

# District heating and cooling in France

## Policies & planning tools overview



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Bucharest, October 17th 2018

# AGENDA



- The legal framework
- Main measures supporting DHC
- The multiannual energy plan
- The local « master plan » for DH
- ADEME's position on the French DHC planning
- Environmental impact of DH

# QUIZZ: What do you know about the DH situation in France?



How many DH systems are they in France?

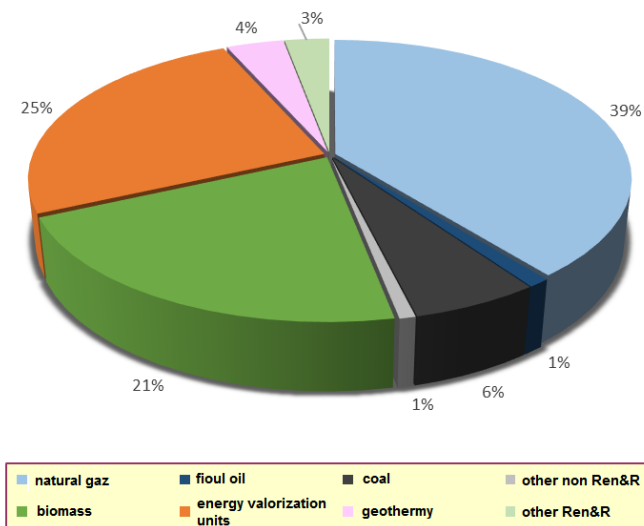
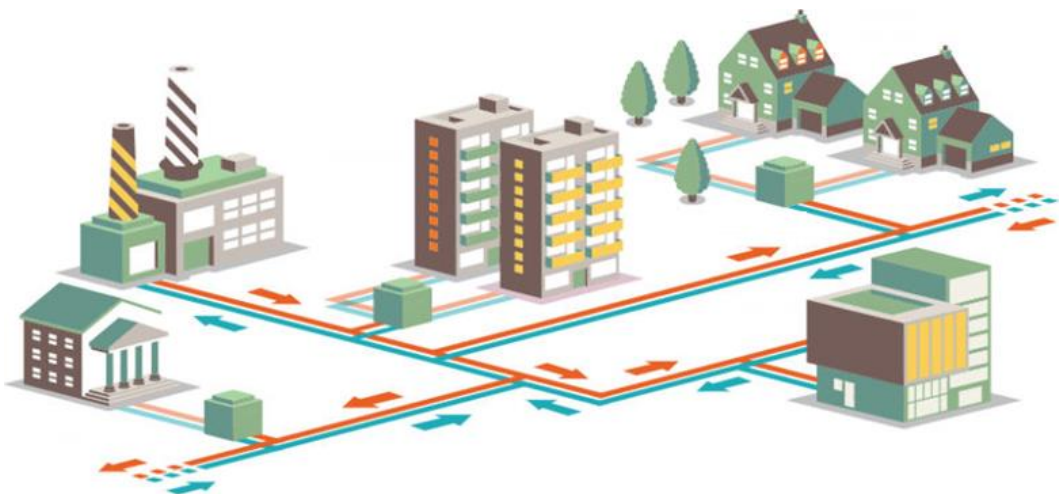
How many kilometers do they represent ?

How much energy do they deliver per year?

Which is the % of Ren in French DH systems?

# Answers to the quizz

**669** district heating networks representing **5,015km** have delivered **24,643 GWh** of net thermal energy in 2016 whose **53%** of **Ren & heat recovery**



Source: ADEME and the national union of urban heating and air conditioning (annual survey on DHC, September 2017)

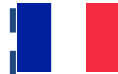


## EED

- 2 legislative acts to frame cost-benefit analysis (CBA) of new generation installations whose thermal inputs > 20 MW

- A national map displaying needs for heat, main existing installations, and potential recovery sources

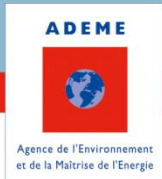
[http://carto.geo-ide.application.developpement-durable.gouv.fr/906/Carte\\_chaleur\\_nationale.map](http://carto.geo-ide.application.developpement-durable.gouv.fr/906/Carte_chaleur_nationale.map)



## Energy transition and green growth act (2015)

- strategical planning tools such as “**multiannual energy plan**” (*Programmation Pluriannuelle de l'énergie*) → France's strategical priorities by energy type
- objective for DHC: **multiply by 5 the amount of delivered renewable & waste district heating & cooling within 2030** (compared to 2012)
- Oblige local authorities to make **local master plan of DHS development within 2019** for installation in operation since 2009

