40m, when no equivalent alternative is found. This is only valid if the municipality has described this in the local heat plan.

Building code (Bouwbesluit 2012) Chapter 5 describes how the Energy performance of buildings and areas are calculated with Energy Performance Coefficient (EPC) and Energy performance standard for provisions at district level. Determination method (EMG) described in the norm [NEN 7125:2017](#).

Rules in the Building Decree

If a municipality chooses to install a heat network and establishes a heat plan for this, buildings to be built with one or more residential areas based on Article 6.10 paragraph 3 of the Building Decree must be connected. For the sake of completeness, it should be stated here that no connection obligation arises from the Housing Act and the Building Decree with regard to renovations or major renovations. Furthermore, it should also be stated here that a connection obligation only applies in a technical sense. There is therefore no obligation for the builder or (other) possible buyers to conclude a supply agreement. The obligation to connect in Article 6.10 paragraph 3 of the Building Decree applies if:

- the number of connections planned in the heat plan to that heat network has not yet been reached at the time of submitting the application for a building permit, and
- if the connection distance is no greater than 40 meters or, if it is greater than 40 meters, the connection costs do not exceed that of a connection of 40 meters.

The equivalent solution for a connection to a heat network must have at least the same level of energy efficiency and environmental protection as is achieved with the level of energy efficiency and environmental protection included in the heat plan for that connection. This degree of energy efficiency or protection of the environment depends on the way in which it is laid down in the heat plan. This is possible, for example, in terms of greenhouse gas emissions or intended Energy Performance Coefficient (EPC). The builder must demonstrate in his application for the Wabo license that this requirement has been met, which is difficult in practice.

Almost Energy Neutral Buildings (BENG)

The EMG 7125 will be replaced by the BENG.

NEN 7120

When granting permits for new construction (and renovation), the municipality must take the Building Decree into account, which sets various requirements for the energy performance of a building.

The Building Decree designates NEN 7120 (Energy Performance of Buildings - Determination Method) for calculating the EPC of new-build homes and non-residential buildings. NEN 7120 incorporates new technologies such as the micro-cogeneration and the air-to-heat pump. Geothermal energy systems can also be involved in the calculation of the EPC via the NEN 7120 method.

When issuing building permits, municipalities gain insight into the intended use of a geothermal energy system via the EPC calculation. This information can be used by municipalities in supervising the Building Decree, whereby the municipality can check whether the structure is provided with an adequate soil energy system in accordance with the principles in the EPC calculation. Municipalities can also use the information from the EPC

calculation to check whether the necessary notifications / permit application for the geothermal energy system (Blbi / Amb) have been made.

NTA8800 (2019)

The NTA 8800 calculation method has been available since 2018 for determining the energy performance of a building. NTA 8800 is a method that applies to new construction, existing construction, residential construction and non-residential construction. The method replaces a number of existing methods for new construction and existing construction, namely NEN 7120, Nader Voorschrift and ISSO 75.3. NTA 8800 follows European standards and replaces the current EPC and EI indicators with the energy requirement per square meter (kWh / m²).

The NTA does not contain requirements for the energy performance of buildings, but is a determination method that determines whether the requirements that are included in legislation and regulations are met.

The European Energy Performance of Buildings Directive (EPBD) results in the obligation that building applications for new buildings must comply with the NZEB requirements from 1 January 2020. Among other things, the method is necessary to comply with the European directive. Simplifications have been made on various points compared to European standards to better reflect the Dutch situation.



Building Regulation (*Bouwverordening*)

The municipal building regulations contain rules about urban design, building on polluted soil and aesthetics. The regulations in the building regulations may differ per municipality.



Enforcement Policy Plan for Building Regulations

See document(s): [Handhavingbeleidsplannen bouwregelgeving](#) | [Beleidsnota](#) | [Rijksoverheid.nl](#)

Municipalities enforce building regulations and record their policy in an enforcement policy plan. If these policies are not followed, municipalities can impose two penalties:

- Administrative fine (Section 5.4.1 of the Awb)
The fine system has:
(Category I) the low penalty of up to € 340, - and
(category II) the high fine, more than € 340.
With fines of category II, much more security has been built in for the citizen to be able to defend himself and the administrative body has to meet more obligations.
- Administrative punishment decision
The Public Prosecution Service Act has been in force since 2006. From 2010 the law also applies to municipalities, provinces and water boards. The law enables municipalities to impose an administrative punishment order on the offender in the event of certain violations of the APV.

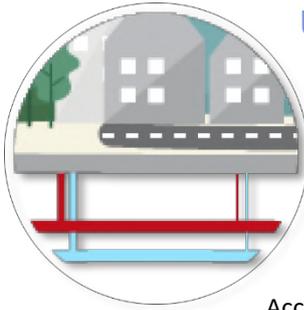
The instrument of the administrative punishment decision gives the possibility, just as with the administrative fine, to tackle nuisance in public spaces. The complex of facts is comparable to that of the administrative fine.

One of the differences with the administrative fine is that a criminal offense is committed against which an objection can be raised at the Public Prosecution Service (with the administrative fine an objection / appeal can be lodged with the administrative body itself).



General local regulations (APV)

A city council may determine how often a road may be opened. It would be wise to take along, when opening up streets, for example for new gas networks or other pipework, empty duct sleeves to limit nuisance in the future. When public roads have to be opened a permit for closing off public roads for traffic is needed. Events determine the closing of roads.



Underground and information exchange

Source holders of information are municipalities, provinces, Ministry of Economic Affairs, Rijkswaterstaat and the water boards.

Right to Property

Ownership of the underground

According to Section 5:20 of the Dutch Civil Code, the ownership of land includes, insofar the law does not state otherwise: "the topsoil and the earth layers underneath it".

Article 5:21 of the Dutch Civil Code regulates the restriction of the use of (land) ownership. According to the aforementioned article, the space above the surface of the plot does not belong to the landowner. The landowner has exclusive use of the space above the surface instead of a right of ownership. In principle, the landowner may not be disturbed by third parties in the enjoyment of the space above the ground, but this enjoyment is limited. The same applies in principle to the underground. Although Article 5:20 of the Dutch Civil Code states that the ownership of the soil includes the earth layers below it (including groundwater that has come to the surface through a well or pump), Article 5:21 of the Dutch Civil Code limits this by stating that this only concerns those earth layers in which the owner has an interest. Third parties may use the space underground if the landowner has no interest in opposing such use. How high above or how deep below the ground a third party may use the space in question and thus the ownership of the landowner is actually limited, is not further clarified. There is no such thing as a general depth (or: height) criterion. So what the 'limited' distances are in concrete terms will depend on the factual circumstances, for example on the nature of the land: agricultural land or building land, or on the nature of the owner's interest in keeping out third parties to a certain height or depth.



Tolerance procedure under the Private Law Barriers Act (Gedoogplichtprocedure ingevolge de Belemmeringenwet Privaatrecht)

The Private Law Barriers Act offers entrepreneurs of public works (pipelines / cables / overhead high-voltage connections / quays and associated works), subject to certain conditions, a public-law instrument that guarantees the construction and / or maintenance of these works in the event of amicable agreement on shared use. of necessary immovable property cannot be obtained. In this context, the Minister of Transport, Public Works and Water Management is empowered to impose an obligation of tolerance on rightholders with regard to immovable property for which the right of shared use is required. The process that ultimately leads to the imposition of the tolerance decision is called the tolerance procedure. A tolerance obligation under the Private Law (Belemmeringenwet) can be imposed if the interests of the entitled person (s) do not reasonably claim / demand expropriation and if the use of the immovable property / objects is no more hindered than reasonably for the construction and maintenance of the work is needed. The work to be undertaken must have a function that is of general use and amicable agreement with regard to shared use must not have been reached, as already stated.

See: <http://publicaties.minienm.nl/documenten/leidraden-belemmeringenwet-privaatrecht-maart-2008>



Guarantees of origin

Based on the Guarantees of Origin Regulation for energy from renewable energy sources and HR-CHP electricity, certification of heat is possible via CertiQ (guarantee of origin). Guarantees of Origin are intended to prove that the heat supplied to the customer is actually green. In contrast to electricity and gas, heat GOs are not freely tradable. This means that if a party (for example, a water board that makes surface water available) is not itself connected to the network, it cannot use the GoOs to green other heat. Guarantees of Origin are not (yet) available for cold.

Data and information exchange



Spatial Development Strategy underground (*structuurvisie voor de ondergrond*)

After all, the substrate is becoming busier. Particularly in more densely populated urban areas, the importance of using the subsurface is increasing due to the economic and spatial advantages. In addition to the "traditional" network for the provision of services such as electricity, gas, telephony and television, many new cables have been added in recent years, such as fiber optic cables for fast internet connections and digital television. In addition, the Netherlands currently has around 110 kilometers of tunnels for rail, tram and road transport. Deeper layers with groundwater-containing packages also play an important role in the development of soil energy systems.

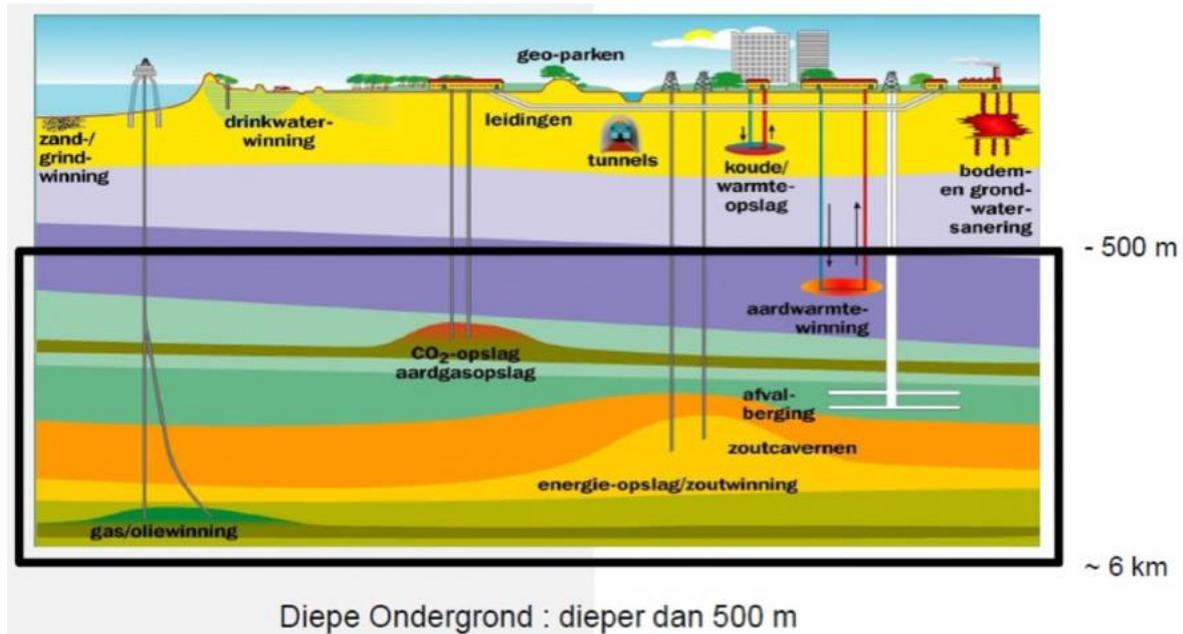
When utilizing the subsurface, until recently the principle of "first come, first served" has been applied. Due to the increasingly limited space, this principle regularly leads to undesirable situations. In order to be able to make optimum use of what the subsurface has to offer and to protect important functions, it is important to integrally approach and coordinate underground functions. For example, it may be desirable to lay cables and pipes together as much as possible and to coordinate maintenance work.

In practice, it is found that there is a need to claim the subsurface from all sectors that deal with underground use of space (soil protection, groundwater management, greenery, sustainability and energy), but that those claims are rarely translated into a destination, construction or prohibition of use or other rules in a zoning plan. Unfamiliarity with the possibilities offered by the zoning plan, lack of experience and a predominantly sectoral approach may be important reasons for this. With regard to the subsurface, however, the zoning plan can be a useful and logical tool in cases where an integrated weighing of interests of spatially relevant matters is desired and the use of space must be controlled.

Moreover, zoning plans are generally legally binding, while visions and master plans, for example, do not have this characteristic.

The usefulness of the zoning plan with regard to the subsoil has been demonstrated, for example, by a pilot from the municipality of Maastricht. In this project, an inventory was first made at the administrative level of expected spatial claims below ground level. Subsequently, it was examined to what extent these different claims would compete with each other or would reinforce each other and how claims from different layers were in proportion to each other. Claims with spatial relevance that were not regulated by other regulations could be included in the zoning plan.

With regard to the utilization of the capacity of soil energy and residual heat, a number of spatial claims can therefore be elaborated in the zoning plan in the context of sustainability. For example, it can be determined in the first place that the zoning plan must not form an unnecessary obstacle to the construction of soil energy systems and planned heat networks and that these must be facilitated as effectively as possible. This can be achieved by means of specific destinations or the inclusion in the purpose description. Furthermore, the description of objectives may include the requirement that when building open spaces, consideration must first be given to the use of sustainable energy. With regard to the protection and laying of cables and pipes together, the zoning plan can also include double destinations (for example, "pipeline" or "pipeline strip"). In this way, the use of the soil for heat networks is maximally facilitated and long, expensive licensing procedures are prevented.



Gastcollege BOON STRONG.PDF, via Geert Roovers

Known problems with the underground are:

- There are unforeseen cables
- There is no space to put new pipes and cables in:
 - It's not possible under green areas
 - The sidewalk is full
- Unforeseen permit required
- Application is delayed

The bulk of our energy so far is provided by natural gas and oil. Due to climate changes, we will increasingly replace these so-called fossil energy sources with energy sources with less CO₂ emissions, such as geothermal energy (heat from the deep subsurface) and soil energy. Moreover, there is now debate about the storage of CO₂ in the subsurface.

The drinking water supply and mining activities - such as the extraction of natural gas, oil, salt and geothermal energy and the storage of CO₂ and other substances in the subsurface - are important for the whole of the Netherlands. This structural vision is about the strategy for safeguarding these "national interests":

Therefore much attention is needed to safety and the timely involvement of the environment in new activities in the subsurface.

See document(s): [STRONG \(Structural Vision of the underground\)](#), [Environmental impact study STRONG](#)



WIBON

The Information Exchange Underground Networks Act (WION), also known as the earthworks scheme, is a Dutch law that entered into force on 1 July 2008. Since October 1, 2008, it is mandatory to submit an excavation report to the Land Registry Office for every "mechanical soil stirring". From 31-03-2018 the [WIBON: Information Exchange Above and Underground Networks + Networks](#).

The law obliges diggers to report any "mechanical grounding", such as digging, digging in saints, dredging and laying pipes. Cable and pipeline managers must have all their (underground) cables and pipelines digitally

available within specified accuracy and report this to the KLIC service. The exchange of that digital information proceeds in accordance with the mandatory Information Model Cables and Pipelines (IMKL).

Evaluation and tightening of the law will take place from 2015, also to implement the European INSPIRE obligations through the KLIC system, whereby location data must be made available continuously and publicly.

If you carry out mechanical excavation work, you are required to request information about the location of any underground cables and pipes at the excavation location. This request is called a Klic Report: [Klic Melding](#).

