

Law of 15 December 2017 on an

## AID SCHEME FOR ENVIRONMENTAL PROTECTION

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# Applicant's Guide

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Investment aid for enterprises in the field of environmental protection  
Public aid to promote eco-technologies and sustainable development in companies.



LE GOUVERNEMENT  
DU GRAND-DUCHÉ DE LUXEMBOURG  
Ministère de l'Économie

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## INTRODUCTION

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This applicant's guide serves as a vade mecum for companies wishing to invest in environmental protection measures covered by the law of 15 December 2017 relating to an aid scheme for environmental protection ([Mémorial A N°1108](#)) (hereafter "the LAW"). The general provisions are included in this guide in the corresponding chapter (see p. 15).

The law of 15 December 2017 relating to an aid scheme for environmental protection is based on the community regulation (EU) No 654/2014 of 17 June 2014 declaring certain categories of aid compatible with the internal market in applications of Articles 107 and 108 of the treaty (GBER)<sup>1</sup>. In addition, the European Commission's Guidelines on State aid concerning environmental protection and energy for the period 2014-2020 <sup>2</sup> (EEAG) are applicable, providing more information on the application of the legal basis.

The law applies to all companies having the required authorisations to carry out their activities and an establishment or branch on the territory of the Grand Duchy of Luxembourg. It is recommended that applicant companies take the legal form of a public limited company (S.A.) or a limited liability company (S.à r.l.).

In order to be eligible for state aid, an incentive effect must be demonstrable. The aid must lead to a change in the behaviour of the beneficiary undertaking so that it creates new activities which it would not carry out without the aid or which it would carry out in a limited or different way, thereby giving an incentive to increase the level of environmental protection and improve the functioning of a secure, affordable and sustainable European energy market. The applicant company must submit a written request for assistance before work on the project or activity in question begins.

However, the following are excluded from the scope of the law:

- aid granted in the fisheries and aquaculture sector, which is covered by regulation (EU) No 1379/2013 of the European Parliament and of the Council of 11 December 2013 on the common organisation of the markets in fishery and aquaculture products, amending Council Regulations (EC) No 1184/2006 and (EC) No 1224/2009 and repealing Council Regulation (EC) No 104/2000;
- aid granted in the sector of processing and marketing of agricultural products, in the following cases:
  - where the amount of aid is fixed on the basis of the price or quantity of such products purchased from primary producers or placed on the market by the undertakings concerned, or
  - where the aid is conditional on being partly or wholly passed on to primary producers;
- aid for activities linked to exports to third countries or Member States, i.e., aid directly linked to the quantities exported, and aid to finance the establishment and operation of a distribution network or other current expenditure linked to the export activity;
- aid conditional on the use of domestic products in preference to imported products;
- aid to firms in difficulty, with the exception of aid schemes to make good the damage caused by certain natural disasters;

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<sup>1</sup> <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32014R0651>

<sup>2</sup> Guidelines on State aid for environmental protection and energy for the period 2014-2020 (2014/C 200/01) [https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52014XC0628\(01\)](https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52014XC0628(01))

- individual or ad hoc aid in favour of an undertaking which is the subject of an outstanding recovery order issued in a previous Commission decision declaring aid unlawful and incompatible with the internal market, or in favour of undertakings in difficulty, with the exception of aid schemes to make good the damage caused by certain natural disasters.

The environmental protection measures concerned, for which the competent Ministers may grant investment aid, are:

- Art. 4 Investment aid enabling undertakings to go beyond the Union's environmental protection standards or to increase the level of environmental protection in the absence of such standards;
- Art. 5 Investment aid for early adaptation to future Union standards;
- Art. 6 Investment aid for energy efficiency measures;
- Art. 7 Investment aid for projects promoting energy efficiency in buildings<sup>3</sup>;
- Art. 8 Aid for investments in high-efficiency cogeneration;
- Art. 9 Investment aid for the promotion of energy from renewable sources;
- Art. 10 Investment aid for the remediation of contaminated sites;
- Art. 11 Investment aid for efficient heating and cooling networks;
- Art. 12 Investment aid for the recycling and reuse of waste;
- Art. 13 Aid for investment in energy infrastructure;
- Art. 14. Aid for environmental studies.

For each measure, the contribution to increasing the level of environmental protection must be highlighted by quantitative indicators (i.e., amount of energy / resources /CO2 saved, efficiency gains, ...).

In this guide, companies will find the information they need to prepare an application file. The guide is modifiable, and the most recent version can be downloaded from [www.guichet.lu](http://www.guichet.lu). Each dossier must correspond to the guidelines in the most recent version of the Applicant's Guide at the time of submission.

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<sup>3</sup> This article will come into force once a Grand-Ducal regulation has been voted on the practical implementation of the fund for the promotion of energy efficiency in buildings, which is necessary for the co-financing of the projects submitted.

The form used to submit the application for aid can be downloaded in Word format from [www.guichet.lu](http://www.guichet.lu).

*Heading: Business -> Financing & Support measures -> Environmental protection aid schemes -> Investment aid for the protection of the environment*

All formal applications for support (including attachments) must be submitted in electronic form (.pdf and .docx, or .doc) via Myguichet:

Link:

<https://guichet.public.lu/en/entreprises/financement-aides/aides-environnement/industrie-services/aide-protoc-environnement.html#bloub-9>

**The application for assistance must imperatively relate to a duly stabilised project and must be submitted before the start of the project** (= start of work as defined in Art. 2 paragraph 5 of the Law of 15 December 2017) within the company, i.e., before making a binding commitment to this end.

The irrevocable order for eligible installations/equipment must therefore be made **after the** official submission of the application for support and **after** the project start date indicated in the submission forms.

*The information collected during the application for public intervention is processed electronically in accordance with the provisions of the Law of 1 August 2018 and Regulation (EU) No 679/2016 of the European Parliament and of the Council of 27 April 2016 on the protection of individuals with regard to the processing of personal data and on the free movement of such data, known as the "General Data Protection Regulation" (GDPR).*

## SUMMARY OF THE DOCUMENTS REQUIRED FOR THE PREPARATION OF THE APPLICATION FILE

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The application **form** (Word format), as well as the files to be attached in Excel format, which can be downloaded from [www.guichet.lu](http://www.guichet.lu), are provided to help companies in the preparation of their application for aid. The application is structured as follows:

A template for the “Project Description” labelled “Template EN\_Project Description\_ENV v1.1.docx” has to be submitted in Word format comprising:

- 1- Identification of the company and type of investment planned
- 2- Description of the details of the planned investment project
  - 2.1. Project objectives
  - 2.2. History and evolution of the project
  - 2.3 Detailed description of the proposed technical solution
  - 2.4. Assessment of the expected impact of the project in terms of environmental protection (i.e., amount of energy / resources /CO<sub>2</sub> saved, efficiency gains, ...).
  - 2.5. Description of the counterfactual reference (if applicable)
- 3- Project implementation
  - 3.1. Incentive effect of the Aid
  - 3.2. In-house human resources
  - 3.3. Technical components employed
  - 3.4. Quarterly implementation schedule (Gantt chart)
  - 3.5 Permits and authorisations

### 4. Financial summary of the project

A template in Excel format is provided “Template EN\_Financial Summary\_ENV.xlsx”

A detailed calculation on the return of investment has to be provided based on a detailed 15-years business plan in editable Excel format is required if electricity feed-in tariffs or a legally insured heat premium are involved.