LA TRANSITION ÉNERGÉTIQUE pour la  
CROISSANCE VERTE



**Local authorities responsible for DHC management** but can delegate resp. to private parties  
To oblige the connection of new building to existing DHC systems they **can define classification procedures** (law from July 2010 - loi portant engagement national pour l'environnement)

## Requirements for DHC system classification

1. The DHC system must be fed by **at least 50% of Ren or recovery energy**
2. Delivered energy must be **measured for each delivering point**
3. The system is **financially balanced** during the depreciation phase



For more information on DHC classification, see the guide from the center for studies and expertise on risks, the environment, mobility and development, CEREMA

<http://reseaux-chaleur.cerema.fr/classer-un-reseau-de-chaleur-ou-de-froid-guide-pratique-et-faq>

# The main schemes supporting DHC in France



**Reduced VAT** on distributed heating incl. at least 50% of renewable or source or waste heat

**TVA 5,5%**

**Mandatory “Master plan”** for local authorities in charge of H&C distribution incl. an assessment of services quality and extension potentials

NB: the plan must be performed bef. 31/12/2018 for infrastructures in operation on January 2009

**Heat Fund a special fund to support investment** in Heat (incl. DHC and industrial heat recovery)

**FONDS CHALEUR**  
DE LADEME

**Classification of DHC systems enabling the mandatory connection** of refurbished or new buildings in case of proportion of renewable & waste energies

**White certificates**

insulation of pipes and singular points of a heat network



**Thermal building regulation**

Obligation of Ren in ind. housing fulfilled thanks to connection to DH (>50% Ren) + max cons. authorization increased for blg connected to a district heating with low carbon impact

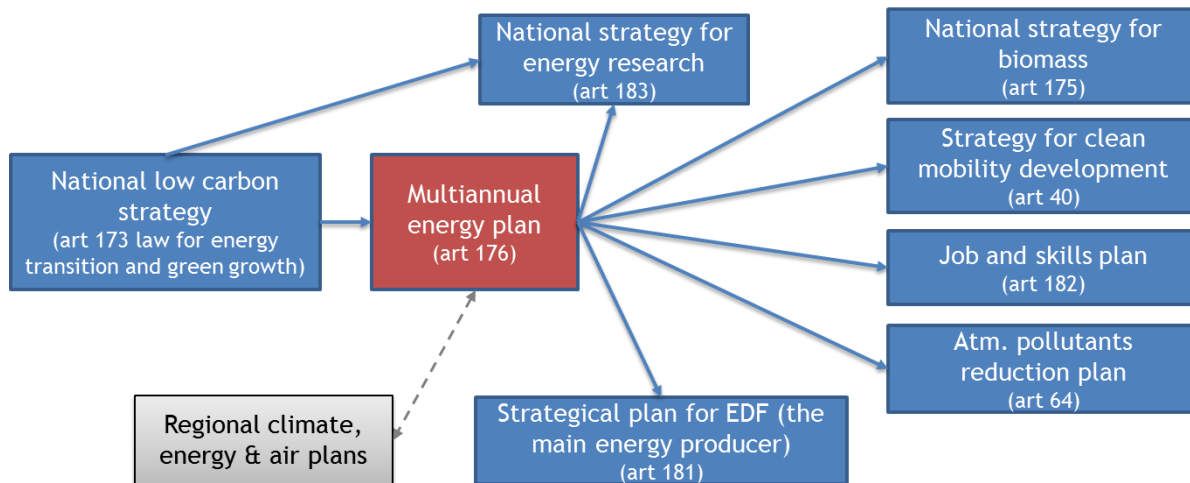
# The multiannual energy plan (1/4)



THE MULTIANNUAL  
*Energy Plan*

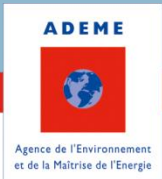
Introduced by the law for energy transition and green growth, this plan **sets periodical scenarios** per energy type **to achieve the long term French energy & climate objectives for 2030 and 2050**

Involving citizens, local authorities, and companies operating in the transport and energy sector, the MEP indicators are **reviewed by the National Council for Ecological Transition** incl. the French agency for energy & environment management, ADEME