<https://www.klicvoorgraven.nl/klic-melding>. https://www.klicvoorgraven.nl/klic_documentatie

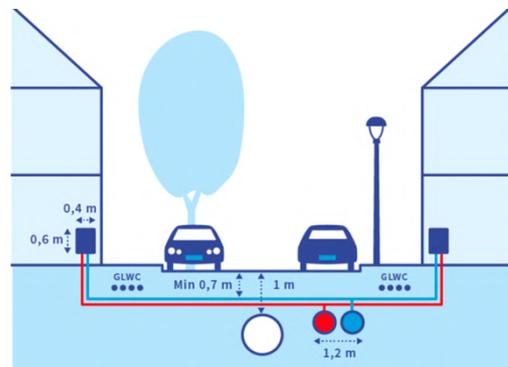


Act information exchange overhead and underground networks

Basic Registration Subsoil (<https://bro.pleio.nl/>)

Gathered all information about existing and new pipes to this information in the law of BRO. To share the information with everyone who needs to use the underground.

- Unfortunately there is a lot of delay and it is never complete;
- Many old pipes still exist;
- Secret pipes;
- Pipes not registered;
- Measurements can be made using radar or test drills / slots up to 2 m. But this is not always reliable, especially in urban areas;
- It does not cover cables.



Lead-up services regulations: regulation for cables and piping

Some cities have preferred profiles for lead-up services or even have lead-up tunnels, in which cables and pipes are combined.

Groundworks

History and quality of the soil



Resolution Soil Quality

Soil investigation is obliged. The plan must be reviewed by the competent authority. If there are unacceptable risks, the soil has to be biowashed or removed.



Archeological (desk)research

An expectation value is displayed in the zoning plan: <http://www.ruimtelijkeplannen.nl/web-roo/roo/bestemmingsplannen>



Archaeological care of monuments in the Monuments and Historic Buildings Act (chapter V.1)

Monuments have specific needs for temperature, humidity. There is a widespread misunderstanding about the temperatures needed to heat those not well insulated monuments. A monument doesn't need high temperatures (>90°C) of a heatnet, but needs a higher volume on a lower temperature (70°C).



Detection of conventional explosives

Archeology and the detection of conventional explosives (OCE research) appear to have a lot in common in the way we work. It can therefore be efficient to perform the required investigations at the same time. Coordination between OCE and archeology is also important for the safe conduct of archaeological investigations and to prevent accidents.

The Archeology and Explosive Investigation Guide provides an overview of the most important aspects and explains how both investigations can be coordinated and conducted simultaneously. The Guide also contains a checklist for combined research:

- during the preliminary investigation / desk investigation;
- during the preparation of the fieldwork.



Road Traffic Law

In Heerlen the basements with pumps are transported in one piece. This means that permits are needed for temporarily closing off roads. In the APV (general local regulations) the local rules for closing off are stipulated. The transport is not exceptional as there is chosen to work with SKIDS. These prefabricated basements have the size of a sea container.



Road Haulage Act

Permit RDW exceptional transport.

Decree administrative provisions on road traffic

Exemption for license-free construction traffic

See document(s): [Ontheffingsaanvraag voor \(land\)bouwverkeer eenvoudiger maken | RDW](#)

Specific regulations and permits of (semi)public companies

There are (semi)public companies with specific regulations for building above/under/along their premises and/or structures.



- *State Water Management Works Act (Wet beheer rijkswaterstaatswerken)*
The national government manages highways, viaducts, tunnels, bridges and dikes. These 'water management works' must be properly managed and maintained so that they can be used safely and efficiently. The National Water Management Works Act (Wbr) gives Rijkswaterstaat the opportunity to ensure this. In the application of this Act, the proper functioning of the water management work is paramount. The interests of others, such as road users, are weighed against this.

According to the law, it is prohibited to do anything with a water management work other than for which it is intended without the permission of the Minister of Infrastructure and Water Management. For example, one should not just lay a cable in the ground next to a national road, or place a billboard in the roadside. A permit based on the Wbr must also be requested for the construction of a roadhouse or petrol station along the national road.

In addition to the permit, you also need permission from the Central Government Real Estate Agency (RVB) to use state land. It is important to know that the RVB can impose further conditions on such a private law scheme, such as paying a (market-based) user fee.

A Wbr permit can be granted if certain requirements are met. In any case, no damage may be caused to the water management work. A license for a billboard on the roadside will usually be refused, because such a sign could distract the motorist. A company that wants to install a water pipe or a telecommunication cable in the same roadside is likely to get permission. This does not pose any danger to traffic or damage to the road. Furthermore, permits are often requested (on national roads) for the construction of a bridge over the road, or a water discharge under the road. These permits are usually applied for by the municipality or the province.



- **Public Works Act for building near (above/under/along) highways (Wbr)**

For some activities on and around the national roads, a permit or exemption must be applied for. There are 2 types of permits and exemptions, based on the:

State Water Management Works Act (Wbr): for example for the construction of a roadhouse, the laying of cables next to a road or the placing of a billboard

Road Traffic Act (Wvw): an exemption to allow competitions or events to take place on the road



- **Permit building works near a provincial road/waterway**

See also regulations of the waterboards in the regulations for water in next chapters.

In the Provincial Environmental Regulations permits and exemptions for building near or in provincial (water)ways are to be found. To apply for the exemption all provinces have an exemption cables and pipelines form. Network operators who have received a general exemption can suffice with a timely notification via the Notification of cables and pipelines for (water)ways.

The conditions include:

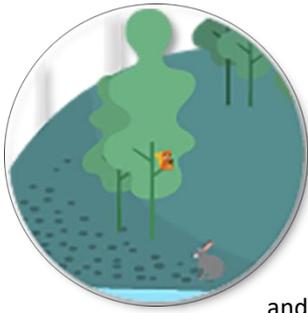
- the (water) route is managed by the province
- there is sufficient space in the shoulder of the road or on the bank of the waterway to lay the cable / pipe.



- **Regulation Environmental Regime for main railways**

Which works or activities are subject to a permit, exemption or notification is laid down in Article 19 in conjunction with Article 21 of the Railways Infrastructure Decree and in the Railways Area Regime Regulation. In principle, a permit or exemption from the Minister of Infrastructure and Water Management is required for every activity and for each (construction) work located within a certain area of the main railway. ProRail will decide on your request on behalf of the Minister. In some cases you may be eligible for an exemption from the permit requirement and a notification is sufficient. In all cases it does not matter whether you build on your own site or on the territory of ProRail.

See: <https://www.prorail.nl/leveranciers/praktische-informatie/vergunningen-aanvragen>. Prorail also made a [tutorial](#) for the permit.



Environment

Nature Conservation Act

From 1 January 2017, the provinces will determine for their area what is and what is not allowed in nature, among other things based on the ecological main structure (Natura 2000). They are responsible for permits and exemptions. The central government is then only responsible for specific applications for exemption and codes of conduct with regard to gas and electricity networks. For heat networks, the road through the province applies.



- Nature legislation, nature protection law determines the status of an (outer) area. In a Natura 2000 area, stricter European rules apply for the preservation of ecology.
- <http://www.clo.nl/indicatoren/nl1425-begrenzing-van-het-natuurnetwerk-en-natura-2000-gebieden>
- Main provincial ecological structure EHS is a supplement to the European directives.
- Specific types of protection with the Habitats Directive (such as bats or the narrow-mouthed whorl snail).



Environmental Management Act (Wet milieubeheer)

In many places in the Wabo, the further elaboration is delegated to an order in council (AMvB) or a ministerial regulation (Min. Reg.). The Decree on environmental law (Bor) and the Ministerial Regulation on environmental law (Mor) must in any case be used to implement this.

The Activities Decree on environmental management has been the official name for the Dutch Decree on General Rules for Establishments for Environmental Management since 1 January 2013. It is a general administrative measure (AMVB) in support of the Environmental Management Act (1 January 2008) and the Water Act.

The Decree sets general rules for companies that fall under the Environmental Management Act and previously required an environmental permit. The decision distinguishes three types of companies, depending on the environmental impact. Type A companies must comply with the Activities Decree but no longer have to report their activities. Type B companies must report their activities. Type C companies still have to apply for an environmental permit (for the environmental part). Many implementation details are included in the Environmental Management Activities Regulation.



Activity Decree

Article 2.1 Duty of care

Article 2.1 of the Environmental Management Activities Decree contains a general duty of care, aimed at preventing or limiting adverse effects on the environment as much as possible. If there is obvious energy waste at an establishment, the municipality or province may demand energy-saving measures based on this duty of care. If a soil energy system does a poor job and the energy savings are much smaller than expected, the competent authority may require the entrepreneur to make improvements to the installation or management of the system.

Article 2.15 Obligation of energy-saving measures

Medium-sized users and large-scale users are obliged to take all energy-saving measures that pay for themselves within five years (Article 2.15 of the Activities Decree).

For large users, the competent authority may demand an energy-saving investigation. A condition is that the competent authority can make it plausible that not all energy-saving measures have been taken by the entrepreneur. The aim of the research is to gain insight into the energy-saving measures that the entrepreneur

still has to take. Such a measure could consist of improving the functioning of a malfunctioning soil energy system. More information can be found at: <http://www.infomil.nl/onderwerpen/sustainable/energy/uniformguideline/>

Article 3.6 Enforcement options at establishments Environmental Management Act

See document(s): [wetten.nl - Regeling - Activiteitenbesluit milieubeheer - BWBR0022762](http://wetten.nl/Regeling-Activiteitenbesluitmilieubeheer-BWBR0022762)

When a soil energy system works poorly, and this system is located within an establishment within the meaning of the Environmental Management Act, municipalities and provinces can take enforcement action. The Environmental Management Activities Decree offers two options for this in a duty of care or an obligation of energy saving measures.



Chapter 7 Resolution environmental impact study (Besluit milieueffectrapportage)

See document(s): <https://www.infomil.nl/onderwerpen/integrale/mer/>

The environmental impact assessment is regulated in Chapter 7 of the Environmental Management Act (Wm) and in the Environmental Impact Assessment Decree 1994. In the Decree m.e.r. 1994 when an m.e.r. must be applied.

To make the construction of the heat transport pipeline possible, zoning plans must be adjusted. If the planned activities are within the sphere of influence of a Natura 2000 site and there is a legal or administrative plan (namely the zoning plan), a plan-m.e.r. obligation applies. In addition, the installation of the heat transport pipeline is subject to assessment, because there are two adjacent heat transport pipelines of 0.5 m each (this is the inner diameter, the outer diameter is approximately 0.8 m per pipeline). The threshold value for the assessment requirement applies to a pipe diameter of 1 meter or more.

You can choose not to wait for the MR assessment, but to prepare a PlanMER / DecisionMER immediately. The most extensive procedure (that of a decision-maker) is followed, with municipalities being the competent authority. This means that the municipalities must accept the EIA, organize the participation and ask the legal advisers for advice. In practice, these activities are coordinated by the Energy Projects Office (BEP) of the Ministry of Economic Affairs.

Regulations for water



National Water Plan

See document(s): [Nationaal Waterplan 2016-2021 | Beleidsnota | Rijksoverheid.nl](http://NationaalWaterplan2016-2021|Beleidsnota|Rijksoverheid.nl)

The 2nd National Water Plan (NWP2) describes the directives, principles and focus of national water policy in the 2016-2021 period, with a look ahead to 2050.



Water Act

The Water Act improves the coherence between water policy and spatial planning. In addition, the Water Act ensures that rules, permit systems and administrative burdens are reduced by combining the current permit systems from the separate water management laws: six permits from the existing 'water management laws' merge into one water permit. For citizens and businesses, this means that one application is sufficient, even if different authorities are involved. After all, there is only one competent authority for both the granting of permits and enforcement, and it is up to the authorities to make mutual agreements on how to deal with this. Compared to the situation before the Water Act, this has serious consequences for practice. Close cooperation is now expected from the various competent authorities. To actually anchor the agreements on this subject, service or cooperation agreements are concluded for this purpose in practice.

The Water Act entered into force on December 22, 2009. Eight laws have been merged into one, the Water Act. The Water Act regulates the management of surface water and groundwater, and also improves the coherence

between water policy and spatial planning. In addition, the Water Act makes an important contribution to government objectives such as the reduction of rules, permit systems and administrative burdens. Until the Environment Act comes into force - scheduled for 2021 - the Water Act will remain in force.



Drinking water extraction area, groundwater protection area and freshwater risk area

Provinces take the lead in identifying areas for drinking water extraction. In these areas are the wells where the water is pumped up. Nothing else can happen at these places than make drinking water. In this way we prevent the groundwater around the wells from becoming contaminated. Only activities for drinking water production may take place in a water extraction area, other activities may also take place in a groundwater protection area. Due to the vulnerability of the area, special rules apply, so that high-risk activities cannot take place here. The groundwater protection area is a larger area around the extraction areas. Rainwater that falls in this area sinks into the soil and flows through the soil to the extraction wells within a few years (maximum 25 years). If there is contamination in the ground, it flows with the rainwater to the groundwater sources.

There are also freshwater risk areas. In these areas it is forbidden to have aquifer thermal energy systems in the first aquifer, because of the risk of upconing salt water into the freshwater, from which also drinking water is made.



Weir legislation

On or near a water barrier there are restrictions for building. Note the term "outside the dikes", this means a zone with restrictions. Water Authority has policy rules for cables and pipelines in, on or along water defenses. A permit is needed at primary water defenses. A notification is needed route cables and pipes parallel or intersecting tertiary waterways.

The Water Board is the competent authority. Therefore they made the Layer Water Board. This layer is a map of the area that a Water Board manages. The map accurately indicates to the square meter which rules of the water board (the label) apply to which place.

<https://www.waterschaplimburg.nl/overons/regels-wetgeving-0/wetten-regels/legger/>

The Water Board of Limburg made a very useful permit checker for permits on groundwork: <https://www.waterschaplimburg.nl/overons/regels-wetgeving-0/vergunningchecker/>

Not all water boards are connected to the digital water check. Here you can check if your project has specific rules to follow. See document(s): [Welkom bij de digitale watertoets](#)



Provincial Environmental Ordinance

In the provincial environmental ordinance (PMV), on the basis of article 1.2 paragraph 2 Wm, rules are laid down to protect the quality of the groundwater with a view to water extraction in areas designated by that regulation. The provincial environmental regulations differ from each other, but all regulations do contain prohibitions with regard to drilling in environmental protection areas (water abstraction areas, groundwater protection areas and / or bore-free zones). The prohibition usually only applies to operations outside establishments. The reason for this prohibition is that drilling increases the risk of groundwater contamination, for example because of the piercing of separating layers. According to most PMVs, exemption from this prohibition can be granted.

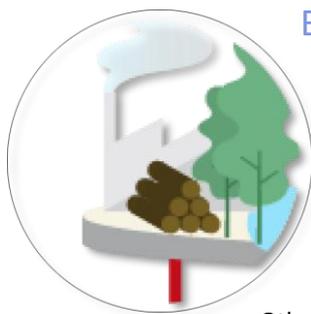
In some regulations, the prohibition to drill has a limited scope. For example, it is then permitted to drill to a certain depth or to a water-separating clay layer. In other cases it is allowed to drill if there certain general rules are met. The bore must then be reported.

The province can, whether or not through the provincial environmental regulation, also set rules for drilling within facilities in environmental protection areas. This can be done via:

- the environmental permit, if the facility falls within the competent authority of the province;

- City Council instruction rules for facilities that are subject to an environmental permit and for which the City Council is the competent authority;
- a prohibition on carrying out drilling from which the Provincial Executive can grant an exemption, for facilities that are not subject to an environmental permit but that fall within general rules (such as the Environmental Management Activities Decree). The model PMV stipulates that section 3.4 of the General Administrative Law Act does not apply to the granting of an exemption from the prohibition to perform actions within water abstraction areas, groundwater protection areas and bore-free zones. This means that the regular preparation procedure of section 4.1.2 Awb applies. According to the model PMV, a decision period of 4 months applies.