Additionally, 3 Excel Templates are provided to submit the Balance and Profit and Loss accounts of the applicant and if the applicant is part of a larger economic entity the consolidated Balance and Profit and Loss accounts of its mother company next to the company size evaluation sheet:

- “BS and PP\_EN\_Applicant Company\_v1.1.xlsx”
- “BS and PP\_EN\_Group\_v1.1.xlsx”
- “Company Size\_EN v1.1.xlsx”

The form, which includes the guidelines used to structure the application for state aid in relation to the investment project, can be adapted to meet specific needs. The Ministry of the Economy reserves the right to request any additional information it deems useful for a proper understanding of the project.

These documents can be written in: French, German or English.

The company must refer to the applicant's guide in force on the date of the application to compile its application for aid relating either to an investment project in environmental protection or to an environmental study.

Only complete applications including the required information will be considered.

The information collected during the application for public intervention is processed electronically in accordance with the provisions of the Law of 1 August 2018, and Regulation (EU) No 679/2016 of the European Parliament and of the Council of 27 April 2016 on the protection of individuals with regard to the processing of personal data and on the free movement of such data, known as the "General Data Protection Regulation" (GDPR).

In accordance with the General Block Exemption Regulation (GBER) N° 651/2014<sup>4</sup>, the applicant company is informed and accepts that the public aid, if it reaches the amount of EUR 500,000, will be published on a dedicated website, including all the information listed in Annex III of the said Regulation, including the name of the beneficiary, the registration number and the amount of aid granted.

## BRIEF INFORMATION ON THE PROCEDURE FOR EXAMINING AID APPLICATIONS

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- **Aid applications for an investment project**

Each complete file will be analysed by experts from the Ministry of the Economy and will be presented at regular intervals to the State Aid Commission, which will give its opinion on the intensity of the aid that can be granted. A precise and binding indication on the maximum level of actual aid cannot be provided before the Commission has given its formal opinion.

The decision on the intensity of the aid definitively allocated falls within the sole competence of the Ministers of Economy, Energy (Art. 6, 7, 8, 9, 11, 13) and Finance and will be recorded by signing an agreement.

The aid intensity is determined in accordance with Art. 19 of the Law of 15 December 2017 in accordance with:

- a) the expected impact of the project on the protection of the environment and technological potential and its contribution to economic development;
- b) the innovative nature of the project;
- c) the financial scope of the project in relation to the size of the company;
- d) for investments in favour of projects promoting energy efficiency in buildings and for the production of energy from renewable energy sources, energy policy guidelines laid down by the Government.

The Figure 1 on page 12 summarises the main steps of the procedure.

- **Applications for assistance with an environmental study**

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<sup>4</sup> Commission Regulation (EU) No 651/2014 of 17 June 2014 declaring certain categories of aid compatible with the internal market in application of Articles 107 and 108 of the Treaty, <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32014R0651>



Each complete file will be analysed by experts from the Ministry of Economy. By means of a simplified procedure, a proposal for a decision will be sent by the experts to the Ministers of Economy and Finance and will be recorded in an official letter addressed to the applicant company.

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## HELP-DESK

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The partners of the Ministry of Economy to support companies are Luxinnovation and Klima-Agence GIE.

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### LUXINNOVATION

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**LUXINNOVATION**

TRUSTED PARTNER FOR BUSINESS

Luxinnovation offers a range of personalised services so that companies in Luxembourg can make use of environmental protection aid schemes.

Luxinnovation ensures:

- the promotion of aid measures;
- the orientation towards the appropriate financing scheme;
- the accompaniment of application files as well as the application for financial aid.

Information: [www.luxinnovation.lu](http://www.luxinnovation.lu)

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### KLIMA-AGENCE GIE

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Klima-Agence GIE is the national structure for the promotion of a sustainable energy transition. Supported by the State of the Grand Duchy of Luxembourg, represented by the Ministry of energy and territorial planning, the Ministry of Environment, of Climate and sustainable development, the Ministry of Housing, and in collaboration with the Chambre des Métiers (CDM) and the l'Ordre des Architectes et Ingénieurs-conseils (OAI), its mission is to be the partner and public facilitator of reference to support the Luxembourgish society in her engagement in climate protection and energy transition management.

Klima-Agence GIE offers neutral and free basic advice to companies in order to make them aware of the possibilities of reducing their energy consumption, making use of renewable energies as well as taking advantage of state subsidies. This advice enables them to choose the technical solutions and energy management methods best suited for their needs.

Information: [www.klima-agence.lu/en](http://www.klima-agence.lu/en)

## SUBMISSION PROCEDURE

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An application for aid is understood to be a duly completed application in accordance with the law of 15 December 2017.

The aid application must relate to a **stabilised project** and be submitted **before the start of the work in** order to meet the eligibility criteria for the **incentive effect**. Any unconditional and legally binding commitment, such as an irrevocable order for eligible installations/equipment, must therefore be made after the official submission of the aid application and after the project start date indicated in the submission forms.

Definition "Incentive effect":

*"Aid is deemed to have an incentive effect if the beneficiary has submitted a written application for aid to the Member State concerned before work on the project or activity in question has started."*

*"The aid must lead to a change in the behaviour of the beneficiary undertaking so that it creates new activities which it would not carry out without the aid or which it would carry out in a limited or different way, thereby giving it an incentive to increase the level of environmental protection and improve the functioning of a secure, affordable and sustainable European energy market."*

Definition "Start of work":

*"either the start of construction work related to the investment, or the first legally binding commitment to order equipment or any other commitment making the investment irreversible, whichever occurs first. The purchase of land and preparations such as obtaining permits and carrying out feasibility studies are not considered as the start of work. In the case of buyouts, "commencement of work" is the time of acquisition of assets directly related to the acquired establishment.";*

The incentive effect criterion **is not met** if a contract has been signed with an unconditional and legally binding commitment before the start of the project. On the other hand, if a contract contains a suspensive clause stating that the obligation is dependent on the application for and receipt of State aid, the contract will not be considered as a legally binding commitment and the incentive effect will in principle be considered to be fulfilled. The general fact that the company may cancel the contract without charge does not alter the binding nature of the contract.

The application must contain at least the following information, as defined in Art. 18. paragraph 2 of the Law of 15 December 2017:

- a. the name and size of the company (any documents deemed useful can be requested in order to determine the size of the company);
- b. a description of the environmental protection investment project and of the beneficiary, including its start<sup>5</sup> and end dates;
- c. an assessment of the expected impact of the project on environmental protection;
- d. a description of how the investment project will be operated and the economic potential;

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<sup>5</sup> The start date includes under the definition of "start of work" any binding commitment.

- e. the localization of the project;
- f. the total cost of the project;
- g. a list of eligible project costs under the relevant scheme;
- h. operating profits and costs, if any;
- i. a financing plan;
- j. the form of aid and the amount of public funding needed for the project;
- k. for large companies, indications supporting the incentive effect of the aid requested;
- l. a description of the technological potential and innovative character of the project, if applicable;
- m. any relevant element enabling the qualities or specific features of the project or programme and its incentive effect to be assessed, as well as the criteria set out in Article 19.