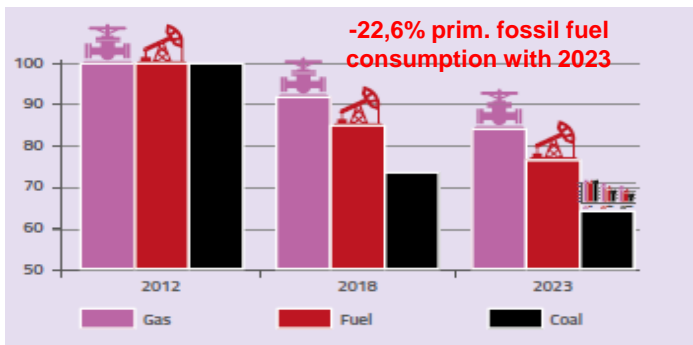
# The multiannual energy plan (2/4)



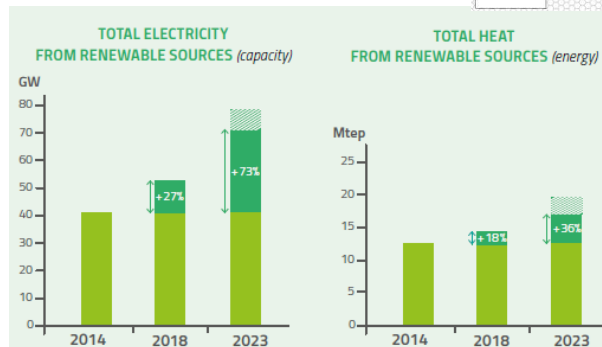
## Main objectives of MEP 2016



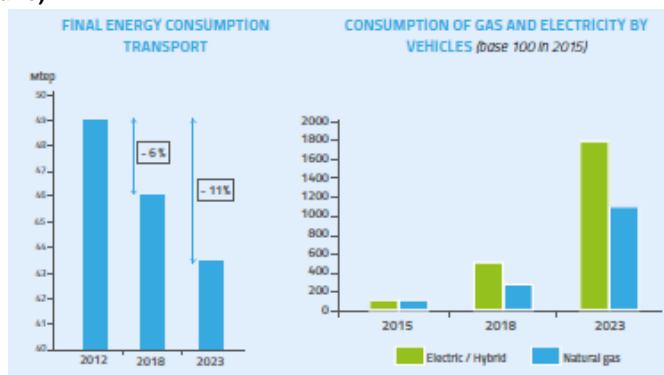
THE MULTIANNUAL  
Energy Plan



Evolution of primary fossil fuel consumption by category in MPE 2016 (base 100 in 2012, ref. scenario)



Scenarios for Ren (electricity & heat) in MPE 2016



Scenarios for clean mobility in MPE 2016

# The multiannual energy plan (3/4)



## Main outputs of MEP 2016



THE MULTIANNUAL  
*Energy Plan*



### Employees

The MEP will create 283,000 extra jobs by 2030

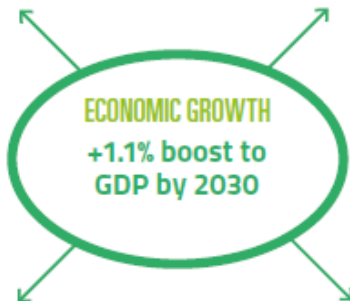
- Draft the "skills and jobs programming plan" included in the French Energy Transition for Green Growth Act..



### Consumers

Increasing gross disposable household income by € 13 billion by 2018 and 32 billion by 2023

- Fight against poverty, with the introduction of a new energy cheque scheme and a new system of energy-saving certificates for households living in energy poverty, with a target of 150 TWh in total energy savings by the end of 2017.



### Businesses

By 2030, the MEP will add 0.7% to the rate of wealth creation in the industrial sector

- Support the competitiveness of French industry by promoting the flexibility of industrial facilities and adapting the grid tariffs for energy-intensive facilities.



### Regions

Giving local authorities and citizens a leading role in the energy transition

- Award 'Energy-Positive Territories for Green Growth' status to 500 local authorities in France, allocating €250 million from the Energy Transition Fund.
- Implement local climate-air-energy plans and regional strategies for air quality and energy.
- Allow access to data collected by gas and electricity distribution system operators, in order to help local authorities improve their energy planning.