These provisions have been adopted in many PMVs. Some PMVs prescribe a different decision period, for example 13 weeks or 6 months. According to the model PMV, the inspector, City Council of the municipality where the drilling takes place and the groundwater extractor (the drinking water company) are given the opportunity to advise on the application for exemption. This provision has often been adopted by the provinces in the PMVs.



Biomass and waste incineration plants

Decree on environmental law (Bor)

In the BOR and the Activities Decree, biomass means:

- vegetable farming or forestry material
- vegetable waste from the food industry
- cork waste
- A-wood

Other types of wood are excluded because unwanted substances can be released during combustion. This applies to impregnated wood, laminated chipboard, laminate and the like. Much painted wood and demolition waste contains heavy metals or halogenated organic compounds.

The European Industrial emission requirements

An IPPC installation is an installation in which one or more of the activities take place as set out in Annex 1 to Directive 2010/75 / EU of the European Parliament and of the Council of 24 November 2010 on industrial emissions PbEU (334). IPPC stands for Integrated Pollution Prevention and Control.

Companies with an IPPC installation are subject to a permit. This is indicated in Article 2.1 paragraph 2 of the Environmental Law Decree (Bor). Province or municipality is the competent authority of an IPPC installation. Appendix I of the Bor provides a definitive answer to this.

The competent authority must base an environmental permit on the Best Available Technology. This follows from Article 2.14, paragraph 1c of the General Provisions on Environmental Law Act (Wabo). Article 2.14 paragraph 6 of the Wabo provides the basis for a further elaboration of this obligation in article 5.4 of the Bor. In addition to the permit, general rules may also apply, such as the Activities Decree.

Activities Decree

The installations that are stoked on biomass fall under the activities decree. Three main emission regimes are described in the Activities Decree.

- Regime of paragraph 3.2.1 - This is the starting point for all combustion plants <50 MWth and all fuels. There are exceptions.
- Regime of chapter 5 section 5.1. - This is larger than 50 MWth for the large combustion plants.
- Regime of chapter 5 section 5.2. - This is the regime for waste incineration plants with no lower capacity.

The definition of biomass shows that this can also be waste.

According to the Explanatory Memorandum to the Activities Decree, 80% heat efficiency means useful use. These conditions are contained in both the Environmental Law Decree (Annex I, section C category 28.10 under 32) and the Activities Decree (section 3.2.1, article 3.10n).

Permit

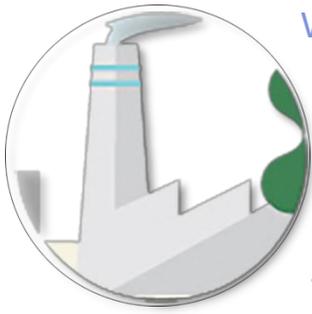
IPPC installations are the larger industrial companies that fall under the Industrial Emissions Directive (2010/75 / EU). This directive applies to all member states of the European Union.

The Industrial Emissions Directive requires companies to only commission the installation if they have an environmental permit. This integral permit must comply with the best available techniques (BAT). For IPPC installations, the best available techniques are in BAT conclusions. These BAT conclusions are set at European level.

For IPPC installations, a licensing authority must also take into account designated BAT documents. These are documents that are included in the annex to the Environmental Law Regulation (Mor). General rules from Dutch law may also apply.

Up to and including 2012, the burning of waste in a wood-fired installation always required a permit. Now, under certain conditions, the incineration of waste in a wood-fired installation is permitted without a permit. The conditions are:

- the waste is biomass that is also a waste material
- material recycling is not impeded
- the heat released is used effectively



Waste heat

Preventing energy waste heat is released during the incineration of waste. The heat generated is recovered to the extent that it is technically and economically feasible (Activities Decree, Article 5.18, paragraph 1).

In addition, requirements may be included in the permit in certain cases. In addition to emission requirements, the Activities Decree also sets requirements for:

- Inspections
- soil protection
- energy consumption
- discharges

There is no permit requirement for installations smaller than 15 MWth. Installations larger than 15 MWth do have a permit requirement. This limit is in category 1.4 of the Environmental Law Decree, Annex I, Part C.



Emissions

Section 5.1.2 of the Activities Decree regulates the emissions from a combustion plant for the incineration of waste. The incineration of waste materials that fall within the definition of biomass is excluded from the scope of section 5.1.2. The burning of only biomass is not considered as waste incineration. Depending on the thermal capacity, the burning of biomass only falls under section 5.1.1 or section 3.2.1 of the Activities Decree. Paragraph 5.1.2 distinguishes between waste incineration plants and waste co-incineration plants.

Waste co-incineration plants are combustion plants in which waste materials are fired with the main purpose of generating energy. It is therefore not strictly necessary for fossil fuels to be fired in a waste co-incineration plant. When the main objective is the destruction of waste, there is a waste incineration plant. The Activities Decree also sets requirements for cement kilns in which waste materials are incinerated.

The following are included for waste incineration plants:

- limit values
- measurement obligation and how to test these results
- regulations for the protection of soil and surface water
- requirements for preventing energy waste.



Waste

Chapter 10 of the activities decree is about waste heat and water outflow. Sewage regulation is found here. These regulations are also relevant for riothermia: the residual heat in sewage water. See chapter aquathermia.



Inspections

According to the Activities Decree, plant owners of combustion plants are obliged to have them inspected by a SCIOS-certified company.

Control of the inspections is carried out by the competent authority (municipality or environmental department). An employee (the supervisor) of the organizations visits a company for this purpose and checks whether the correct inspections have been carried out. He or she does this by asking the owner for an inspection report prepared by a SCIOS certified inspector. The owner is obliged to cooperate in this. Inspections carried out are registered by the inspection companies in the SCIOS deregistration system. The competent authority may inspect the deregistration system for the area under its control. This gives the competent authority insight into the companies at which certified inspections have been carried out. This can be compared to the own data of companies with combustion plants. Based on this, priorities can be determined, and decisions can be made at

which companies inspections should be carried out. Efficient and effective supervision can be carried out in this way, because the competent authority will mainly visit those companies that are not mentioned in the deregistration system.



Spatial Strategy Datacenters

The Spatial Economic Development Strategy (REOS) for Data centers promotes the use of the waste heat of data centers. Local and regional heat networks will play an increasing role in energy / heat demand in the energy transition and regional plans (RES). For a good spatial strategy, a good foundation of the heat network now and in the future (growth path 2030) is required. Data centers are already supplying heat to heat networks on a small scale. The potential of the entire sector is great. This requires that heat generated by green energy from data centers counts as sustainable in the BENG standard, but is not the case yet in 2020.



Deep geothermal energy systems

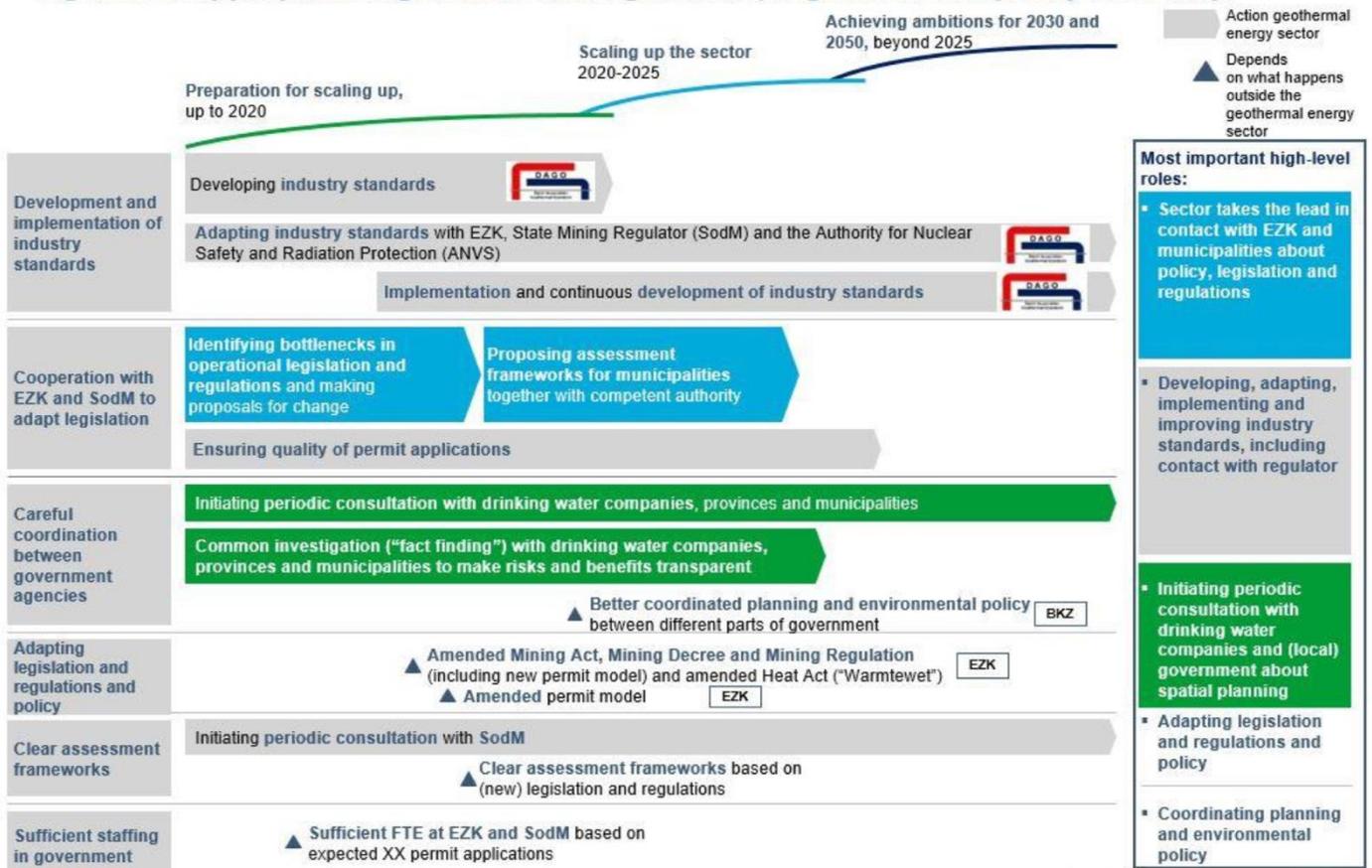
The deep geothermal energy market is still in its infancy in The Netherlands. The government and stakeholders in this geothermal energy want to scale up the sector and acknowledges the need for appropriate legislation and regulations.

They made a roadmap to achieve this ambition in the Masterplan Geothermal Energy in the Netherlands. See:

https://geothermie.nl/images/bestanden/Masterplan_Aardwarmte_in_Nederland_ENG.pdf



Figure 23: Appropriate legislation and regulations, regulation and policy road map



In the meanwhile, the legislation comes from the Mining Act and the Activity Decree. The Activity Decree has no specific rules on Geothermal energy systems. That means that at this moment we have to take a look at safety zones on the most "dangerous" parts of the plant, which is the by-catch of natural gas. This gas must be captured and used in a cogeneration. The safety zone for cogeneration is 50 meters to houses. Otherwise if it isn't used in cogeneration the safety zone is 200 meters. The space needed for a geothermal plant is approximately 1,5 hectares.



The Mining Act

The Mining Act more or less makes an exception to the foregoing. In the current Mining Act, a kind of depth criterion is mentioned. Article 2 Mining Act stipulates that the Act relates to the extraction of minerals at a depth of more than 100 meters below the surface and to geothermal heat insofar as the geothermal heat is present at

more than 500 meters below the surface of the earth's soil. Pursuant to this legislation, the State owns the minerals that are present at a depth of more than 100 meters (Articles 2, second paragraph and 3, first paragraph). The second paragraph of Article 3 of the Mining Act stipulates that by granting a license (concession) the State transfers ownership of the minerals or water, through extraction, to the license holder. The owner of the topsoil in his capacity is therefore not deemed to be the owner of the minerals or water that are in the soil at the aforementioned depth or that come to the surface through extraction.

In addition to legal restrictions on the use of property, there are also factual restrictions that limit the use of the land by an existing fact or an already existing circumstance, such as soil contamination, an abandoned drill (an iron pipe used for gas or oil drilling), bombs (unexploded shell) or underground oil tanks. There are also restrictions on the groundwater.

The Minister of Economic Affairs is the competent authority for granting a license for the exploration and production of geothermal heat.

Only one consent decision is needed for all important phases of a project, instead of an exploration license, a production license and a production plan.

The current regulatory system of mining legislation and regulations, which is particularly objective by nature and works well in the experienced oil and gas industry, does not adequately match the specific characteristics of the young geothermal sector. An independent method of regulation for geothermal energy should therefore be introduced in the existing Mining Act.

In order to guarantee safety, additional technical requirements are required for the exploration and production of geothermal energy. For example, more appropriate measures to prevent interference with groundwater zones or provisions on the use of materials with a view to preventing corrosion as much as possible and thus the uncontrolled leakage of liquids. In addition to the possibility to shape such requirements into standards, the minister also mentioned the legal regulation thereof as a realistic option. Some existing safety requirements, on the other hand, could be relaxed. For example, not all legal regulations that are intended for gas wells are also necessary for geothermal energy. But there has to be taken into account the external safety risk contour of a deep geothermal well of 1500m. This is because of the natural gas that comes with the water (what should we do with that?). Besides that, when cleaning the pumps, toxic material is used.

The minister also proposes measures to test the financial capacity of mining companies for the entire life cycle. After all, in the event of unforeseen technical problems or clearing up the extraction wells at the end of production, it is important for people, nature and the environment that operators are able to take the necessary measures. For this, too, the minister announces changes to the Mining Act. However, no concrete legislative proposals have yet been submitted for this.

With regard to geothermal energy, there is little information available in parts of the Netherlands about the deeper subsurface. Moreover, knowledge is fragmented because geothermal energy is still a young sector. According to Minister Wiebes, the government should be in charge of regional seismic surveys and the detection of geothermal energy, which market parties can then take advantage of. The Minister also considers innovating the current geothermal processes to be of great importance in reducing the costs of the projects and is therefore an important pillar in the acceleration of geothermal energy.

The "Staatstoezicht op de Mijnen" is recently catching-up the health & safety plans for deep geothermal energy. Every geothermal energy system needs an approved extraction plan, but still there are some wells without approval. Mijwater does have the permit.

A geothermal energy company may not construct wells without an exploration permit. The Minister of Economic Affairs and Climate grants an exploration license on the basis of the Mining Act. The province issues advice to the minister, and also involves the municipality (s) concerned and the water board.



Exploration permit

An exploration permit ensures that only one party can be active in an area at a time. The minister can refuse the exploration license for reasons stated in the Mining Act. These reasons (grounds for refusal) are summarized:

- because of the technical and financial (im) possibilities of the applicant
- because of the method of detection
- for lack of efficiency and sense of responsibility
- due to conflicts with regulations, structural visions or spatial planning plans
- because of the financial capacity of the applicant
- for the safety of local residents
- for nature and environment reasons

The permit specifies the permit holder (s) involved and the area. The minister can also attach additional regulations to the permit. For example, he can oblige or prohibit certain techniques or activities for (parts of) the area. There may be more than one license holder but there is always only one license holder to the government responsible for carrying out the work; this is the so-called "operator".