The Ministry may request additional information useful for the proper understanding of the project.

The main steps in the procedure for submitting and processing applications for support are summarised in the Figure 1. Companies are advised to make use of Luxinnovation's free services before submitting an application to the Ministry of Economy.

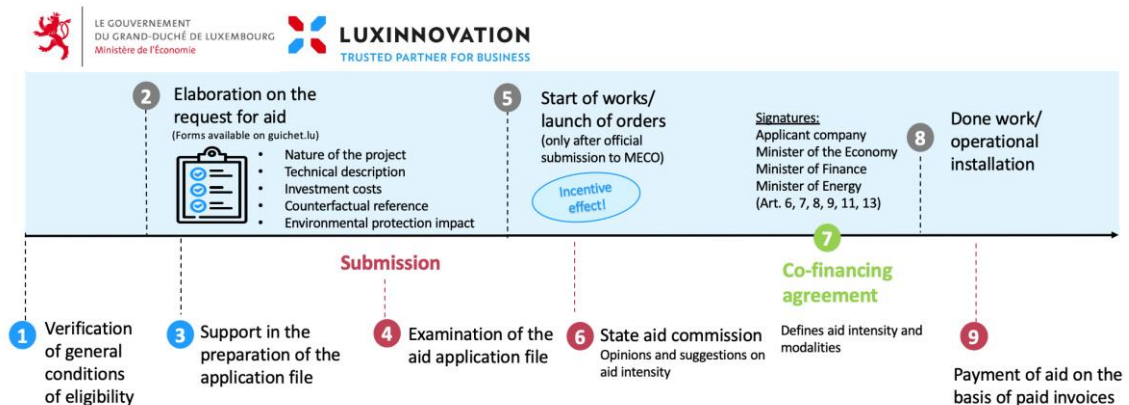


Figure 1: Summary of the key steps in the procedure for submitting and examining applications for financial aid

A simplified procedure applies to applications for aid for environmental studies (Art. 14). The opinion of the State Aid Commission does not need to be requested (Step 6 Figure 1) and instead of a co-financing agreement (Step 7 Figure 1) a decision will be addressed to the applicant company.

## SME STATUS AND THE "SINGLE ECONOMIC ENTITY" CONCEPT (ANNEX I OF THE GBER<sup>4</sup>):

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In view of the difficulties, such as access to capital or lack of human resources, encountered by SMEs, certain categories of aid in the RGEC provide for an increase in aid intensity in their favour. At the national level, this provision was the subject of a <sup>6</sup>Grand-Ducal regulation in 2005 (see extracts below).

In order to check whether the applicant company can benefit from SME status, it is necessary to verify whether:

|                            | Micro        | Small         | Average       |
|----------------------------|--------------|---------------|---------------|
| Workforce; <b>and</b>      | <10          | < 50          | < 250         |
| Annual turnover; <b>or</b> | < €2 million | < €10 million | < €50 million |
| Annual balance sheet       | < €2 million | < €10 million | < €43 million |

Account should be taken not only of the number of employees<sup>7</sup> and the turnover <sup>8</sup>or annual balance sheet of the applicant undertaking, but also of those of any other economic entity with which the applicant undertaking forms a **"single economic entity"**<sup>9</sup>. To this end, it must be established whether the applicant undertaking can be considered as a "single economic entity":

- autonomous;
- have a "partner corporation" with another entity;
- have a "related undertaking" relationship with another entity;
- maintain one of the relationships referred to in point (iii) through consultation between one or more natural persons, provided that the other undertaking is active in the same or adjacent market.

Undertakings exercising one of the above relationships form, according to case law, a "single economic entity". The latter must be the reference point when analysing the compatibility criteria, in particular the calculation of SME status.

When the company in question is a start-up company that does not yet have a balance sheet, the business plan should be analysed up to the time of the first turnover.

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<sup>6</sup> <http://www.legilux.public.lu/leg/a/archives/2005/0038/a038.pdf>

<sup>7</sup> The headcount is expressed in annual work units (AWU). Each person who worked full-time in the enterprise or on its behalf during the year in question corresponds to one unit. Part-time staff, seasonal workers and those who did not work for the whole year are fractions of a unit.

<sup>8</sup> Turnover excludes value added tax (VAT) and other indirect taxes.

<sup>9</sup> The holder is required to provide support in collecting the relevant information in the context of controlling the size of the company (SME or large company).

i) Autonomous

If an applicant undertaking is considered autonomous, it is considered to form a single economic entity which is to be analysed.

ii) Partner corporation:

If the applicant undertaking alone, or jointly with one or more affiliated undertakings, holds between 25-50% of the capital or voting rights of another undertaking, the latter must be qualified as a partner undertaking. The same reasoning applies to undertakings holding between 25-50% of the applicant's capital or voting rights. For the calculation of the SME status, the relevant figures of the partner enterprise(s) must be added pro rata to that of the applicant.

*Example:* A company "A" applies for aid reserved for SMEs only. On the basis of the information provided by the applicant, it is understood that company B holds 35% of the capital of company A. In order to calculate the actual size of the applicant, it is important to add 35% of company B's workforce and financial figures to the complete data for company A.

This criterion should be waived even if the entity holds between 25% and 50% of the capital or voting rights of another undertaking provided that it is:

- A business angel, under public or private law, provided that the total of their investment(s) does not exceed €1.25 million;
- A university or non-profit research centre;
- From an institutional investor;
- An autonomous local authority with an annual budget of less than €10 million and less than 5,000 inhabitants.

It should be specified that business angels interfering directly or indirectly in the management of the investee company, without prejudice to the rights they hold as shareholders or partners, may be qualified as related companies.

(iii) Related undertaking:

A company must be qualified as related when it:

- holds between 50.01% and 100% (of the capital) and voting rights of the shareholders or partners of another company;
- has the right to appoint or dismiss the majority of the members of the administrative, management or supervisory body of another undertaking;
- has the right to exercise a dominant influence over another undertaking by virtue of a contract concluded with the latter or by virtue of a clause in its articles of association;
- controls alone, by virtue of an agreement concluded with other shareholders or associates of that other company, the majority of the voting rights of the shareholders or associates of that other company.

For the calculation of the SME status, the relevant figures of the company(ies) 100% related to the applicant's company must be added.

(iv) Enterprise linked through one or more natural persons

Some companies seem at first glance to be independent of each other. However, if two undertakings do not meet any of the above criteria from a legal point of view, they may nevertheless qualify as forming a "single economic entity", provided that the following two cumulative conditions are met:

1. The companies concerned fulfil one of the criteria of a "related undertaking" through a natural person or a group of natural persons acting in concert.
2. The companies analysed are active in the same or contiguous market.

Finally, it should be specified that when a company exceeds the thresholds for the number of employees or the financial situation during the financial year in question, its situation will not be affected, and it will retain the SME status with which it started the year. However, it will lose its status if it exceeds the thresholds for two consecutive accounting years. The reverse applies for a large company meeting the SME thresholds for two consecutive years.