# The multiannual energy plan (4/4)



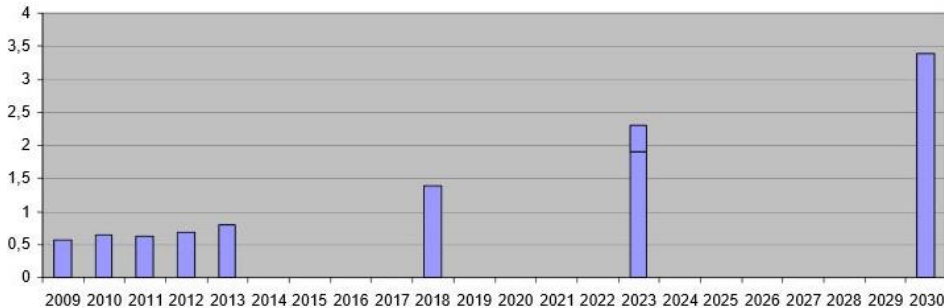
## Main challenges for DHC



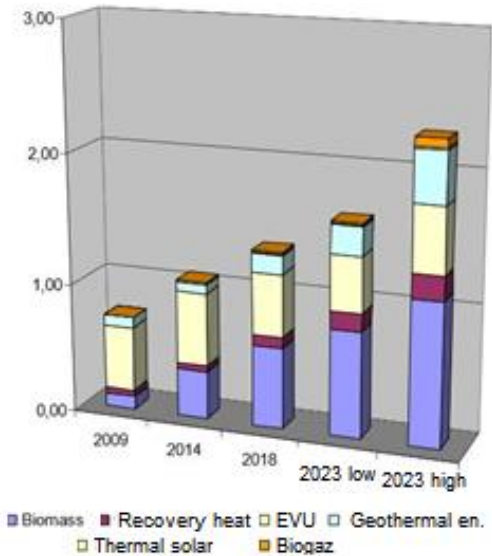
**Multiplication by 5** of the amount of delivered renewable & waste district heating & cooling within 2030 (compared to 2012) => **3.4 Mtoe Ren&R**

2 intermediary objectives:

- **1.35 Mtoe of Ren** in 2018 (0.68 in 2012)
- **Between 1.9 and 2.3 Mtoe** in 2023



Renewable heat & cooling & recovery energy delivered by DHC systems (in Mtoe) in MPE 2016



Renewable heat & cooling & recovery energy delivered by DHC systems (in Mtoe) in MPE 2016

# ADEME's proposal for MPE revision (1/3)



## Focus on district heating

### Methodology

Comparison of the mid and long terms objectives of MPE 2016 (22 TWh within 2023/40 TWh within 2030) with last development of the DH in France: **potential delivered energy by projects supported by the Heat fund** (0.8 TWh/y) + **annual survey on DHC development** from the national union of urban heating and air conditioning

NB: this survey is also used for yearly survey from IEA and Eurostat according to EU regulation n° 2017/2010 amending regulation n° 1099/2008 on energy statistics and for reporting requested by directive 2009/28 on renewable energies

### Main outputs

DH development too low to reach the objectives of the energy transition and green growth act

➔ **Multiplication by 3 the number of DH projects**

### ADEME's recommendations

- Strengthen support to regions where the DH market is not saturated
- Boost the classification procedures for networks having succeed their commercial phase
- Maximize the contribution of Ren and recovery energies to current and future projects (objectives : 60-65% of Ren & recovery energy in DH in 2028)
- Maintain the VAT reduction scheme & the heat fund support