The minister can in some cases change the exploration license. The license can also change at the request of a license holder. This can happen, for example, if the company wants to change (reduce) the license area or if more parties are involved or if another party wants to become an operator. The minister can also change the exploration license or revoke it in urgent cases. Modification or withdrawal of a permit may be appropriate if circumstances or insights (in, for example, the use of certain techniques or during soil movement) have changed. The licensed area can then be adjusted or new obligations or restrictions can be attached to the permit.

Changing the activity (for example winning instead of tracing) or making the area bigger can never be done with a change in the permit. For this a new application must be submitted to the minister. An authorization period can only be extended if the established period for the permit proves insufficient to complete the activities.



Workplan

Within four weeks after the granting of the exploration license, the operator must submit a work plan to the Inspector General of Mines (State Supervision of Mines, SSM). This work plan provides an overview of the most important activities that are planned for the next five years for the permit area. In any case, the work plan contains:

- an overview of the main mining activities that are planned for the coming five years
- an extensive overview of the mining activities that are planned for the coming year, such as exploratory research, drilling, and any construction work
- a "health & safety plan"
- an up-to-date organization chart including the responsible persons
- maps of the structure of the substrate



Environmental Permit

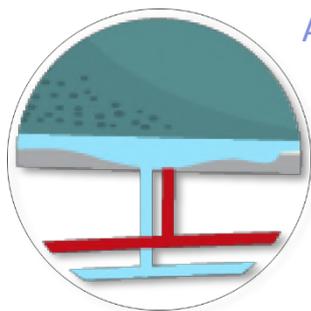
At the moment that the operator wants to carry out the actual activities, an environmental permit is required and possibly an EIA. An environmental permit takes into account, for example, building requirements, effects on the environment and spatial integration (these are issues that have not been addressed, or only to a limited extent, in an exploration permit).

The moment the operator wants to drill and construct a well (but also for changing or extending a well) he must apply for an environmental permit. No separate environmental permit is required for testing, maintaining or decommissioning a borehole. The Minister of Economic Affairs and Climate is the competent authority and the person who issues the environmental permit. He decides on the application for an environmental permit on the basis of a uniform preparation procedure. The plan is then made available for perusal for six weeks, and an interested party can respond to this, also referred to as submitting an opinion. With regard to the environmental permit, the relevant province and municipality (s) have a general right of advice. If the minister wishes to deviate from the zoning plan or an integration plan when granting an environmental permit, a 'Declaration of no objections' from the mayor and aldermen and deputy states respectively is requested.



Environmental Impact Analysis

With the environmental permit for the construction of a well, the minister must assess whether an environmental impact assessment (EIA) is required. This must ensure that the environmental interest fully plays a role in the preparation and decision-making process for activities that may have significant adverse consequences for the environment. If an EIA is required, this must be submitted to the minister together with the application for the environmental permit. The operator must therefore first inform the minister of his intention to apply for an environmental permit. The minister will then decide whether the operator must prepare an EIA. If the bore is not provided in a sensitive area, this is usually not necessary. Operators may also voluntarily prepare an EIA.



Aquathermia

Aquathermia, low temperature water sourced heat can be divided in three types:

- TEO – Thermal energy surface water
- TEA – Thermal energy effluent sewage water
- TED – Thermal energy drink water



Heat Act

If heat is supplied to consumers with TEO or TEA, the Heat Act applies. The Heat Act protects the rights of small users (consumers and companies with limited heat demand) against suppliers. The law sets maximum prices for, among other things, heat. From 2019, cold will also be regulated, but that is by the beginning of 2020 not yet implemented. It is also stated that suppliers may not discriminate between customers. The law also includes room for experimentation, for example to introduce special rates for low temperature heat and better access conditions for sustainable sources.



Environmental law

This new, overarching law, in which 26 laws are integrated, is being drafted and implemented in 2021. Relevant for TEO and TEA are the General Environmental Law Provisions Act, the Spatial Planning Act, the Water Act, the Housing Act (building regulations) and possibly the Monuments Act and the Environmental Management Act (regulations on local activities). The Environment and Planning Act regulates the physical living environment and spatial development. Obligations arise for TEO and TEA from the Environmental Act. In general, these are building permits and zoning changes for (new) construction projects. Discharge and extraction permits and e.g. an environmental permit limited environmental test (OBM) and / or water permit for certain soil energy systems. The law is expected to enter into force in 2021.

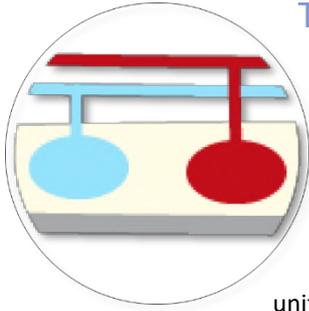


Water Act

The Water Act, which in the future will be part of the Environment Act, mainly regulates the management and management of our water systems, including surface water and groundwater bodies. TEO and TEA extract heat and cold from surface and waste water. Rules in this regard are regulated under the Water Act. This includes the extraction and discharge of water. TEO draws and discharges water into the surface water. Relevant duties for TEA are the duties of care allocated in the Water Act to municipalities (duty of care for waste water collection) and Water Boards (duty of care for purification of this waste water). The way in which a municipality handles its duty of care is included in a municipal sewerage plan (GRP). An Aquifer Thermal Energy System as an open energy storage system uses the groundwater system and has at least a notification obligation about its use.

All relevant laws and regulations for water management are kept in a constantly developing document: the Water Handbook. The government, UvW (Union of waterboards), VNG (Dutch Municipalities Association) and the IPO (interprovincial consultation) are involved in this handbook. See for more information [STOWA](#).

Thermal energy storage



General rules underground thermal energy systems

A set of general rules applies to all underground thermal energy systems (UTES), whether or not they require a permit. These rules are aimed at protecting the soil and relate to the energy balance, the return temperature, prevention of interference, the circulation fluid, decommissioning and monitoring. These uniform rules are included in various decisions, depending on the type of system (open or closed) or whether or not they are part of an establishment in accordance with the definition of the Environmental Management Act. The Competent Authority has the option of deviating from or supplementing a number of general rules by laying down custom regulations. With this you can respond to specific local circumstances.



<https://blogklimaatenergie.nl/2018/05/04/hoe-het-gebruik-van-bodemenergie-en-geothermie-te-stimuleren/>

Underground thermal energy systems



Open underground thermal energy systems (aquifer thermal energy systems: ATES) are regulated via the Water Decree. The provinces are the competent authority for this (BUM and HUM). The preconditions for open soil energy systems are set out in a provincial water plan or another policy document. The policy rules are included in a provincial environmental regulation. These policy rules can differ per province and per area.

Where the closed systems were previously not regulated and could therefore be installed without restriction, they have been placed under the authority of municipalities since the entry into force of the Amendment Decree on soil energy systems (WBBE) on 1 July 2013. The Soil Energy Systems Decree has a dual purpose. On the one hand, it is aimed at stimulating the use of soil energy, with a view to making a contribution to the objectives for energy saving and CO₂ reduction. On the other hand, it is aimed at protecting the soil.

The Decree on Activities in the Habitat (Bal) is an integrated permit from the Decree on Activities, the Decree on Discharging Outside Establishments and the Water Decree. In addition, the required installation permit for an open soil energy system is linked to the discharge permit that is required to be able to discharge the associated flushing water after flushing open systems. From other policy frameworks, rules can also be set for the installation of open and closed soil energy systems. This includes groundwater protection areas, the areas of the National Ecological Network (including Natura 2000), or areas with archaeological values. It is often a matter of provincial policy. Consultation with the province is important for this.

Aquifer Thermal Energy Storages (ATES) are often designed and awarded per building. Because ATES have to be placed at some distance from each other for technical reasons, it is possible that a permit cannot be granted if the neighbours already have an ATES installation. Area-specific coordination of spatial planning procedures is a requirement for maximizing the potential of this technology.

The Activities Decree and the Decree on Discharging Outside Establishments contain rules that work directly.

The Water Decree contains instruction rules; these only apply if the province has included them in the Water Permit for Open Systems. GS have the option to deviate from the instruction rules with a view to responding to specific local circumstances.



Licensing closed systems

Usually the municipalities are competent authority for closed systems. Large closed systems with a bottom-side capacity of 70 kW or more are always subject to a permit. The permit contains the permission to install the

system, and no permit requirements. The permit is granted if the system does not lead to unacceptable effects on the operation of thermal energy systems in the area.

The installation of small closed thermal energy systems, with a bottom-side capacity of less than 70 kW, is usually subject to notification.

The existing closed systems have no reporting obligation. Because it is relevant to know where all systems are, voluntary reporting is encouraged. Systems that have been reported enjoy protection against possible interference with new systems. If a permit is required for closed systems, the notification is part of the permit application. The same information must be provided as with a report.



General rules closed thermal systems

For the use of closed systems, general rules apply to the energy balance, the maximum temperature of the circulation fluid in the loops and their registration. In Chapter 8 of the activities decree are rules for the borehole thermal energy storage (closed-loop).

Custom regulations



For small and large closed systems, the competent authority (municipality) can lay down a customized regulation in a separate decision. In it, it sets different requirements for limiting the cold surplus and / or the maximum temperature of the liquid in the loops. The conditions for this are that this makes more efficient use of soil energy, and that the importance of protecting the soil does not preclude this. This is further elaborated in the Soil Energy BUMs.

Environmental protection areas



Provinces can set additional rules and restrictions for closed thermal energy systems within environmental protection areas.

Guide for enforcement on underground thermal energy storage for provincial tasks (HUM en BUM)

See document(s): Richtlijn 8200 Bevoegd gezag taken Bodemenergie - SIKB, https://www.sikb.nl/doc/HUM BUM Bodemenergie/PRJ 171 BUM BE provinciale taken_2.4_151008.pdf, https://www.sikb.nl/doc/HUM BUM Bodemenergie/PRJ 172 HUM BE provinciale taken_2.4_151008.pdf



Provincial permit under the Water Act for Aquifer Thermal Energy Storage

The use of an open geothermal energy system requires a provincial permit under the Water Act. This is an outflow permit under the activity decree paragraph 3.6 of the environmental management act. Part of the provinces has an exemption regulation for the permit requirement for small open systems (with a withdrawal up to a maximum of 10 m³ / hour). Some provinces require a notification for placement of the small open systems.

The permit is only granted if there are no unacceptable effects on the environment. In the permit, the province describes the conditions that the permit holder must meet, such as:

- the maximum temperature of the groundwater that is back in the soil is brought;
- the energy balance requirements;
- the monitoring of the amount of groundwater pumped, the groundwater temperatures before and after passing through the building and amounts of energy that the system adds and extracts from the soil;
- notification of the decommissioning of the system.

The Underground Thermal Energy Systems Decree makes a change to the Water Decree, which makes it possible for GS to use the shorter "regular procedure" instead of the current "uniform public preparation procedure" of the General Administrative Law Act. This can be an incentive for the installation of open systems.

The master plans can promote the application of the short procedure, because the desired weighing of interests has already taken place within the vision development in the master plan and the related policy rules.

Reports and permits for closed systems are submitted or requested via digital counters:

- The Activities Decree Internet Module (AIM) is for notifications based on the Activities Decree (for establishments).
- The Online Environment Counter (OLO) is there for notifications based on the Decree on discharges outside establishments. Permits based on the Environmental Law Decree are applied for via the Online Environment Counter (OLO).

In time, the AIM and the OLO will be merged into one digital counter. The competent authorities (municipalities, provinces, water boards) are already affiliated with the AIM and the OLO. This means that all reports and permits that are made via the AIM and OLO arrive digitally at the Competent Authority.

This central database with all permits and reports can then be accessed via the WKO Tool: a web application that can be used to easily calculate the chances, costs and payback times of heat and cold storage for a construction site (www.wkool.nl).

Permits for open systems are requested via the Water Desk. Information about all open systems is digitally stored in the National Groundwater Register (NGR). A link is also established between this NGR and the WKO Tool.



Decree discharge outside facilities

Closed geothermal energy systems outside facilities fall within the Decree on discharging outside facilities (Blbi). This decree is based on the Soil Protection Act and Chapter 10 of the Environmental Management Act. The Blbi contains the same general rules for closed soil energy systems as the Environmental Management Activities Decree.

Waste water is released during the construction and maintenance of geothermal energy systems. The waste water flows during the development and maintenance of open systems are particularly large, which makes it difficult to find a suitable discharge route. Geothermal energy systems are mainly installed in built-up areas, where the possibilities are often limited.

In principle, groundwater is clean, so that the quality does not hinder the discharge. However, many open geothermal energy systems are in brackish or saline groundwater or the groundwater has been contaminated by human activities in the past, which may hinder the discharge. However, the extent of the discharge is generally the greatest obstacle to finding a suitable discharge route.

The wastewater from geothermal energy systems is often discharged to the soil, to the surface water or to the sewer system. Discharges into surface water fall under the Water Act, with the water authority as the competent authority. The municipality is authorized for discharges into the sewer system and for discharges into the soil. The Amendment Decree geothermal energy systems introduces new regulations to make the discharge of waste water from geothermal energy systems easier (Abm art. 2.2b and Blbi art. 1.2a) The Guide "Discharges during construction and maintenance of geothermal energy systems, policy supporting document" (Infomil, April 2013) provides an overview of the guidelines for dealing with discharges from geothermal energy systems. If the waste water is returned to the soil or is discharged into the surface water, this is preferably regulated in the same water permit for the extraction. If discharges into a sewer system or to the soil, these discharges are permitted

on the basis of the Activities Decree or the Decree on discharging outside facilities, with the municipality as the competent authority.