To determine the single economic entity and verify SME status, companies are asked to fill in the Excel file - spreadsheet "SME ANALYSIS" or to use the Commission's<sup>10</sup> self-assessment wizard.

For large companies, consolidated accounts can be used as a basis for analysis.

*N.B. The Ministry may request any documents deemed useful in order to determine the size of the company.*

**Important note:** Aid may only be granted if the company cannot qualify as a firm in difficulty (Art. 3 (2)(e)). The validation of the criterion of "**undertaking in difficulty**" within the meaning of Article 2(9) of the Law of 15 December 2017 on an aid scheme for environmental protection is carried out both at the level of the applicant undertaking and at the level of the single economic entity, considering all related undertakings, as specified above.

*N.B. The Ministry may request any documents it deems useful in order to verify the criterion of the company in difficulty.*

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<sup>10</sup> [http://ec.europa.eu/growth/tools-databases/SME-Wizard/smeg.do;SME\\_SESSION\\_ID=XY3pnhVAA7l4SttxTbHv0De0BAdTSb5rXReDFE2\\_1G04AAsk3f7Hl-1562859047?execution=e1s1](http://ec.europa.eu/growth/tools-databases/SME-Wizard/smeg.do;SME_SESSION_ID=XY3pnhVAA7l4SttxTbHv0De0BAdTSb5rXReDFE2_1G04AAsk3f7Hl-1562859047?execution=e1s1)

### Chapter 1 - *General provisions*

#### **Art. 1. Subject**

(1) The aid provided for by this Law shall be granted by joint decision of the Ministers responsible for the Economy and Finance, hereinafter referred to as "the competent Ministers".

By way of derogation, the aid referred to in Articles 14 shall be granted by decision of the Minister responsible for the Economy.

The foregoing paragraphs are without prejudice part of the provisions of Article 7.

(2) This Law shall apply exclusively to aid having an incentive effect. The aid must lead to a change in the behaviour of the beneficiary undertaking so that it creates new activities which it would not carry out without the aid or which it would carry out in a limited or different way, thereby giving it an incentive to increase the level of environmental protection and improve the functioning of a secure, affordable and sustainable European energy market.

(3) For each aid referred to in paragraph 1 above, its gross amount may not be less than EUR 1,000 nor more than the amount provided for in Article 80(1)(d) of the amended Law of 8 June 1999 on the Budget, Accounting and Treasury of the State.

#### **Art. 2 Definitions**

For the purposes of this Act, the following definitions shall apply:

1. "Tangible assets" means assets consisting of land, buildings, machinery and equipment;
2. "Intangible assets" means assets that have no physical or financial form, such as patents, licences, know-how or other types of intellectual property;
3. "Recoverable advance" means a loan for a project paid in one or more instalments, the repayment terms of which depend on the outcome of the project;
4. "Date of grant of aid" means the date on which the right to receive aid is conferred on the beneficiary under this Law;
5. "Commencement of work" means either the start of construction work related to the investment or the first legally binding commitment to order equipment or any other commitment making the investment irreversible, whichever occurs first. The purchase of land and preparations such as obtaining permits and carrying out feasibility studies are not considered as the start of work. In the case of buyouts, "commencement of work" is the time of acquisition of assets directly related to the acquired establishment;
6. "Energy efficiency" means the amount of energy saved, determined by measuring and/or estimating consumption before and after the implementation of an energy efficiency improvement measure, with the external conditions affecting energy consumption being standardised;



7. "Energy from renewable energy sources" means energy produced by installations using exclusively renewable energy sources and the share, in terms of calorific value, of energy from renewable energy sources in hybrid installations also using conventional energy sources; it includes renewable electricity used to fill storage systems but excludes electricity produced from those systems;

8. "Undertaking" means any natural or legal person who pursues an economic activity, whether principally or incidentally;

9. "Firm in difficulty" means a firm fulfilling at least one of the following conditions:

(a) in the case of a limited liability company (other than an SME in existence for less than three years or, for the purposes of eligibility for risk financing support, an SME which has been in business for less than seven years after its first commercial sale and which is eligible for risk financing investments after due diligence by the selected financial intermediary), where more than half of its subscribed share capital has disappeared due to accumulated losses. This is the case when the deduction of the accumulated losses from the reserves (and from all other items generally considered as part of the company's equity capital) leads to an accumulated negative amount which exceeds half of the subscribed share capital. For the purposes of this provision, "limited liability company" shall mean, in particular, the types of undertakings mentioned in Annex I to Directive 2013/34/EU of the European Parliament and of the Council and "share capital" shall include, where applicable, share premiums;

(b) if it is a company in which at least some of the partners have unlimited liability for the debts of the company (other than an SME in existence for less than three years or, for the purposes of eligibility for risk financing aid, an SME operating for less than seven years after its first commercial sale and which is eligible for risk financing investments after due diligence by the selected financial intermediary), where more than half of the equity capital, as recorded in the company's accounts, has disappeared due to accumulated losses. For the purposes of this provision, "company of which at least some members have unlimited liability for the debts of the company" means in particular the types of companies mentioned in Annex II to Directive 2013/34/EU,

(c) where the undertaking is the subject of collective insolvency proceedings or fulfils, under the national law applicable to it, the conditions for submission to collective insolvency proceedings at the request of its creditors,

(d) where the firm has received rescue aid and has not yet repaid the loan or terminated the guarantee, or has received restructuring aid and is still subject to a restructuring plan,

(e) in the case of an enterprise other than an SME, where for the two preceding financial years:

- i. the debt-to-equity ratio of the enterprise is greater than 7.5; and
- ii. the company's interest coverage ratio, calculated on the basis of EBITDA, is less than 1.0;

10. "Gross grant equivalent" means the amount that would have been granted if the aid had been provided to the beneficiary in the form of a grant, before taxes or other charges;

11. "State of the art" means a process in which the reuse of waste to produce a finished product is common practice and economically viable. Where appropriate, this concept of 'state of the art' should be interpreted in the light of the internal market and Union-wide technologies;

12. "Energy Efficiency Fund, hereinafter "EEF": a specialised investment instrument created to invest in projects to promote energy efficiency in buildings in both the residential and non-residential sectors. EEFs are managed by an Energy Efficiency Fund Manager;

13. "Energy efficiency fund manager" means a professional management company with legal personality that selects and makes investments in eligible energy efficiency projects;

14. "Large enterprise" means any enterprise which does not fulfil the criteria laid down in Annex I of the Commission Regulation (EU) No 651/2014 of 17 June 2014 declaring certain categories of aid compatible with the internal market in application of Articles 107 and 108 of the Treaty on the Functioning of the European Union, hereinafter the "Treaty";

15. "Energy infrastructure" means any physical equipment or installations located within the Union or connecting the Union to one or more third countries and falling within the following categories:

a) as far as electricity is concerned:

- i. transport infrastructure, within the meaning of Article 1, point 50, of the amended Law of 1 August 2007 on the organisation of the electricity market,
- ii. distribution infrastructures within the meaning of Article 1, point 12 of the amended Law of 1 August 2007 on the organisation of the electricity market,
- iii. electricity storage, defined as storage facilities used to store electricity permanently or temporarily in above- or below-ground infrastructure or geological sites, provided that they are directly connected to high-voltage transmission lines designed for a voltage of at least 110 kV,
- iv. equipment or installations essential for ensuring the safe, secure and efficient operation of the systems referred to in points (i) to (iii), including protection, monitoring and control systems for all voltages and substations, and
- v. smart grids, defined as any equipment, line, cable or installation, used for both transmission and distribution at low and medium voltage, enabling two-way digital communication, in real or near real time, interactive and intelligent monitoring and management of the generation, transmission, distribution and consumption of electricity within a network, with a view into developing a network that effectively integrates the behaviour and actions of all connected users (producers, consumers and producer-consumers) in order to achieve a sustainable and cost-effective electricity system that limits losses, provides high levels of quality and security of supply, and guarantees safety,

b) as far as gas is concerned:

- i. natural gas and biogas transmission and distribution pipelines that form part of a network, excluding high-pressure pipelines used upstream for the distribution of natural gas,
- ii. underground storage facilities connected to the high-pressure gas pipelines referred to in (i),

- iii. reception, storage and regasification or decompression facilities for liquefied natural gas or compressed natural gas, and
  - iv. equipment or installations essential for the safe, secure and efficient operation of the system or for the provision of two-way capacity, including compressor stations,
- c) as far as oil is concerned
  - i. pipelines used for the transport of crude oil,
  - ii. the pumping stations and storage facilities necessary for the operation of crude oil pipelines, and the equipment or installations essential to ensure the correct, safe and efficient operation of the system in question, including protection, monitoring and control systems and flow reversal devices,
  - iii. in relation to CO<sub>2</sub>: pipeline networks including associated compressor stations, designed to transport CO<sub>2</sub> to storage sites for injection into suitable underground geological formations for permanent storage;

16. "Aid intensity" means the gross aid amount expressed as a percentage of the admissible costs, before taxes or other charges;

17. "Financial intermediary" means any financial institution, regardless of its form or ownership structure, including funds of funds, private equity funds, public investment funds, banks, micro-finance institutions and guarantee companies;

18. "Operating margin" means the difference between the discounted revenues and the discounted operating costs over the economic life of the investment, where this difference is positive. Operating costs include costs such as those relating to personnel, materials, contracted services, communications, energy, maintenance, rentals, administration, but do not include, for the purposes of this Regulation, depreciation charges or financing costs if these have been covered by investment aid. Discounting operating revenues and costs using an appropriate discount rate allows a reasonable profit to be made;

19. "Medium-sized enterprise" means any enterprise with fewer than 250 employees and an annual turnover not exceeding EUR 50 million or an annual balance sheet total not exceeding EUR 43 million and fulfilling the criteria laid down in Annex 1 to Commission Regulation (EU) No 651/2014 of 17 June 2014 declaring certain categories of aid compatible with the internal market in application of Articles 107 and 108 of the Treaty.

20. "Union standard":

- a) a mandatory EU standard setting the levels of environmental performance to be achieved by each company, or
- b) the obligation, provided for in the Law of 9 May 2014 on industrial emissions or any subsequent legislation replacing it in whole or in part, to apply the best available techniques, hereinafter "BAT", and to ensure that the emission levels of polluting substances do not exceed the levels that would be achieved by applying BAT; when expressed in the form of ranges, the limit value first achieved by BAT is applicable;

21. "Small enterprise" means any enterprise with fewer than 50 employees and an annual turnover or annual balance sheet total not exceeding EUR 10 million, which fulfils the criteria laid down in Annex 1 to Commission Regulation (EU) No 651/2014 of 17 June 2014 declaring certain categories of aid compatible with the internal market in application of Articles 107 and 108 of the Treaty;
22. "Polluter" means a person who directly or indirectly degrades the environment or creates conditions leading to its degradation;
23. "Pollution" means damage caused by a polluter that directly or indirectly degrades the environment or creates conditions leading to the degradation of the physical environment or natural resources;
24. "Polluter pays principle" or "PPP": the principle that the costs of combating pollution should be borne by the polluter who causes it;
25. "Agricultural products":
- a) products listed in Annex I to the EC Treaty, excluding fishery and aquaculture products covered by Regulation (EC) No 104/2000;
  - b) products falling within CN codes 4502, 4503 and 4504, i.e. cork articles;
  - c) products intended to imitate or substitute milk and milk products as referred to in Council Regulation (EC) No 1234/2007 of 22 October 2007 establishing a common organisation of agricultural markets and on specific provisions for certain agricultural products;
26. "Environmental protection" means any action designed to remedy or prevent damage to the physical environment or natural resources caused by the beneficiary's own activities, to reduce the risk of such damage or to bring about a more rational use of natural resources, in particular through energy-saving measures and the use of renewable energy sources;
27. "Recycling" means any recovery operation whereby waste is reprocessed into products, materials or substances for their original function or for other purposes. This includes the reprocessing of organic material, but does not include energy recovery, conversion for use as fuel or for backfilling operations;
28. "Re-use" means any operation by which products or components that are not waste are used again for the same purpose for which they were designed;
29. "Efficient heating and cooling network" means a heating or cooling network using at least 50 per cent renewable energy, 50 per cent dead heat, 75 per cent heat from cogeneration or 50 per cent of a combination of these types of energy or heat. This definition includes the heat/cold production facilities and the network (including related facilities) necessary to distribute heat/cold from the production units to the customer's premises;
30. "Contaminated site" means a site where the presence of dangerous substances resulting from human activity has been confirmed in such concentrations as to pose a significant risk to

human health or the environment, considering the actual use of the land and its authorised future use;

31. "Renewable energy sources" means the following renewable non-fossil energy sources: wind, solar, geothermal, hydrothermal, ocean and hydroelectric power, biomass, landfill gas, sewage treatment plant gas and biogas;

32. "Fair rate of return" means the expected rate of return equivalent to a discount rate adjusted to take into account the level of risk associated with a project and taking into account the nature and volume of capital that private investors plan to invest;

33. "Assisted area" means the areas within the territory of the Grand Duchy included in the regional aid map approved for the period from 1 July 2014 to 31 December 2021 pursuant to Article 107(3)(a) or (c) of the Treaty.

## AID INTENSITY

The **aid intensity** is the gross aid amount expressed as a percentage of the **admissible costs**, before taxes or other levies.

**N.B.** The aid intensity applies to the **admissible cost** which is not to be confused with the total investment. Within the total investment of the project, there may be elements which are not eligible (see details chapter on eligibility p. 28). Eligible costs are the basis for determining admissible costs, which furthermore take into account a counterfactual reference scenario for certain measures (see calculation method p. 24).