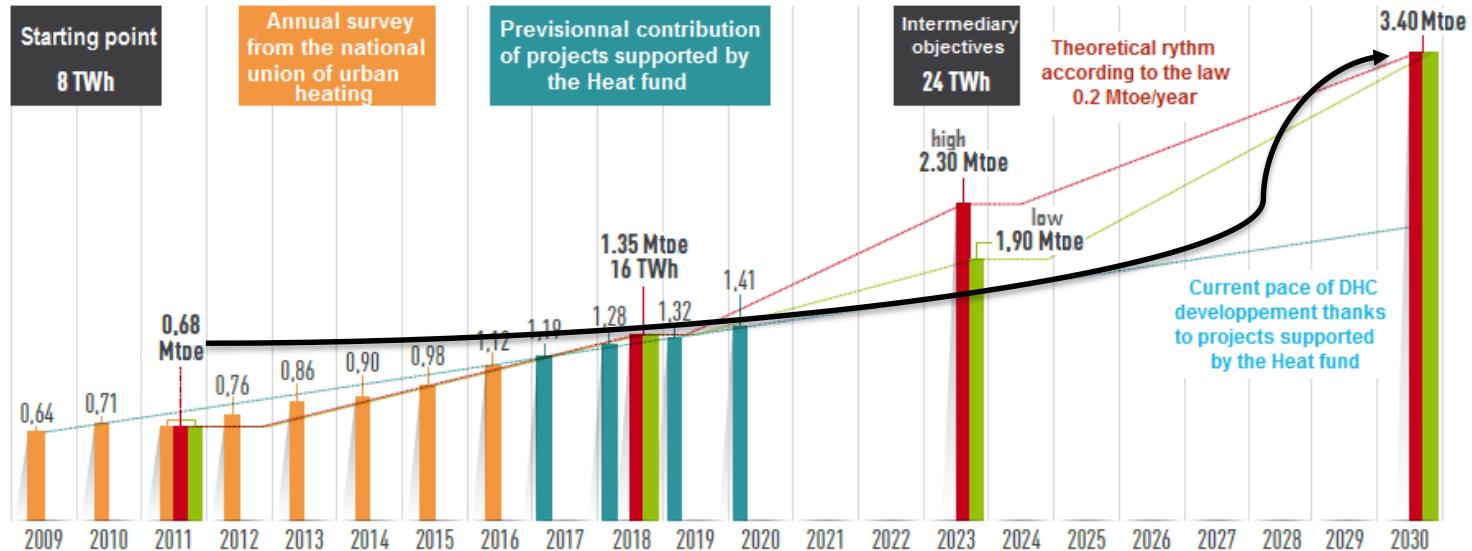
# ADEME's proposal for MPE revision (2/3)



## Focus on district heating

**Specific objectives for DHC**  
 2018 & 2023 : set by decree MPE from October 27th 2016  
 2030 : set by law for energy transition and green growth from August 17th 2015

- Previsionnal contribution of projects supported by the heat fund in N-3 (hypotheses: 10% of losses for new networks)
- Contribution evaluated from delivered energies estimated from the annual survey led by the national union of urban heating and air conditioning



X5 compared to 2011

# ADEME's proposal for MPE revision (3/3)



## Focus on Ren district cooling

### ● Methodology

*Starting point:* energy consumption in 2016 of main DC systems & projects supported by the Heat Fund (137 TWh)

*Ending point:* development pace of the main cooling project Climespace (4%/y) according to its master plan + potential new projects in accordance with the current capacity

### ● Main outputs

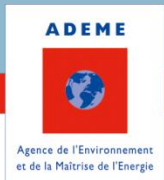
Target value for Ren district cooling (aerothermal excl.) within 2028 : **0.37 TWh** (32 ktoe)

~ multiplication by 2-3 of the current level !

### ● ADEME's recommendations

- Support of **7 new big & 50 mid-size projects**
- Development of **cool water loop**

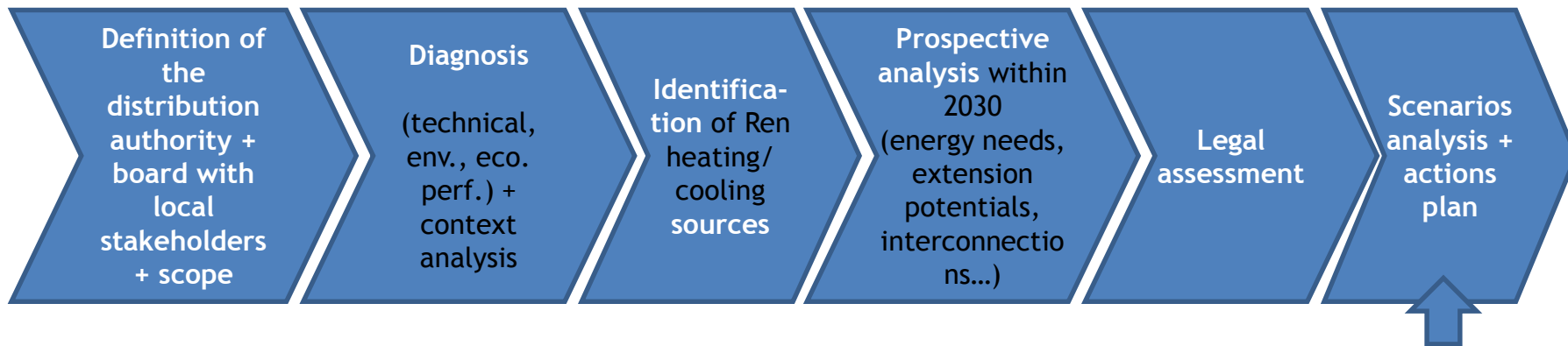




# The local « master plan » for DH

Energy transition and green growth act → obliges local authorities to make **local master plan of DHS development within 2019** for installation in operation since 2009