Guidelines for managing underground thermal energy systems

- The guidelines required for management are listed below:
- Water Act permit: regulations for the operation of open systems. The province is the competent authority.
- Environmental Management Act / Activities Decree article. 2.15. Efficient energy use. The municipality or province is the competent authority.
- Building Decree, energy performance buildings (EPG), elaborated in NEN standard 7120.
- ISSO standards for Sustainable Management and Maintenance (Nos. 100 to 107). An installation consultant is familiar with this.
- SIKB BRL 2101: Mechanical Drilling Protocol. The recognition attached to this protocol is provided by NL Agency.
- SIKB BRL 11000: protocol soil part soil energy.
- KBIBRL 6000-21: protocol above ground part soil energy.
- Other relevant directives are:

Documents	Subject	Apply to	Document management
BRL SIKB 2100 en protocol 2101 'Mechanisch boren'	Requirements for mechanical drilling and decommissioning of soil energy systems	Drilling companies	SIKB
BRL SIKB 11000 en protocol 11001 'Ontwerp, realisatie en beheer en onderhoud ondergronds deel bodemenergiesystemen'	Requirements for the design, realization and management of the underground part of open and closed soil energy systems	Soil consultancies and drilling rigs	SIKB
AS 3000 'Laboratoriumanalyses van grond-, waterbodem- en grondwatermonsters'	Requirements for laboratory analyses (for example for monitoring)	Laboratories	SIKB
BRL KvINL 6000 Deel 21 'Ontwerpen, installeren en beheren van installaties', bijzonder deel 'Ontwerpen, installeren en beheren van energiecentrales bodemenergiesystemen'	Requirements for the technical installation design and construction of the aboveground part of soil energy systems	Installation companies in the building	KvINL
ISSO-publicatie 72 'Ontwerpen van individuele en klein elektrische warmtepompsystemen'	Description of the technical installation design and construction of the aboveground part of closed ground energy systems	Installation companies in the building	ISSO
ISSO-publicatie 73 'Ontwerp en uitvoering van verticale bodemwarmtewisselaars'			
ISSO-publicatie 80 'Handboek integraal ontwerpen van collectieve installaties met warmtepompen in de woningbouw'			
ISSO-publicatie 39 'Ontwerp, realisatie en beheer van een energie-centrale met warmte en koude opslag (WKO)'	Description of the technical installation design and construction of the aboveground part of open soil energy systems	Installation companies in the building	ISSO

Spatial Policy for 4DHC

France



Researched by	Checked by	Reviewed by	First Draft	Final Draft
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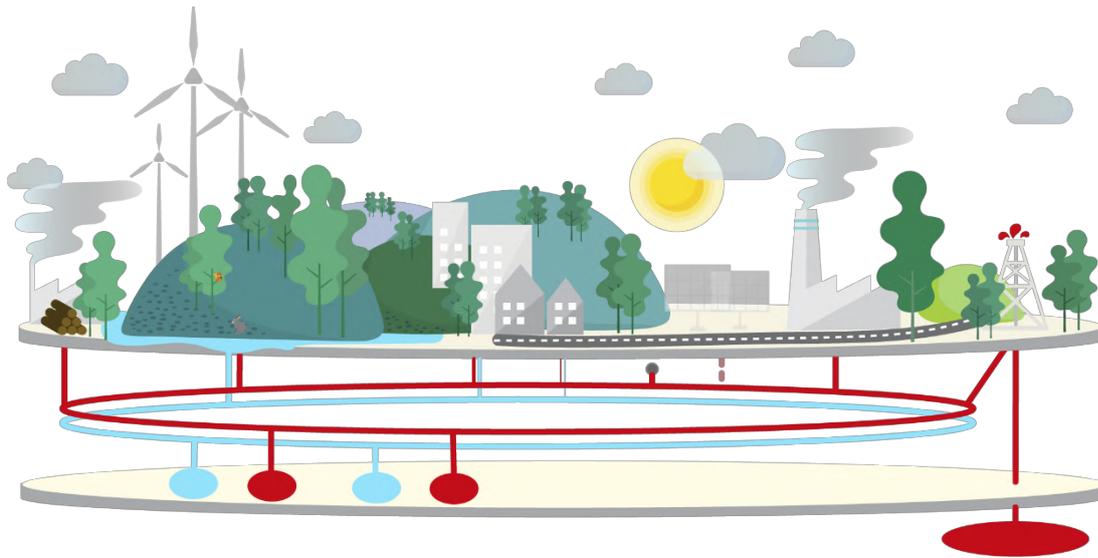
Deliverable: WP.LT D1.2 Spatial Policy for 4DHC

Date: June 2020

About HeatNet NWE

This document has been developed as part of the HeatNet NWE project, which is part-funded through the Inter-reg NWE programme and aims to increase the uptake of 4DHC networks across North-West Europe. As part of this project, the partners developed the HeatNet Model, which will help the public sector to begin implementing 4DHC networks, and the Transition Roadmaps, which outline the partners' experience in developing six district heating pilots across North-West Europe. The HeatNet Guide to Financing gives a broad overview of the various sources available to finance district heating schemes.

For further information on these reports and on the HeatNet NWE project, please visit www.guidetodistrict-heating.eu.

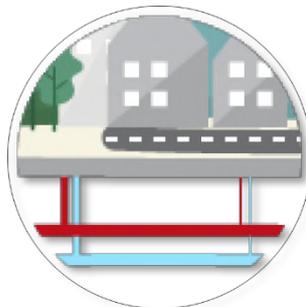


[Chapter 0-1: Overview](#)

[Chapter 0-2: Agreements & energy acts on national level](#)



Chapter 3: Spatial planning



Chapter 4: Underground and information exchange



Chapter 5: Environment



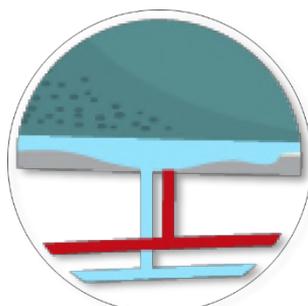
Chapter 6: Biomass and waste incineration plants



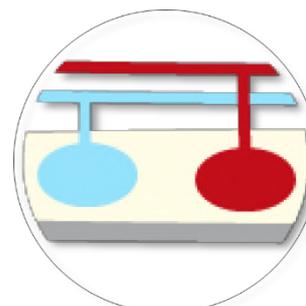
Chapter 7: Waste heat



Chapter 8: Geothermal energy



Chapter 9: Aquathermia



Chapter 10: Thermal energy storage

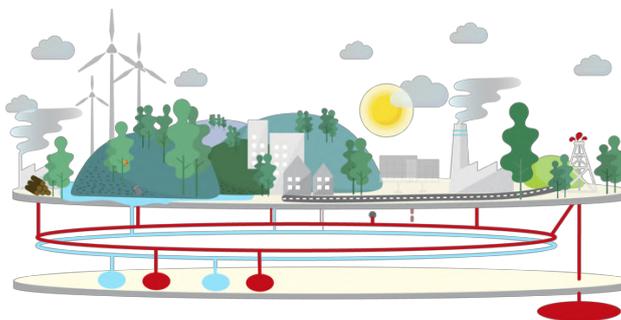
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Preface

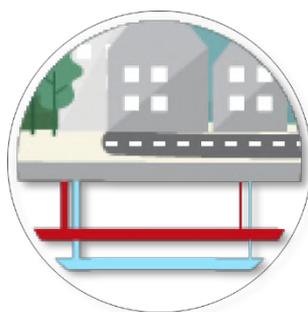
This report gives an overview of the spatial policies in France one can encounter working on 4DHC-networks. For each of the pilot countries of HeatNet, this overview is made. Moreover, a summarizing and synthesizing overview report is produced.



If you want to know more about the legislation and regulations, you can read the chapters that are divided in a chapter of the agreements and energy-acts on national level and the chapters below:



Chapter 3: Spatial planning



Chapter 4: Underground and information exchange



Chapter 5: Environment



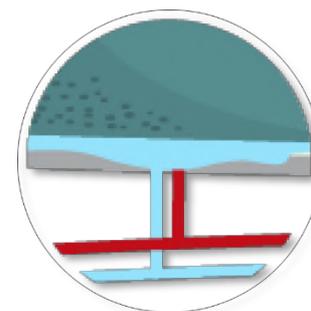
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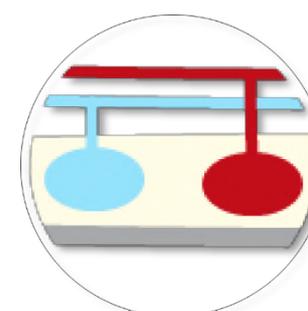
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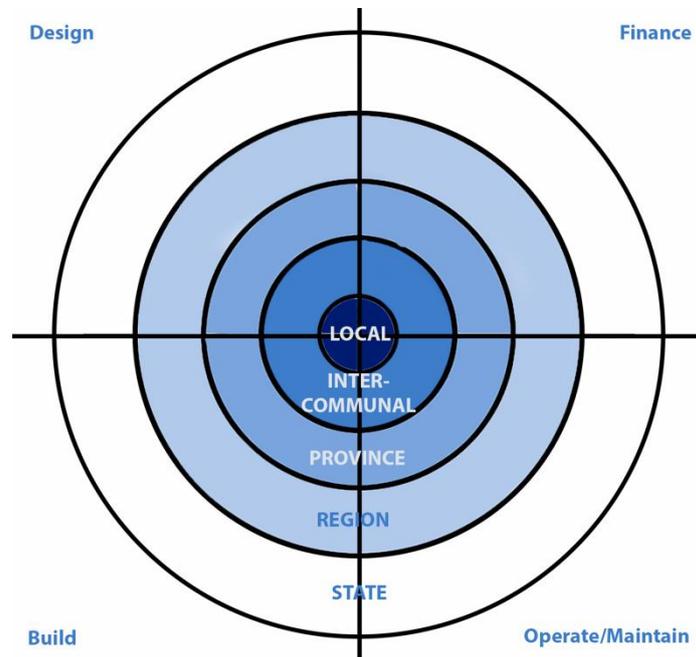


Chapter 9: Aquathermia

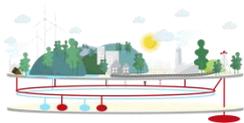


Chapter 10: Thermal energy storage

Legislation in the NWE countries can be found on different governmental levels: state, region, province, inter-communal and local. In France the departments are the province level.



To make it easier to navigate through all of these policies, in the report the bullseye marks in red the policies based on the phase your project is in: Design, Build, Finance or Operate/Maintain and the governmental level of the legislation from local in the heart of the bullseye to the state level on the outline.



Overview Spatial Policies in France

Within NWE, France has incorporated DHC in its most advanced form in its legislation. A specific legislation is in place to stimulate DHC. Moreover, recently an action plan to promote DHC is launched.

Achieving national targets to reduce greenhouse gas emissions requires a reduction in energy consumption and an increase in the use of renewable energies, in all sectors: building, transport, industry, etc.

Local authorities, through their planning and development policies, have an essential role to play in this area. This role is now reinforced, because of the new links between energy and urbanism introduced by the Grenelle laws, as well as the development of the concept of territorial energy planning.

Among the various technical solutions for enhancing energy efficiency and mobilizing renewable energies, the heating and cooling networks are set ambitious development targets for 2020: three times the number of equivalents - connected housing (target: 6 million) and majority use of renewable energies (wood, geothermal) and recovery (waste incineration, biogas).

However, heat networks are by nature infrastructures intimately linked to municipal or inter-municipal urban development, their route generally following that of the road network that connects and irrigates the neighbourhoods, their economic relevance depends on the density and use of buildings and their depreciation over long periods, comparable to those of most urban infrastructures. In addition, heating networks are often the support of a local public utility - that of district heating - which can give their infrastructure (boiler rooms, pipes, substations) a special status, particularly with regard to planning rules.

The local urban plan (Plan Local de l'Urbanisme, PLU), a document that outlines the policy and urban planning rules at the level of the territory of a municipality or group of municipalities, is intended to reinforce the integration of energy issues in urban planning, particularly in facilitating or encouraging the development of urban forms and types of buildings with reduced energy consumption or using renewable energies.

In order to promote the use of renewable energies, territorial collectivities are entitled to classify heating networks located in their area, provided they are supplied with at least 50% of heat from renewable energy sources. New and renovated buildings located within a classified area are obliged to be connected to the heating network. But there is no obligation for existing non-renovated building.

The procedure of grid connection is at the same time also the procedure for grid development, since the construction of a plant must occur simultaneously with the construction (development) of the district heating grid.

But the PLU can also, according to its drafting, create unjustified and unintentional obstacles to the development of certain infrastructures such as those of the heating networks.

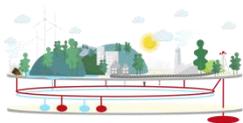
There is a requirement for each big new urban project to study the feasibility of integrating a district heating (new or extension) along with other renewable energy technologies. Moreover, it is mandatory for every new major district heating and for every new major plant, to perform a costs-benefits analysis regarding the use of industrial waste heat and district heating.

Local government are able to set a density-threshold, below which the beneficiary of a building permit must pay for under-density. This provision aims to encourage building in higher densities, creating economic viability for the application of heating networks.

Difficulty now: renovation of housing association buildings district heating is not favoured by regulation. In order to be eligible for subsidies to either build a DHC or transform an existing infrastructure into a "green" solution, a masterplan is required to describe the DHC to develop in 10-year time. This Masterplan should involve the stakeholders and should align building improvements, urban renewal and renewable development. However, one legislation works against DHC. When a dwelling has already an energy-efficiency label D or better, the grants

for refurbishment are no longer granted. So social housing companies will not connect to a DHC before they have the grants, because the DHC will bring the label already up to at least D.

Although the legislation in France promotes DHC-networks, an important barrier to the development of DHC is the large number of different institutions constituting the French administration (deconcentrated and concentrated service). This is especially the case in Boulogne sur Mer, where the DHC network is in the harbor area, where marine and land and their different governments come together.



Agreements and acts on energy in France

Energy transition for green growth act

See attached file(s): [Energy Transition for Green Growth Act in action - Regions, citizens, business \(32 pages - juillet 2016 - Versions anglaise\).pdf](#)

The Energy Transition for Green Growth Act and its attendant action plans are designed to give France the means to make a more effective contribution to tackling climate change and reinforce its energy independence, while striking a better balance in its energy mix and creating jobs and business growth. The texts required for its implementation are operational and support-plans are in place.

These tools are available to private individuals, businesses and the regions, enabling them to take concrete action:

- Increase household spending power by reducing energy bills.
- Protect the planet *and* public health.
- Seize green growth opportunities, delivering a competitive advantage for today's industry and the cutting-edge industries of the future, while securing jobs in France and improving quality of life. Many initiatives have already been launched, setting the stage for large-scale implementation. The experience acquired to date has in turn directly inspired simplifications and additions to the law.
- Energy savings, especially through massive incentives for investment in home renovations and access to clean transport;
- Rise of on- and offshore renewable energies, which are sources of technological performance and economic growth and hold great potential in mainland and overseas France.

The Energy Transition Act promotes sustainable economic growth and the creation of sustainable and non-relocatable jobs:

- it will allow for the creation of 100,000 jobs in the short term (including 75,000 in the energy renovation sector and nearly 30,000 in the renewable energy sector), together with more than 200,000 jobs by 2030;
- the investments made are expected to boost GDP by 0.8% in 2020, and by 1.5% in 2030.

Multi-year Energy Programme

See document(s): [La Programmation Pluriannuelle de l'Énergie 2016 - Réseaux de chaleur et territoires](#)

The PPE (Programmation Pluriannuelle de l'Énergie) sets out the priorities for action by the public authorities to achieve the energy objectives defined in the Energy Transition and Green Growth Act. For the first time, all aspects of energy policy (managing energy demand, renewable energy sources, security of supply, networks, etc.) and all types of energy are dealt with under one strategy, taking into account the fact that the various aspects of energy policy are interconnected and enabling the development of a comprehensive vision of the energy sector that will help achieve our objectives more effectively.

(2016): Set intermediary targets before 2030 where 4 Mtep of renewable and waste heat are expected in DHC: 1.35 Mtep renewable and recovered waste heat in 2018 (it was 0.68 Mtep in 2012) and between 1.9 Mtep and 2.3 Mtep by 2023.

The PPE currently covers two different periods: 2016 – 2018 and 2019 – 2023. The idea is that the PPE is revised at the end of each period so that new objectives are aimed for. At the beginning of 2019, the newest version of the PPE (still a project) was launched, and the new objectives for renewable and recovery energy in DHC are between 2.6 and 3.0 Mtep in 2028. The French Government is currently reviewing this program.

Regional Air Climate Control

The Regional Scheme Climate Air Energy (SRCAE), jointly developed by government departments and the region, present a comprehensive diagnosis of the development potential of renewable energy sources on a regional scale and provides guidelines for reduction.

Territorial Energy Climate Plan

The Territorial Energy Climate Plan (PCET), drawn up by the community (often at intermunicipal level), determines the local strategy and objectives for energy and adaptation to climate change.

Regional energy and climate plans (Plans climat énergie territoriaux – PCET) will now only be produced at intermunicipal level, aiming to cover the entire region. They include air quality and have been renamed Regional energy, air and climate plans (Plans climat air énergie territoriaux – PCAET). Regional energy, air and climate plans may be accompanied by Regional energy efficiency plans.

Energy Code

The classification of heating and cooling networks is determined by articles L712-1 to L712-5 of the Energy Code, articles 5 and 7 of Law 80-531 of 15 July 1980, Decree No 2012-394 of 23 March 2012. on the classification of heating and cooling networks and the Decree of 22 December 2012 on the classification of heating and cooling networks.