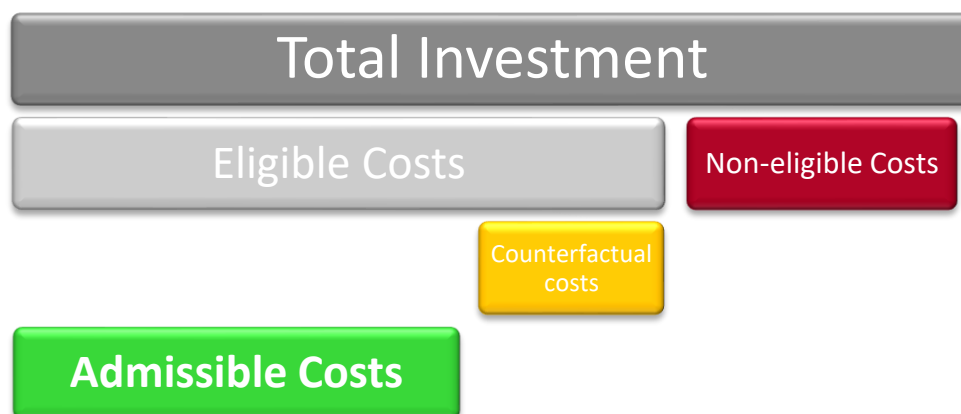


Figure 2: Illustration of the determination of admissible costs.

## MAXIMUM RATE OF AID

The maximum aid intensity varies according to the environmental protection measure and the size of the company. The table below summarises the maximum aid amounts for all aid schemes expressed as a percentage of admissible costs as defined in the law of 15 December 2017.

The aid intensity may be increased by 5 percentage points for investments made in assisted areas (i.e., Differdange and Dudelange) fulfilling the conditions of Article 107(3)(c) of the TFEU Treaty and this for aid granted under Articles 4, 5, 6, 8, 9, 11, 12, of the Law of 15 December 2017.

It should be noted that the increase of 5 percentage points for investments made in assisted areas would be possible in principle for new economic activities in these areas or for the diversification of existing establishments with new products or new process innovations.

|   | <b>Small<br/>company</b>  | <b>Medium<br/>company</b> | <b>Large<br/>company</b> |
|---|---|---------------------------|--------------------------|
| Investment aid enabling undertakings to go beyond Union environmental protection standards or to increase the level of environmental protection in the absence of Union standards (Art. 4.) | 60%   | 50%                       | 40%                      |
| Investment aid for early adaptation to future EU standards more than:   |   |                           |                          |
| >3 years before the entry into force of the standards   | 20%   | 15%                       | 10%                      |
| Between 1 and 3 years before the entry into force of the standards (Art. 5.)  | 15%   | 10%                       | 5%                       |
| Investment aid for energy efficiency measures (Art. 6.)   | 50%   | 40%                       | 30%                      |
| Investment aid for high-efficiency cogeneration (Art. 8.)   | 65%   | 55%                       | 45%                      |
| Investment aid for promotion of energy produced from renewable sources (Art. 9.)  |   |                           |                          |
| a) Separate identifiable investment or investment in deduction of a counterfactual reference  | 65%   | 55%                       | 45%                      |
| b) Investment in certain small facilities (without deduction of a counterfactual reference)   | 50%   | 40%                       | 30%                      |
| Investment aid for the remediation of contaminated sites (Art. 10.)   | 100%  | 100%                      | 100%                     |
| Investment aid for efficient heating and cooling networks (Art.11.)   |   |                           |                          |
| Production installation   | 65%   | 55%                       | 45%                      |
| Distribution network  | aid not exceeding the difference between admissible costs and operating margin over the economic lifetime |                           |                          |
| Investment aid for the recycling and reuse of waste (Art. 12.)  | 55%   | 45%                       | 35%                      |
|   | compliance with the principle of the waste hierarchy  |                           |                          |
| Investment aid for energy infrastructure (Art. 13.)   | aid not exceeding the difference between admissible costs and operating margin                            |                           |                          |
| Aid for environmental studies (Art. 14.)  | 70%   | 60%                       | 50%                      |

## INDICATIVE AID RATE APPLICABLE TO THE ELIGIBLE INVESTMENT

On the projects (excluding studies under Art. 14) that have been positively assessed so far, the average aid rate has been around 20% of the eligible investment costs. However, the rates vary according to the type of measure implemented and the size of the company, with small and medium-sized enterprises being entitled to higher rates of aid.

For renewable energy production **projects** benefiting from a **feed-in tariff for electricity** guaranteed by law<sup>11</sup>, the intensity of the investment aid takes into account the cumulation of aid (i.e. operating aid (injection rates, heat premium, manure premium) and investment aid). The aid intensity is determined on the basis of the specific cost of the energy generated in accordance with the Community guidelines on State aid for environmental protection<sup>12</sup>. Investment aid may at most make up the difference between the cost price and the injection rate guaranteed by law. In practice, the effective rate of investment aid may consequently be well below the maximum aid intensity set out in the law of 15 December 2017. The Ministry of the Economy will carry out the relevant calculations as part of the investigation of the file.

## GENERAL METHOD OF CALCULATING ADMISSIBLE COSTS

### ADMISSIBLE COSTS [ART.4-13]

The determination of admissible costs must be made in the majority of cases by reference to a counterfactual reference (Case I), except for certain cases where the principle of additionality may apply (Case II).

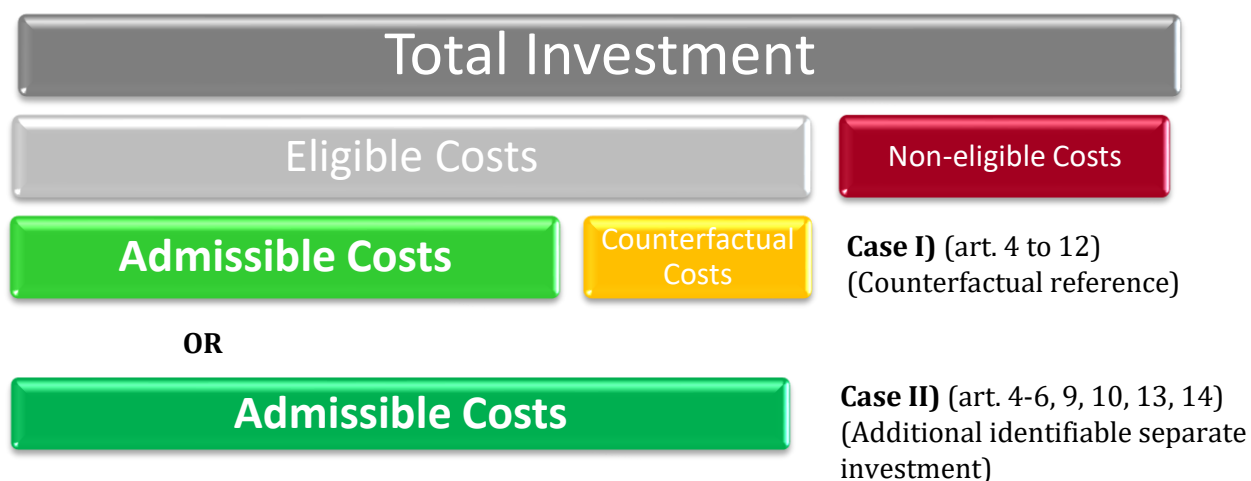


Figure 3: Methods of general calculation of admissible costs.