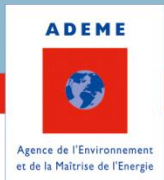
Nota : this plan is also requested by ADEME to every request for financial support to DH infrastructure



A feasibility study of Ren DH infrastructure creation or extension is mandatory for any urban planning operation subject to an impact study

For more guidelines on master plan elaboration : see the [guide from the national local authorities AMORCE](#)

# Environmental impact of DHC (1/2)



## A brief overview

### Legal framework

Decree of 15 September 2006 relating to the energy performance diagnosis for existing buildings for sale in mainland France → **DHC operators must declare the CO2 content of their installation** taking into account as possible transient and temporary conditions in the life of a network

### Principle

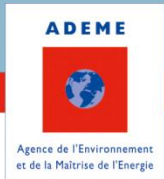
Every year an **ministerial order published CO2 content** (reference value). This value corresponds to the **lowest value between the content of the year N and the average content of years N, N-1 and N-2**

NB1: data based on the annual survey on DHC development from the national union of urban heating.  
Default value (if no answer): 0.384 kgCO<sub>2</sub>/MWh (eq. coal)

For more information on the last assessment of DHC CO<sub>2</sub> content see the ministerial order from April 11<sup>th</sup> 2018  
<https://www.legifrance.gouv.fr/eli/arrete/2018/4/11/TERL1809033A/jo/texte>



# Environmental impact of DHC (2/2)



## Coming evolutions

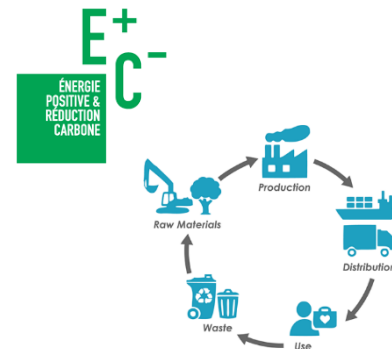
### Limits

Zero content for heat generated from biomass and fatal heat + exclusion of emissions due to energy production and distribution auxiliary equipment (electricity) + inclusion of electricity generated thanks to cogeneration

### Potential evolution

The energy & green growth act → experimentation launched in November 2016 of a **new building label** taking into account **GHG emitted** & **resources depletion** (energy + materials) during the entire life cycle of building to anticipate the future thermal building regulation

→ **Rules on CO2 content evaluation for DHC expected to be updated**



For more information on the new label experimentation [www.ecologique-solidaire.gouv.fr/batiment-energie-positive-et-reduction-carbone](http://www.ecologique-solidaire.gouv.fr/batiment-energie-positive-et-reduction-carbone)

# For more information on French DHC

- The specific webpage of the Ministry for ecological transition

<https://www.ecologique-solidaire.gouv.fr/reseaux-chaleur>

- The specific webpage of ADEME on DHC

<https://www.ademe.fr/expertises/energies-renouvelables-enr-production-reseaux-stockage/passer-a-laction/transport-lenergie/reseaux-chaleur>

The ADEME's point of view on DH

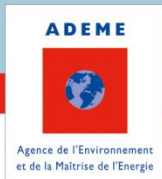
<https://www.ademe.fr/avis-lademe-reseaux-chaleur-alimentes-energies-renouvelables-recuperation>

- The French Observatory led by the national union of urban heating and air conditioning

<https://www.observatoire-des-reseaux.fr/sncu/>

- The report from CEREMA on the development of district heating & cooling in France published on June 2017 <http://reseaux-chaleur.cerema.fr/rapport-developpement-des-reseaux-de-chaleur-et-de-froid-en-france>

- The national map displaying needs for heat, and potential recovery sources ([http://carto.geo-ide.application.developpement-durable.gouv.fr/906/Carte\\_chaleur\\_nationale.map](http://carto.geo-ide.application.developpement-durable.gouv.fr/906/Carte_chaleur_nationale.map))





Thank you for your attention

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