According to the energy code, the classification of the network is only possible if three conditions are met:

- at least 50% of the grid is supplied by renewable or recuperative energies;
- a count of the energy quantities supplied per delivery point (ie the substation) is assured;
- the financial balance of the operation is guaranteed during the depreciation period of the installations.

The ranking is expressed by deliberation of the community or group of communities, specifying that:

- an energy audit must be carried out on existing networks to examine the possibilities for improving their energy efficiency;
- when there is an advisory committee for local public services (Article L1413-1 of the CGCT), it must be consulted for advice.

The public or private status of the network has no influence on the classification possibilities: a private heating network can be classified as long as it meets the aforementioned conditions.

The classification of heating and cooling networks allows defining priority development areas for the networks. In these zones, the connection to the network is compulsory to all new building, or any building being consequently refurbished (with the condition that the heating or cooling load is superior to 30 kW), and also to all buildings replacing their boiler.



Spatial Planning

Primary instruments planning and development

Code de l'urbanisme

The Code de l'urbanisme is the code that brings together in French Law the legislative and regulatory provisions relating to Planning Law. As a result of the Grenelle of the environment conference: Chapter II of the Grenelle II Bill amends and supplements the Urban Planning Code, to better take into account the environment,

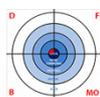
by specifying certain objectives of planning:

- fight against global warming;
- reduction of greenhouse gas emissions; preventing urban sprawl;
- economic development of space and resources;
- preservation and restoration of biodiversity and ecological continuity.

Territorial coherence schemes, to better integrate commercial development, transport and housing into urban planning will take the objectives of the local housing program, of the urban transport plan and of the business development scheme. The local urban plan incorporates these same objectives at intercommunal scales.

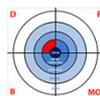
Article 4 of the Grenelle II project aims to facilitate the installation of individual renewable energy production devices or any renewable material (wood ...) to avoid greenhouse gas emissions or the installation of vegetated roofs or retaining rainwater ... except where there are special protection regimes (protected perimeters, protected areas, that is to say, a large part of the most urbanized areas). Article 5 (Chap III) authorizes territorial planning and sustainable development guidelines.

See document: https://www.cjoint.com/doc/19_01/IAonVskLiCh_codedelurbanisme2019.pdf



The Local Urban Plan (PLU)

The Local Urban Plan is a planning document established at the scale of a municipality (or at the scale of a grouping of municipalities of the EPCI type, we will then speak of intercommunal PLU) which develops a global project town planning and development and which defines the land use rules.



PLUi: Plan Local d'Urbanisme Intercommunal

At the PLUi level, two factors appear to be favorable for the development of heat networks:

- urban densification: it consists in densifying the already urbanized spaces, by building on available plots or by renovating existing ones. Urban densification is an opportunity to connect new buildings or new habitable surfaces to existing heating networks, and thus to densify the heating network;
- the mix of uses: it corresponds to the fact of mixing within the same district several functions: housing, offices, public facilities. The mix of uses is opposed to the logic of zoning prevalent in dormitory cities or certain areas of activity. By associating office buildings with dwellings, the mix of uses allows, as shown in the diagram below, for the heat production unit to operate more often at a power close to its maximum power. is economically the most profitable.

Within a PLUi, any orientation of a Planning and Development Project (PADD) aimed at urban densification and the mix of uses is thus a favorable element for the heating network.

Other tools related to PLU

In addition, by the Code de l'urbanisme, to the possibilities of the PLU, several provisions and tools in the field of urban planning / development and concerning the heating networks or renewable energies can be connected to the reflections carried out around the PLU.

At the territorial level superior to the PLU:

- The **Territorial Coherence Scheme (SCoT)** can set rules relating to density and energy performance, rules that PLUs must follow (article L122-1.5 of the Urban Planning Code).
- The **Regional Climate-Air-Energy Plan (SRCAE)** and the **Territorial Climate-Energy Plan (PCET)** define the local policy around climate, air and energy issues; the PLU must "take into account" the PCET, which must be "compatible" with the SRCAE.



The Territorial Coherence Scheme (SCoT)

Established by the SRU law of December 13, 2000, the Territorial Coherence Scheme is a tool for the design and implementation of inter-municipal strategic planning, at the level of a large living area or an urban area.

It determines, on the scale of several municipalities or groupings of municipalities, a territorial project aiming to bring coherence to all sectoral policies, particularly in terms of town planning, housing, travel and commercial facilities, this in a preserved and valued environment.

SCoT is the flagship of local planning documents. As such, this major document is binding on all the others, in particular on municipal or inter-municipal PLUs.

The SCoT consists of at least 3 documents:

- a presentation report, which contains in particular a diagnosis and an environmental assessment,
- a planning and sustainable development project (PADD),
- an orientation and objectives document (DOO), which is enforceable against PLUi and PLU, PLH, PDU and municipal maps, as well as the main development operations (ZAD, ZAC, subdivisions of more than 5000 m², land reserves of more than 5hac, etc.).



Tools dependent to the PLU

- The procedure for classifying heat networks, makes the connection mandatory on certain sectors (for new buildings or buildings undergoing renovation); the perimeters defined by the classification must be compatible with the planning documents (law n ° 80-531 of July 15, 1980) and must be annexed to the PLU (article R123-13 of the Town Planning Code).

To find out more: <http://reseaux-chaleur.cerema.fr/classer-un-reseau-de-chaleur-ou-de-froid>

- **The Master Plan for the heating networks**, a voluntary unregulated approach, consists in establishing a prospective vision of the evolution of the networks on the territory of the community, based on an inventory of fixtures and scenarios of evolution of the territory.

To find out more: <http://reseaux-chaleur.cerema.fr/realiser-un-schema-directeur-de-reseau-de-chaleur>



- Any development operation subject to an impact study is also subject to the obligation to carry out a study on the development of renewable energies, in particular the connection or the creation of a heating / cooling network supplied mainly by ENR & R (article L128-4 of the Urbanism Code).

To find out more: <http://reseaux-chaleur.cerema.fr/guide-les-etudes-denergies-renouvelables-dans-les-operations-damenagement>



- For any building over 1.000 m², new or renovated, the obligation to conduct a study on its power supply by renewable energies (article L111-9 of the Code of Construction and Housing)

See attached file(s): http://www.occitanie.developpement-durable.gouv.fr/IMG/pdf/fi00717_plui_reseau_chaleur_04.pdf



Subsections of the Regulation	Purpose of the article in the old codification	Recommendation on the writing of the regulation
Destination of constructions, uses of grounds, and types of activities (Articles	Type of prohibited land use (Article 1)	The editor of the PLUi must take care not to forbid or obstruct related constructions the operation of the heat network, in particular the energy production unit, the substations, the various technical

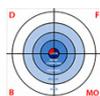
R.151-30 and following of the urban planning code)		rooms that would be made necessary by the project (storage room for biomass in storage, etc.). In order to amortize the creation of a heat network, the PLUi regulation may also authorize collective housing projects or townhouses projects in serviced areas.
Urban, Architectural, Environmental and Landscape Quality (Articles R.151-39, R.151-41 and 42)	Implantation of constructions (article 6-7-8)	The PLUi regulation may specify that the construction of substation is exempt from the obligation to comply with the implementation rules.
	Height of constructions (Article 10)	The content of this provision may be important, especially with regard to the heat production unit. If the main body the building does not usually require special provisions in relation to other residential buildings or activities, the presence of a chimney may however justify a specific increase in ceilings for the height of buildings, or even that the ceilings of height apply to heat production units. The regulation may also impose, in sectors close to existing or planned public transport, a minimum density of construction (Article L 151-26). This provision, justified by the proximity of public transport, can contribute to denser urban forms and thus improve the economic viability of the heating network.
	Exterior aspect of constructions (Article 11)	The presence of specific facilities linked for example to the storage of combustion materials (such as tanks or material storage silos) may require enhanced landscape integration. Some emergencies such as chimneys must be allowed.
	Obligations imposed on buildings, development in terms of enhanced energy performance (Article 15)	The regulation may define sectors where it imposes a minimum production of renewable energy, depending on the characteristics of the project and the sites concerned. This arrangement allows to connect the heat network to neighborhoods with a heat demand.
Equipment and networks (Articles R151-47 to 50)	Roads and roads (Article 3)	Heat networks powered by wood energy require deliveries of wood by truck. The by-law can thus provide for the layout of the roadways necessary for a wood boiler. The by-law may also set conditions for the servicing of building land by public energy networks (section R. 151-49 of the urban planning code).
	Reserved locations (Article 27)	The by-law may delimit reserved spaces to freeze a right-of-way, particularly for facilities of general interest. This type of arrangement can be used for a wood boiler, or a wood storage platform. Note that Article R. 151-34 of the urban planning code indicates that it is necessary for a reserved place to define its destination and the recipient communities,

		services and public bodies. The location of a reserved space for a wood boiler or a storage platform therefore presupposes that the project is already sufficiently advanced, with communities, services and public bodies already benefiting from the project already known.
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The payment for under-density

Municipalities and EPCs competent for PLU (i) or POS may set a density threshold below which the beneficiary of a building permit must pay a payment for under-density (Article L 331-38 of the urban planning code). This provision may encourage the beneficiaries of an authorization to build more densely, thereby promoting the economic viability of the heating networks.



Planning and Sustainable Development Project (PADD)

Since the energy transition law, the Planning and Sustainable Development Project (PADD) must now define the general guidelines for energy networks. The PADD must therefore determine the main lines of its energy network policy, concerning heat networks, as well as electricity and gas networks.

The PADD can allow the community to set directions for developing district heating networks. In connection with the presentation report, the PADD has the possibility to specify:

- the objectives of the intermunicipal network for heat networks;
- sectors favorable to the creation, extension, or densification of heat networks.

These changes in urban planning in 2015 made it possible for local authorities to impose to an area the use of a certain percentage of renewable energy for every new building. If this percentage is high, DHC can turned to be the only financially viable solution.

Heat Planning



French action plan to promote DHC - launched in Oct 2019

Mobilization and Attractiveness

- Campaign to raise awareness of all cities with more than 10,000 inhabitants with the goal to have 50 to 60 new renewable DHC networks per year
- Campaign to raise awareness among citizens, architects, promoters...
- Promote the websites of viaseva, DHC national observatory and have a national narrative around DHC
- Study the possibility to have some financial bonus from the Heat Fund in case of citizen participation in DHC schemes: in that case the additional subsidies have to be used to lower the heat price for end-users (no additional margins for DHC operators)
- Compulsory heat planning every 10 years for cities having DHC network and study the possibility to have a public service of cooling distribution (+ have the DHC masterplan being translated in the urban planning – PLU).
- Facilitate the possibility for cities to enforce compulsory connection to DHC networks
- Publish in open-data the list of all State buildings with the surface and the type of heating systems

Customer information and protection

- Transpose the European Clean Energy package in the French law in terms of billing, customer information and right to disconnect
- Adapt the concession contract models for a better pricing (concession is the main way for public authorities to build and operate DHC in France)
- Help 10 to 20 DHC networks having difficulties during the next 2 years

Economic competitiveness of DHC

- Increase the amount of the Heat Fund to compensate the missing money if the carbon tax remains fixed (it was supposed to increase in the next years)
- Change some modalities of the Heat Fund to provide money for bigger projects and adjust the reference prices of the fossil fuels taken into account to calculate the subsidies
- Include the possibility to have a review of the business model of a DHC network 4 years after getting the subsidies of the Heat Fund, to check if hypotheses taken to choose the level of subsidies were relevant and adjust the level of the subsidies accordingly
- Give the possibility for DHC operators receiving Heat Fund subsidies to get certificates of energy savings (which is currently not possible)
- Suppress in the gas distribution operators contracts the bonuses they get if they connect more buildings to the gas network
- Suppress the public subsidies to other systems (I guess heat pumps, efficient gas boilers, biomass boilers for example) in case these systems are installed instead of the connection to a clean DHC network (apparently the last Climate and Energy law also suppresses the possibility to get certificates of energy efficiency for systems installed in place of connection to “good DHC”).

Increase the share of clean energy delivered by DHC

- Adapt the guidelines to calculate the share of RES in the energy-mix of a DHC network
- Increase the threshold of RES in the DHC energy mix to have the right to enjoy a reduced VAT rate (now DHCs supplied with at least 50% of RES enjoy a 5.5% VAT rate instead of 20%).
- Facilitate the possibility for cities to enforce compulsory connection of new buildings to the DHC network (unless alternative solutions can supply the same level of RES- and carbon-free energy).
- Facilitate the waste heat recovery (open data, network of stakeholders)
- Encourage DHC owners and operators using coal to stop using it in the next 10 years
- Stimulate geothermal projects to supply DHC (especially in regions Alsace, Aquitaine, West Ile de France, Touraine, Southern Rhône-Alpes)
- Increase the amount of waste heat recovered from waste incinerators

R&D

- Develop R&D projects on IT tools, tariff and contract innovation, learning and raising awareness
- Increase the quality threshold of DHC networks to access to the Heat Fund subsidies (DHC management tool, energy efficiency, maintenance quality, temperature adjustment...).

**Feasibility studies**

The feasibility studies for the development of mandatory renewable energy for development projects that are subject to an impact study (Article L128-4 of the urban design code) establish one or more scenarios at the level of new neighborhoods (in particular in the ZAC), and in particular analyze the desirability of connection to a heating or cooling network.

**Obligation to connect to a classified DHC**

Transactions that are subject to the connection obligation are as follows:

- case no. 1: construction of a new building (if the application for a building permit was submitted after the classification decision)
- case n ° 2: new part or increase of an existing building, larger than 150 m² or 30% of the existing surface (in the sense of the thermal regulation, see article R111-20 of the building code and the housing)
- case 3: renovation of a building, improvement of the energy performance of a building or part of a building subject to articles R131-25 and R131-26 of the construction and housing code. According to these articles, the works in question are those which satisfy all 3 of the following conditions:

- building of more than 1000 m² (except buildings: buildings do not use energy to regulate their indoor temperature; constructions provisional (duration less than or equal to 2 year); agricultural buildings, handicrafts, industrial (except houses) and requires a small amount of energy for heating, tap water or cooling; places of worship; historical monuments when the renovation works would lead to an unacceptable change in their character or appearance)
 - work related to either the envelope and the installations (heating, tap water, cooling, ventilation, lighting) or just the envelope.
 - Estimated amount of energy performance improvement works more than 25% of the value of the building
- Case 4: Replacement of the common heating / cooling system of a building or an industrial plant for the production of heat / cold, if the capacity exceeds 30 kilowatts;

If the project falls into one of these four cases and is located in a priority development area of a classified heat network (information available from the community), connection is mandatory except for exceptions.

Possibilities for exception

The purpose of the deviation is to enable a developer to choose a solution that is more efficient than the heating or cooling network. The grounds for exemption are limited by the Regulation: a derogation can only be granted if the installation in question:

- whether more than 50% (during the year) is supplied by energy produced from locally available renewable energy sources that cannot be operated by the grid;
- submits a request for heat or cold whose technical characteristics are incompatible with those of the network;
- cannot be supplied by the network within the time required to meet the needs of heating or hot water or, in the case of cooling networks, air conditioning;
- Note: this exception ground is not valid if the network administrator sets up a transition solution for the supply of heat or cold;
- cannot be connected to the network under economic connection conditions and rates that are lower than the thresholds specified in the classification decision.