<sup>11</sup> Amended Grand-Ducal Regulation of 1 August 2014 on the production of electricity based on renewable energy sources

<sup>12</sup> Guidelines on State aid for environmental protection and energy 2014-2020 - (2014/C 200/01) : <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A52014XC0628%2801%29>



Both definitions are explained below:

- Cas I. Admissible costs are the extra investment costs determined by comparing the aided investment with the counterfactual situation in the absence of State aid [Art. 4, 5, 6, 8, 9, 11, 12]. In principle, it is possible to refer to the cost of a technically comparable investment (\*) which could probably be carried out without aid (\*\*) and which does not achieve the objective of common interest or achieves that objective only to a lesser extent.

*(\*) Technically comparable investment means an investment with the same production capacity and the same other technical characteristics in their entirety (except those directly linked to the additional investment to achieve the objective).*

*(\*\*) The reference investment must be a commercially credible alternative to the investment under assessment.*

**Admissible costs = eligible costs - counterfactual investment costs**

More details on relevant counterfactual references are given in the following paragraphs.

- Cas II. Where it is possible to distinguish [Art. 4,5,6,9,10<sup>13</sup>,13], as a separate investment, the costs necessary to achieve the objective of common interest from the total cost of the investment, for example because it is easy to establish that the environmental element is an added (additional) element to a pre-existing installation, the costs of the separate investment are the admissible costs;

**Admissible costs = eligible costs**

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#### ADMISSIBLE COSTS [ART. 14 / ENVIRONMENTAL STUDIES].

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Admissible costs are the eligible costs of the study.

**Admissible costs = eligible costs**

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<sup>13</sup> In the case of measures for the remediation of contaminated sites, the admissible costs are equivalent to the costs of the remediation work, less any increase in the value of the land (Art. 10).

## COUNTERFACTUAL REFERENCES

### TECHNOLOGIES AND RESPECTIVE COUNTERFACTUAL REFERENCES

#### Typical state interventions

- (1) The Commission examines typical examples of state interventions aimed at increasing the level of environmental protection or strengthening the internal energy market.
- (2) In particular, the following guidelines are given for the calculation of allowable costs on the basis of a counterfactual scenario.

| Aid category   | Counterfactual scenario / admissible costs <sup>(14)</sup>   |
|--|--|
| CHP  | The counterfactual scenario is a conventional heat or power generation system with the same capacities in terms of effective energy production.  |
| Environmental studies <sup>(15)</sup>                            | Admissible costs correspond to the cost of studies.  |
| Remediation of contaminated sites                                | The costs incurred <sup>(16)</sup> for the remediation works, less the increase in the value of the land <sup>(17)</sup> .   |
| Installations for the production of heating and cooling networks | Investment costs for the construction, extension or renovation of one or more production units that are an integral part of an efficient heating and cooling network.                                    |
| Waste management <sup>(18)</sup>                                 | The additional investment compared to the cost of conventional energy production, without waste management, with the same investment in capacity.  |
| Help for businesses that go beyond EU standards                  | The additional investment costs are those necessary to go beyond the level of environmental protection required by EU standards <sup>(19)</sup> .  |
| Lack of EU or national standards                                 | The extra investment costs are the investment costs necessary to achieve a higher level of environmental protection than the undertaking(s) concerned would achieve in the absence of environmental aid. |

<sup>14</sup> The Commission may accept other counterfactual scenarios duly justified by the Member State.

<sup>15</sup> This includes support for energy efficiency audits.

<sup>16</sup> Should be considered as environmental damage if the quality of the soil and the surface or groundwater needs to be repaired. For the remediation of contaminated sites, all expenses incurred by the company for the remediation of its site are taken into account as eligible investment, whether or not these expenses can be shown as fixed assets in the balance sheet.

<sup>17</sup> The increase in land value resulting from the remediation must be assessed by an independent expert.

<sup>18</sup> This concerns the management of waste from other businesses and includes reuse, recycling and recovery activities.

<sup>19</sup> The cost of investments necessary to achieve the level of protection required by EU standards is not included in the eligible costs and must be deducted.

|  |   |
|--|---|
| Electricity generation from renewable energy sources | The additional investment cost compared to the cost of a conventional power plant with the same capacity in terms of effective energy production.   |
| Heating from renewable energy sources                | The additional investment cost compared to the cost of a conventional heating system with the same capacity in terms of effective energy production.  |
| Production of biogas converted into natural gas      | If the aid is limited to the valorisation of biogas, the counterfactual scenario describes the other possible use of this biogas (including combustion).  |
| Biofuels and biogas used for transport               | In principle, the additional investment cost should be chosen in comparison to that of a conventional refinery, but the Commission can accept other counterfactual scenarios that are duly justified.   |
| Use of industrial by-products                        | If the by-product is scrapped because it cannot be reused: the eligible costs are the additional investments required to use the by-product (e.g., a heat exchanger in the case of waste heat). If the by-product is to be eliminated, the counterfactual investment is the investment made to eliminate the waste. |

**Note:** Details of counterfactual references are indicative<sup>2</sup> for information purposes vis-à-vis the applicant companies. Their formal compliance in terms of calculating the financial assistance is ensured by the Ministry of the Economy's experts in the context of the appraisal of the file.

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## COUNTERFACTUAL REFERENCE FOR ELECTRICITY GENERATION

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The calculation of the counterfactual situation is carried out by the Ministry of Economy. It is based on the European Commission guidelines<sup>2</sup> and takes into account a power plant / gas cogeneration plant of equivalent capacity that is part of the existing fleet of power plants in the European interconnection network.

For renewable energy production projects benefiting from a guaranteed electricity feed-in tariff<sup>11</sup>, the investment aid intensity takes into account the accumulation of aid (i.e. operating aid (injection rates, heat premium, manure premium) and investment aid). The aid intensity is determined by taking into account the specific cost of the energy generated in accordance with the Community guidelines on State aid for environmental protection<sup>2</sup>.

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## COUNTERFACTUAL REFERENCE FOR HEAT GENERATION

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The calculation of the counterfactual situation is carried out by the Ministry of Economy. It is based on European Commission guidelines<sup>2</sup> and takes into account a gas boiler of equivalent power.

## COUNTERFACTUAL REFERENCE FOR ENERGY EFFICIENCY MEASURES

The calculation of the counterfactual situation and admissible costs is to be provided by the company based on the principles specified in the table below.

| Situation before measuring   | Planned measure                    |  |  |
|--|------------------------------------|--|--|
|  | Replacement by standard technology | Replacement by technology beyond the standard  | Additional equipment beyond the standard   |
| Installation* or equipment at the end of life                        | admissible costs = 0               | admissible cost = extra cost compared to the standard  | if identifiable separate investment:<br>admissible cost = eligible investment cost |
| Installation in working order and not at the end of their life cycle |                                    | admissible cost = eligible cost minus the cost of hypothetical maintenance (Capex) of the existing installation over an adequate period of time (minimum 5 years)**. |  |
| Equipment in working order and not at the end of their life cycle    |                                    | admissible cost = extra cost compared to the standard  |  |

Notes:

\* "Installation" should be understood as an industrial production process, a production line, or even a set of equipment.

\*\*The applicant company must submit to the Ministry of Economy a document in which it certifies that, without State aid, it would operate the existing installation at least for the period taken into consideration for the determination of the counterfactual reference.