The request for exemption must be addressed to the community that determined the classification of the network; it is (and not the network operator) who assesses the request and makes the decision. It is up to the applicant to provide the necessary justifications (for example, an investigation into the heat supply which shows that one of the grounds for exception applies).

It is recommended that the communities clarify in advance (before deciding on the classification) to the operator the precise framework of the reasons for the deviations, in particular for the economic reason (definition of the tariff thresholds). If the community does not have sufficient internal expertise to perform this clarification, it is advised to rely on the expertise of an independent engineering firm.

Control and sanctions

Article L712-5 of the French Energy Code punishes the connection obligation with a fine of 300,000 euros. Criminal offenses are registered by officers and bailiffs, civil servants and civil servants on behalf of the administrative body, as well as those mentioned in the first paragraph of Article L.480-1, urban development code.



Carte nationale de chaleur

See document(s): [Carte nationale de chaleur – France - Réseaux de chaleur et territoires](#)

These maps can serve as a basis for thinking about the development of renewable energy sources and recovery in an area and can contribute to the development of various planning documents (SCoT, PCEAT, SRADDET, etc.). This data will also be able to support the studies carried out for the realization of the master plans of the heating networks. They allow an initial knowledge of the demand for heat and cold in an area to derive the most relevant

areas for the establishment or expansion of a heating or cooling network. Similarly, as part of the cost-benefit analysis of the ICPE¹ fatal heat recovery regime, manufacturers will more easily examine the surrounding heat needs to which they are likely to respond.

Maps of the national territory of heat and cold supply and demand fall within the framework of the transposition into French legislation of the Energy Efficiency Directive 2012/27 / EU and must contribute to the satisfaction of requirements of this directive in Article 14 and Annex VIII providing for a comprehensive assessment of the national heat and cold potential, including a map of the national territory with:

- demand for heat and cold in municipalities, agglomerations (an urban ensemble consisting of different urban centers whose suburbs eventually converge) and industrial zones with an estimate of this demand in the coming years;
- existing and planned infrastructure for the production of heating and cooling networks;
- Potential supply points for heat and cold with electricity production installations with a total annual electricity production of more than 20 GWh, waste incineration plants and cogeneration plants.

The maps were developed by the Center for Studies and Expertise on Risks, Environment, Mobility and Development (CEREMA) on the basis of a preparatory study by SETEC Environment.



Regional climate-air-energy plan (SRCAE)

At the regional level, all of the 26 (one per region) Regional Frameworks on Climate, Air and Energy (SRCAEs) have been approved, covering 100% of the French population. The SRCAE requirements include detailed information on planned mitigation, air quality and adaptation actions and measures. The section on adaptation measures in each Regional Framework is adapted to the regional context.



Plans climat air énergie territoriaux (PCET)

Regional energy and climate plans (Plans climat énergie territoriaux – PCET) will now only be produced at inter-municipal level, aiming to cover the entire region. They now include air quality and have been renamed Regional energy, air and climate plans (Plans climat air énergie territoriaux – PCAET). Regional energy, air and climate plans may be accompanied by Regional energy efficiency plans.

Territorial Climate-Air-Energy Plans (Plans Climat-Air-Energie Territoriaux, PCAET) are compatible with the SRCAEs' strategic orientations and with urban planning documents, concern all levels, from the region to the municipality. Since 2010, they have been mandatory for local authorities with more than 50 000 inhabitants; and, since 2016, mandatory for local authorities with more than 20 000 inhabitants (2016 was also when air quality requirements were incorporated into the plans).



Energy audit heat network

The procedure and content of the energy audit are determined by the Decree of 22 December 2012.

The purpose of the audit is to identify the potential for improving the energy efficiency of the generation system and components of the distribution network, including substations (see 2.3.1, 2.3.2, 2.3.3). The economic impact of the opportunities for improvement thus identified must also be studied.

The audit must be performed by a neutral service provider. It may not make any link that could undermine its independence with the owner or operator of the network, or with a company that has carried out work on the controlled facilities.

The audit is based on:

- site visits (production facilities, distribution network, sampling of substations);
- Meetings with community services, delegates, subscribers;
- analysis of various documents related to regulatory controls and site operations;
- analysis of the technical reports of the delegate and reports of possible analysis.

¹ ICPE, Installation Classée pour la Protection de l'Environnement (Classified Infrastructure to Protect the Environment)



Energy audit and master plan

Apart from this legal basis, it is highly recommended to integrate the implementation of the network energy audit into a broader master plan approach.

The "Technical audit" part performed under a master plan in accordance with the guide proposed by ADEME and the AMORCE association corresponds to the audit as required in the classification application file, since it is less than 3 years old and has been created by an unrelated service provider that is likely to undermine its objectivity and independence vis-à-vis the owner, the network operator or a company that has carried out work on the controlled facilities (in accordance with Article 3 of the Regulation).

The production of a master plan is mandatory for all heat network projects (creation or expansion) for which support for heat funds is requested.

Design Standards (for District Heating)



Thermal Regulation 2012

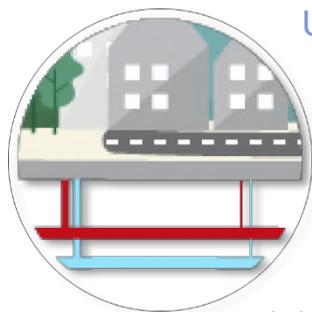
RT2012 introduces an obligation to use renewable energies and recovery (R & R) for individual homes. This requirement can be achieved by at least one of these 3 solutions (specified by Article 16 of the Decree of 26 October 2010):

- produce domestic hot water from a certified solar thermal system
- be connected to a heating network supplied more than 50% by renewable energy
- demonstrate that the contribution of renewable energy to the building's Cep is greater than or equal to 5 kWhep / (m².year)

The 2012 thermal regulation introduces a mechanism for upgrading heating networks that emit little CO₂: once a new building project is connected to a sustainable heat network, it benefits from an increase in its maximum energy consumption limit.

The Grenelle 1 Law laid down the principles of the new thermal regulation for new buildings whose objective is to significantly reduce energy consumption and greenhouse gas emissions. The 2012 thermal regulation therefore introduces a mechanism for upgrading the heating and cooling networks that emit little CO₂: when a new building project is connected to a virtuous heat / cooling network, it receives an increase of its maximum energy consumption limit.

Underground and information exchange



Data on energy

At the local level, thanks to a new law regarding energy data access (more energy data available for local authorities), planning and scheme would be more precise.

In order to implement at their level the law on Energy Transition, many agents including territorial collectivities and citizens need access to updated and precise data on the production of energy and the effective consumption of energy by building, neighborhood, city, etc. while abiding by the rules on the protection of private data.

The law on Energy Transition has those data become progressively accessible online for free re-use by any party (open data). The network operators (electricity, gas, heat and coal networks) and the providers of fuel products must provide certain data to the Statistics service of the Ministry of Energy every year by the June 30. These will be in turn published online within two months (before September 1). Legal provisions have been made through three decrees published in 2016 relative to the confidentiality of some information.

See:

[LOI n° 2015-992 du 17 août 2015 relative à la transition énergétique pour la croissance verte,](#)

["Décret n° 2016-972 du 18 juillet 2016 relatif à la confidentialité des informations détenues par les opérateurs gaziers et par les gestionnaires des réseaux publics de transport ou de distribution d'électricité | Le-gifrance"](#)

[Décret n° 2016-973 du 18 juillet 2016 relatif à la mise à disposition des personnes publiques de données relatives au transport, à la distribution et à la production d'électricité, de gaz naturel et de biométhane, de produits pétroliers et de chaleur et de froid](#)

["Arrêté du 18 juillet 2016 fixant les modalités de transmission des données de transport, distribution et production d'électricité, de gaz naturel et de biométhane, de produits pétroliers et de chaleur et de froid | Le-gifrance"](#)



Local Public Services Advisory Board

Since 2002, all towns of more than 10,000 inhabitants and intercommunalities of more than 50,000 inhabitants must be provided with a Local Public Services Advisory Board (CCSPL, Commission Consultative des Services Publics Locaux). When a local public service is created, this board collects the advices of the citizens. Any public DHC project are submitted to the advice of the advisory board. This obligation allows connecting the DHC project holder and the different local associations of citizens and customers.



Road permit for works

On the public road domain, it is necessary to obtain an authorization for temporary occupation of the public domain. Any moral person can request this authorization: public service delegate, work supervisor, project manager, Construction Company.

It is necessary for any works occupying the ground and affecting the public domain, among other the laying of pipes and any underground network.

This permit is provided by the municipality, department or State depending on whether the public domain is municipal, departmental or national. The demand for a road permit work should be associated with a traffic stop request.

See : <https://www.service-public.fr/professionnels-entreprises/vosdroits/F23509>

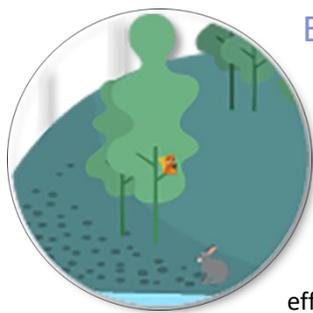


Preventive Archeological Digs

The national dispositive for Preventive National Digs was created by the law of 17th January 2001 (modified in 2003 and 2016). The State sets the procedures of archaeological operations whose control is placed in the hands of the Regional Prefect.

Before any public or private territorial development (highway, quarry, or any installation requiring a Building permit), the State can prescribe an archaeological diagnosis in order to check whether the terrain conceals former traces of human occupation. The diagnosis is made by the National Institute for Preventive Archaeological Digs (INRAP).

The diagnosis allows detecting, characterizing, and dating the possible archaeological relics located underground. Based on the conclusions made by the INRAP, either the project developer can immediately proceed to the works, or a prior dig is prescribed.



Environment

Environmental Charter

The main environmental law principles can be found in the 2004 Environmental Charter (which is part of the Constitution). The French environmental legal framework is substantially influenced by the law of the European Union (EU) as the legislation consists, to a certain extent, of transposed EU Directives and directly effective EU Regulations.



The French Environmental Code contains most of the acts and decrees related to the environment, such as:

- Rules concerning the preservation of natural resources.
- The monitoring of hazardous activities.
- Environmental assessment and public information on projects.

Specific rules can be found in other codes, such as:

- The Mining Code.
- The Energy Code.
- The Public Health Code.
- Laws and decrees not codified, particularly in the mining sector (for example, Decree 2006-648 on mining permits), also apply.



Duty of care

The Charter for the environment incorporates the principles and concepts already known by French environmental law, consolidating and innovating them in the formulation. It is constituted by a preamble, which expounds its purpose and references some principles, and 10 articles which list rights attributed to and duties imposed on each person. The rights include: the right to live in a balanced and healthy environment (Article 1), the right to access information about the environment and the right to participate in the preparation of public decisions having an impact on the environment (Article 7); and among the duties: the duty to participate in the preservation and improvement of the environment (Article 2), the duty to prevent any damage to the environment or, failing that, to limit the consequences of such damage (Article 3) and the duty to contribute to the remediation of damages caused to the environment (Article 4). From the combined provisions of Articles 1 and 2 of the Charter, the Conseil constitutionnel has deduced a duty of care to which each person is held concerning his activities that could cause damage to the environment. In addition, the Charter also includes obligations on public authorities concerning the application of the precautionary principle (Article 5) or the promotion of sustainable development (Article 6).



Regulatory authorities

Environmental regulation mainly consists of drafting and enforcing bills, decrees and orders in relation to:

- The planning of sustainable management of natural resources (such as water, air and land).
- Police enforcement in sectors such as hazardous facilities, mines and quarries, through the issuance of environmental permits and the execution of on-site controls.
- Environmental regulatory authorities intervene on both a national and local scale.



At national level, the Ministry for Ecological and Inclusive Transition (*Ministère de la transition écologique et solidaire*) (MTES) enforces environmental policies through five General Directorates respectively dedicated to:

- Energy and Climate.
- Infrastructures, transports and sea.
- Planning, housing and nature.
- Prevention of technological risks.

- Civilian aviation.

MTES (<https://www.ecologique-solidaire.gouv.fr/>) also enforces policies through the Directorate dedicated to "sea fishing and aquaculture".



The General Council for Environment and Sustainable Development (*Conseil général de l'environnement et du développement durable*) (CGEDD) within the MTES advises the government on environmental matters. The CGEDD also sits as a special body (the "Environmental Authority" (*Autorité environnementale*) (AE) dedicated to carrying out the case-by-case examination and evaluation of the effects of certain public and private projects on the environment.

The MTES is also the ministry for 70 public institutions, including the National Agency for Management of Radioactive Waste (*Agence nationale pour la gestion des déchets radioactifs*) (ANDRA).

Other ministries also have jurisdiction over specific environmental issues (such as the Ministry of Economy for certain mining permits).

Independent administrative authorities also tackle environmental issues (for example, the Nuclear Safety Authority (*Autorité de sûreté nucléaire*) (ASN) enforces nuclear law).



At a local level, Regional Directorates for Environment, Land Planning and Housing (*Directions régionales de l'environnement, de l'aménagement et du logement*) (DREAL), implement the environmental policies in each French region, under the authority of the local representative of the state: the prefect (*préfet*).



As far as local authorities are concerned, mayors can also exercise administrative enforcement powers in relation to environmental law. They specifically have jurisdiction to enforce waste law in situations such as the unauthorised dumping of toxic waste (*Article L.541-3, Environment Code*).



Regulatory enforcement

Préfets are the main authorities in charge of enforcing environmental law.

The *préfet* grants permits to operate certain kinds of facilities, such as the "classified facilities for the protection of the environment" (*installations classées pour la protection de l'environnement*) (ICPE), which are likely to endanger public safety, public health and/or the environment. The *préfet* enforces the control of the exploitation of these facilities and manages their termination. In cases of non-compliance of an operator with environmental requirements, the *préfet* can impose administrative sanctions (*Articles L. 171-7 and 171-8, Environment Code*).

To carry out his or her tasks, the *préfet* relies on the means of the Environment Inspection (*Inspection de l'environnement*), which is composed of environmental engineers and sworn officials implementing the environmental policy of the state.

The Environment Inspection (www.installationsclassées.developpement-durable.gouv.fr/) is part of the Regional Directorates for Environment, Land Planning and Housing (*Directions régionales de l'environnement, de l'aménagement et du logement*) (DREAL) and is in charge of the control of more than 500,000 ICPE. Each year, the Ministry for Ecological and Inclusive Transition (*Ministère de la transition écologique et solidaire*) (MTES) publishes guidelines establishing the priorities of the controls to be carried out by the environment inspectors.

Environmental requirements are enforced by the administration under the scrutiny of the administrative courts. In that respect, administrative courts have jurisdiction over state and local authorities' decisions (for example, regarding operating permits and environmental penalties).

Criminal and civil courts also enforce environmental law. The criminal courts have the power to try and prosecute environmental criminal offences, including the failure to comply with administrative prescriptions (see, for ICPE, *Articles L. 173-1 and L. 173-2, Environment Code*).

The civil courts hear civil liability cases, which include not only liability for damages caused to other persons (such as abnormal neighbourhood disturbances), but also liability for damages caused to the environment (*Article 1246, Civil Code*).



An integrated permitting regime (*Autorisation environnementale*)

In France, the function of environmental authority is exercised by the environmental authority of the CGEDD or by the regional missions of environmental authority (each chaired by a member of the CGEDD). The CGEDD environmental authority was created in the summer of 2009, in accordance with European environmental law, which requires each member state to establish an independent environmental authority (see its annual reports since 2009). The regional environmental authority missions (under the acronym MRAe) were created in April 2016 and took over part of the environmental authority missions previously entrusted to the regional prefects.

This entered into force on 1 March 2017. Integrated environmental permits cover:

- One main authorization to operate an ICPE and/or to operate an IOTA that has an impact on water.
- Other authorizations or administrative documents previously granted under different sets of rules:
 - absence of opposition to the declaration to operate IOTAs that have an impact on water;
 - authorization for the emission of greenhouse effect gases;
 - special authorization to carry out works in a classified natural reserve (*réserve naturelle*);
 - authorization to carry out works in a classified monument or site (*site classé*);
 - exemption to the prohibition against harming protected species;
 - absence of opposition to the projects that might have an impact on a Natura 2000 zone;
 - receipt of the declaration or registration to operate an ICPE;
 - approval to proceed to waste treatment;
 - authorization to operate an electricity production unit.

Single/separate permits

The integrated permitting regime does not cover all the permits that are required to carry out a project (for example, it does not cover the building permits required under urban planning law).

Activities not covered by the integrated permitting regime may require specific permits, for example:

- Mining operations.
- Nuclear facilities.

Contaminated land

Contaminated land is regulated through two sets of legislation:



- If "classified facilities for the protection of the environment" (*installations classées pour la protection de l'environnement*) (ICPE) have been operated on contaminated land, ICPE regulations apply *prima facie* (Articles L. 512-6-1, L. 512-7-6, L. 512-12-1 and L. 556-1, Environment Code). The *préfet* is the competent authority where an ICPE has been operated on the land.



- If an ICPE has not been operated on the contaminated land, common waste regulations apply (Article L. 556-3, Environment Code). The mayor is the enforcing authority where an ICPE has not been operated on the land.



The Ministry for Ecological and Inclusive Transition (*Ministère de la transition écologique et solidaire*) (MTES) is responsible for defining public policy on the subject of contaminated land (see MTES national methodology on contaminated land, 19 April 2017).



Investigation and clean-up

Where known contamination justifies investigation and monitoring measures, the state classifies the contaminated land within "land information sectors" (*Secteurs d'information sur les sols*) that must be drafted since 1

January 2019 (Articles L. 125-6 and R. 125-41, Environment Code). These sectors do not include operating ICPE and nuclear facilities, or easement areas on known contaminated land (servitudes d'utilité publique).

Primarily, the waste producer and/or the waste holder who contributed to the contamination of land where no ICPE had been operated, is responsible for clean-up measures. The owner of the contaminated land can be held liable for negligence or contribution to the contamination and is therefore responsible for the remediation (Article L. 556-3, Environment Code).

ICPE operators are subject to specific investigation and clean-up duties at the closure of the operation (Articles R. 512-39-3, R. 512-46-27, R. 512-66-1, Environment Code).

See for an extensive overview of all environmental law in France: [Environmental Law of France](#)

Nature Parks and protected Areas



Regional Nature Parks

The Regional Nature Parks (PNR, Parcs Naturels Régionaux), were founded in order to protect whole areas from human activities, pollution and destruction. These areas are already taken into account in local spatial planning documents, such as PLU (Local Urban Plan) and SCOT (Territorial Coherence Scheme).



Natura 2000

Created according to the Habitat Directive of the 22nd May 1992, the Natura 2000 zones are dedicated to the protection of particular species (fauna, flora and habitats) in a defined area.

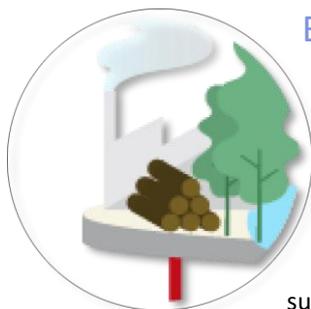
All activity must be evaluated on its incidence on the protected species in its Environmental Evaluation.



Marine Natural Parks

According to the provisions of the United Nations Convention on the Sea Law of 10th December 1982, States can create Marine Natural Parks on all or part of the marine waters under its sovereignty and belonging to the Maritime Public Domain.

Marine Natural Parks do not act as regulations; however, the Management Board of the Park may propose any necessary measure to the French Government in order to protect and ensure the sustainable management of the park. Likewise, the Management Board gives an opinion on the IOTA authorizations.



Biomass and waste incineration plants

Mandatory Cost-benefit analysis

EU Directive 2012/27 / EU on energy efficiency promotes the recovery of residual heat. For example, installations of more than 20 MW that emit heat and are close to a heat network must perform a cost-benefit analysis to investigate the possibilities of exploiting this residual heat in the network (only in the case of a new or substantially modified installation). Similarly, any new or modified power plant that is more than 20 MW connected to a heat network must also evaluate the different potential for heat recovery before the power plant is dimensioned.



These provisions have been transposed into French legislation by [Decree No 2014-1363](#) of 14 November 2014 and the Decree of 9 December 2014. This Decree specifies the relevant categories of provisions and the content of the cost-benefit analysis.



Environmental Code Article R512-46-4

For installations with a heat output of more than 20 MW that generate non-recovered fatal heat at a useful temperature level or that are part of a heating or cooling network, a cost-benefit analysis to evaluate the possibility of valuing fatal heat, especially via a network of heat or cold. A decision of the Minister for classified installations and the Minister of Energy, in the forms referred to in Article L. 512-5, determines the installations concerned and the procedures for performing the cost-benefit analysis;

For combustion plants with a thermal capacity greater than or equal to 20 MW, a description of the measures taken to limit the energy consumption of the installation. In particular, the elements for optimizing energy efficiency, such as secondary heat recovery, are provided.

See: [R512-46-4](#)



Order of 9 December 2014

The order is specifying the content of the cost-benefit analysis to evaluate the advisability of valuing waste heat through a heating or cooling network and the categories of installations concerned - Article 5

Where the cost-benefit analysis leads in the economic and financial analysis to a total expected benefit greater than the expected cost and there are no compelling reasons of entitlement, ownership or financial order by preventing, the operator implements the solution of recovery of the waste heat through a network of heat or cold in the conditions emerging from the cost-benefit analysis. In the event of a significant change in one of the parameters relating to the content of the cost-benefit analysis listed in the annexed table before the connection is implemented, the operator shall update the cost-benefit analysis and transmit it to the prefect.

Where there is an exemption based on the compelling reasons of law, ownership or financial order, it is expressly provided for by the authorization order mentioned in [Article R. 181-43](#) of the Code of the environment or by the registration order mentioned in [Article R. 512-46-19](#) of the same code. The prefect informs the Director General of Energy and Climate of his reasoned decision within one month of its adoption, for notification to the European Commission.

See also: <https://www.eea.europa.eu/publications/more-from-less/france-material-resource-efficiency>

Environmental authorization

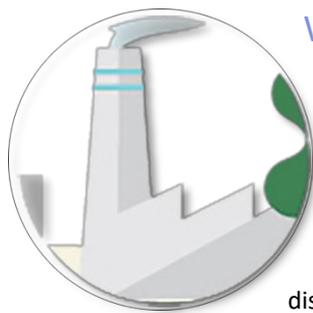
Depending on the thermal power of the boiler, and sometimes on the type of fuel used, there are different environmental authorizations to get:

- For biomass boilers (wood, straw, or any vegetal residue):
 - If the thermal power (Pt) is superior to 1MW and inferior to 20 MW: declaration procedure according to the topic 2910 of the ICPE regulation;

- If the thermal power (Pt) is superior to 20 MW and inferior to 50 MW: registration procedure according to the topic 2910 of the ICPE regulation;
- If Pt is superior to 50 MW, refer to the best available techniques reference folder “Grandes Installations de Combustion”.
- For waste-to-energy plants: all plants are submitted to the authorization procedure according to the topic 2771 of the ICPE regulation.

An installation submitted to an environmental authorization is submitted to controls regarding the amount of pollutants emitted into the atmosphere, the amount of fuel burned, of energy produced, but also on the maintenance and operation of all equipment.

See: https://aida.ineris.fr/consultation_document/10767



Waste heat

Mandatory Cost-benefit analysis

As mandatory due to the article 14 of the Directive Européenne relative à l'efficacité énergétique (in English : European directive on energy efficiency), for every new major district heating or every new major plant built in France, there must be a costs-benefits analysis regarding the use of industrial waste heat in the district heating.

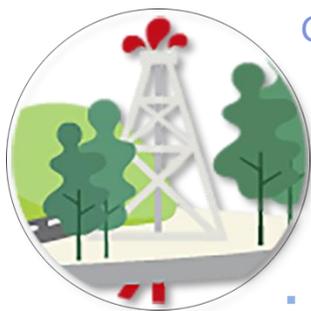


EU Directive 2012/27 / EU on energy efficiency promotes the recovery of residual heat. For example, installations of more than 20 MW that emit heat and are close to a heat network must perform a cost-benefit analysis to investigate the possibilities of exploiting this residual heat in the network (only in the case of a new or substantially modified installation). Similarly, any new or modified power plant that is more than 20 MW connected to a heat network must also evaluate the different potential for heat recovery before the power plant is dimensioned.

These provisions have been transposed into French legislation by Decree No 2014-1363 of 14 November 2014 and the Decree of 9 December 2014. This Decree specifies the relevant categories of provisions and the content of the cost-benefit analysis. See previous chapter for more information on this subject.

See: <https://www.legifrance.gouv.fr/affichTexte.do?cidTexte=JORFTEXT000037285002&dateTexte=&categoryLien=id>

The energy code does not support the production of electricity from residual heat. From an energy point of view, the conversion of heat into electricity is a less efficient process than the direct evaluation of heat. However, the residual heat can be used to produce electricity for own use or for sale on the market: this valuation may be relevant if there is no heat dissipation in the area.



Geothermal energy systems

Mining code

Geothermal installations are part of the statutory mining regime (Article L 112-1 of the Mining Code). The mining code regulates the research and operation of these geothermal installations by issuing two mining titles:

- the exclusive research license for the exploration phase
- the concession for the operating phase.



The exclusive research permit is a ministerial order that gives the company an exclusive right to carry out exploration work, which itself is regulated by Decree 2006-649 of 2 June 2006, to discover a geothermal deposit on the site. within the perimeter determined by the award decision, as well as the exclusive possibility to request a concession within the perimeter of the license if the device is proven. The holder submits his license application to the minister responsible for mines who forwards it to the relevant prefecture. This verifies the admissibility of the application and then organizes a national and European competition to bring this application to the attention of other companies interested in the area and to retain the company (s) that offer the best technical and financial capacities and presenting a work program to improve knowledge of the energy source with strict compliance with the Regulation.

All applications for permits submitted give rise to a public participation organized by the Ministry of Mines. The application, the impact message as defined in the first paragraph of Article 17 of Decree 2006-648 of 2 June 2006 and cartographic documents can be consulted at the Ministry of Mining and at the regional directorates.

The exclusive research license is granted for a maximum of five years and can be extended twice, each for a maximum of five years. The scope of the permit is reduced with each expansion, with the company focusing more specifically on the areas to be explored.

The concession is a decision that gives the company the right to exploit the geothermal resource. With this mining title, the production phase of the raw material is possible. Such a concession is granted for an initial period of up to 50 years and each concession can be extended several times for up to 25 years. Granting and renewing a concession is subject to a public inquiry of at least 30 days.

The procedure for granting exclusive research licenses and concessions was established by Decree No 2006-648 of 2 June 2006.

The mining title does not give the holder the right to perform research or exploitation activities. Depending on their importance, they are subject to a permit or prefectural statement. Decree No 2006-649 of 2 June 2006 specifies the regime and the procedure that applies to each category of work.

The authorization procedure provides for a public inquiry under the conditions provided for in Article R123-1 et seq. Of the Environmental Act, and for the gathering of opinions by the services and municipalities. The prefect decides by decision after consultation with CODERST.

The statements are submitted to the advice of the services and sent to the municipalities for information. The prefect has two months after receipt of the declaration to issue, if necessary, regulations intended to protect the interests mentioned in Article L161-1 of the Mining Code (worker safety, public safety, environment, waters, heritage, ..). In the absence of additional requirements, the holder of the exclusive research license carries out the work in accordance with his statement.



The regulatory position on the different types of geothermal installations

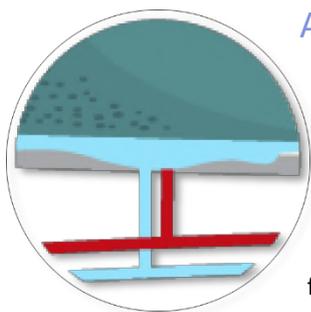
Decree No 78-498 of 28 March 1978 on geothermal research and exploitation titles defines in Article 1 geothermal installations at high or low temperature depending on the temperature of their water, measured in area during exploration drilling tests are above or below 150 degrees C .

With Decree No. 2015-15 of January 8, 2015, amending Decree No. 78-498, works called "of minor importance" (particularly characterized by a depth between 10 and 200 meters and equipment of less than 500 kW) benefit from a simplified declaration system. The capacity of 500 kW is sufficient to simultaneously heat more than 100 homes that meet the thermal requirements of the RT 2012 regulations for new buildings or with the label "building renovation with low energy consumption", known as "BBC Réno", for existing buildings.

Installations with a capacity of more than 50 MW are subject to a user license. Installations with a lower capacity are considered authorized and no administrative measures are required.

The request must go to the Energy Directorate of the ministry of environment, energy and sea.

Aquathermia



Environmental Code

The Environmental Code, in article L.214.1, states that IOTA activities (Installations, Ouvrages, Travaux et Activités) involving withdrawals on the water, a modification of its level or method of flow, the destruction of spawning grounds, zones for the growth or feeding of fish fauna, or spills, releases or deposits, even if not polluting, with the exception of domestic or similar activities (article R. 214-5), are

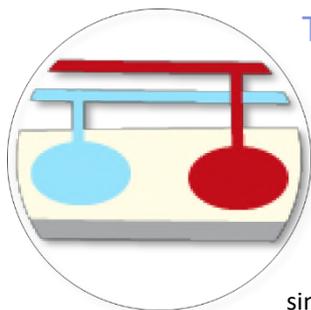
subject to the authorization or declaration regime.

Authorization or declaration schemes depend on the potential danger arising from the implementation of the IOTA. The considered dangers are public health and safety, damage on the free flow of water, reduction of the water resources, increase of the risk of flooding, and damage on the quality and diversity of the aquatic environment and fauna.

Thalasso thermia

Sea water as a source of heating and cooling is used in several areas in France; for example in the city of Marseille (Massileo District Energy).





Thermal energy storage

According to article L. 214-1 of the Environmental Code, those activities (Installation, ouvrages, travaux et activités, IOTA) that involve withdrawals on the water, a modification of its level or method of flow, the destruction of spawning grounds, zones for the growth or feeding of fish fauna, or spills, releases or deposits, even if not polluting, with the exception of domestic or similar activities (article R. 214-5), are subject to the authorization or declaration re-

gime.

Authorization or declaration schemes depend on the danger arising from the activities concerned and on the severity of the effects on aquatic resources and ecosystems. Thus, some IOTAs are subject to authorization, because they are likely to present dangers to public health and safety, to damage the free flow of water, to reduce water resources, to increase the risk of flooding or to seriously damage the quality or diversity of aquatic environments (article L. 214-3). On the contrary, those IOTAs that do not present such dangers are only submitted to declaration.

For geothermal operations of minor importance, defined by a depth of less than 100 m, and a maximum heat output * of less than 20 thermals / hour, a declaration to the mayor is sufficient. However, for geothermal farms of greater importance, it is the Mining Code that applies.