## ELIGIBILITY: GENERAL PRINCIPLES

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1. More specifically, the aid is aimed at the implementation of high-performance, innovative or less widespread environmental protection techniques.
2. Eligible are technical components that are intrinsic to the measure in question, i.e. which generate the environmental protection effect.
3. Eligible is qualified labour requested in the context of the implementation of the environmental protection measure by external service providers.
4. Works not directly related to increasing the level of environmental protection are not eligible.
5. Applications for aid to meet the requirements of the Environment Administration under the law on classified establishments (Commodo) or for measures prescribed by law (e.g., safety equipment, reception/control costs, measures imposed as part of the operating permit, energy performance certificate, etc.) are not eligible.
6. The following are not eligible: land costs, civil engineering intended to house the installations, trench repairs (except for the exceptions set out in the technical data sheets).
7. Measures with a very favourable return on investment and for which the aid would therefore not have a strong incentive effect are not eligible (see p. 11).
8. Any investment falling within the normal framework of equipment renewal (depreciation) is not eligible.
9. Leasing costs in the form of financial leasing are eligible provided that they contain an obligation to purchase the asset at the end of the lease term.
10. The principle of the beneficiary-user must be respected.
11. Any disposal of investments before the expiry of a period of 5 years from the date of investment may result in the repayment of all or part of the aid received.
12. The applicant company must comply with all legal and regulatory provisions applicable to the establishment and operation of industrial and commercial enterprises.
13. The Ministry of the Economy will process all investment applications from industrial companies and companies producing renewable energy (biogas, wind power, biomass, etc.) provided they have an establishment permit and operate on the territory of the Grand Duchy of Luxembourg. It is recommended that the applicant companies take the legal form of a S.A. or S.à r.l.
14. Applications for the authorisations required to operate the technical installations for which aid is requested must be submitted at least to the competent authorities before the State Aid Commission's deliberation.

## APPLICATION FOR PAYMENT OF STATE AID TO BUSINESSES

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The **Ministry of the Economy** grants aid to businesses for investments into the protection of the environment.

### FILING AN APPLICATION

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Businesses must submit their application for payment of aid using an **online assistant on MyGuichet.lu**.

The person submitting the application (the applicant him/herself or their representative) needs:

- a **LuxTrust product** (e.g. Token, Smartcard or Signing Stick); **or**
- an electronic identity card.

Link to the page detailing how to file an application for payment of aid to businesses :

<https://guichet.public.lu/en/entreprises/financement-aides/aides-environnement/demande-paiement-aides-etatiques.html>

### INFORMATION TO BE PROVIDED

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Businesses must provide certain elements:

- the amount of costs incurred by category and type of aid for the reporting period; **and**
- the key information contained in the decision/agreement (file reference, amount of aid granted, aid intensity, etc.).

### DETAILED/SUMMARY COST STATEMENT

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The business can choose between:

- a **detailed cost statement**: all related invoices must be entered. This is the recommended choice if the **number of invoices is less than or equal to 10**;
- a **summary cost statement**: the total amount per cost category and type of aid must be provided. In this case, the company must **provide a statement of invoices**.

**Note:** the size of each invoice is limited to 15MB. However, you can upload the required documents as zip files.

### SUPPORTING DOCUMENTS

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Applications for aid must include the following information and documents:

- proof of all costs incurred: invoices, payroll expenses; **and**
- proof of payment of these costs and expenses incurred (bank statement).

Businesses must add these documents at the end of the procedure.

## QUALITATIVE EXCEEDANCE OF COMMUNITY STANDARDS OR ENVIRONMENTAL PROTECTION MEASURES IN THE ABSENCE OF SUCH STANDARDS

**Article 4** concerns investment aid enabling undertakings to go beyond adopted EU environmental protection standards or to increase the level of environmental protection in the absence of such standards.

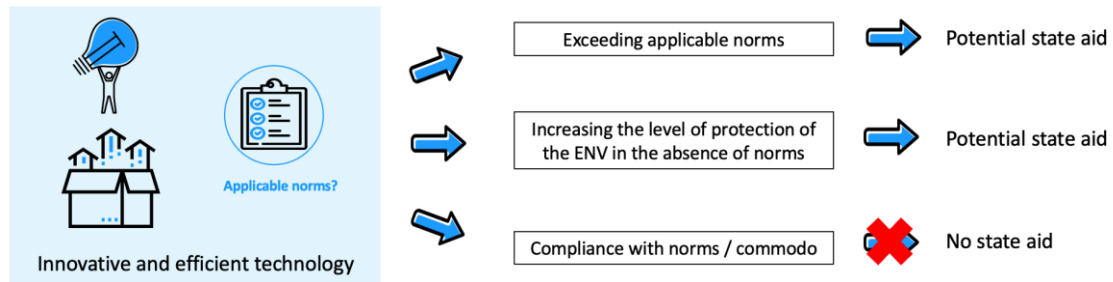


Figure 4: Types of environmental protection measures eligible under Art.4.

Without prejudice to Article 5 (see p. 35), no State aid may be granted where the planned improvements in the level of environmental protection are intended to ensure that undertakings comply with Union standards which have already been adopted but which have not yet entered into force.

Likewise, no **state aid is granted to achieve the standards** prescribed by national laws, in particular to meet the conditions under the law on classified establishments (Commodo).

In practice, it is recommended that the level of environmental protection of the measure in relation to national and EU standards is certified upon submission of the request for assistance by an independent expert or by a performance guarantee from the company providing the technology (supplier) and/or that the expertise of ILNAS (Institut luxembourgeois de la normalisation, de l'accréditation, de la sécurité et de la qualité des produits et services) be taken into account if necessary.

Is understood by "Union standard":

- (a) a mandatory Union standard setting the levels to be achieved by each undertaking with regard to the environment, or
- (b) the obligation, provided for in the Law of 9 May 2014 on industrial emissions or any subsequent legislation replacing it in whole or in part, to apply the best available techniques, hereinafter "BAT", and to ensure that the emission levels of polluting substances do not exceed the levels that would be achieved by applying BAT; where they are expressed in the form of ranges, the limit value first achieved by BAT is applicable;

This article is applicable in particular when a company plans to implement a technology allowing to reduce pollutant emissions (e.g. NO<sub>x</sub>, SO<sub>x</sub>, PM,...) below the prescribed thresholds.



## (ART. 4) INVESTMENT AID ENABLING UNDERTAKINGS TO GO BEYOND THE UNION'S ENVIRONMENTAL PROTECTION STANDARDS OR TO INCREASE THE LEVEL OF ENVIRONMENTAL PROTECTION IN THE ABSENCE OF SUCH STANDARDS

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### TECHNICAL AND PRACTICAL INFORMATION REQUIRED <sup>20</sup>

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Before applying for assistance under Art. 4 an environmental study is required and may be co-financed under Art. 14 - Aid for environmental studies - carried out by an independent professional expert<sup>21</sup>. The information to be provided must include:

- a statement of the standards concerned (measures envisaged and counterfactual reference)
- description of the technical measure envisaged
- quantification of the level of exceedance of the applicable standards or the degree of improvement in the absence of such standards
- duration/life expectancy of the planned measure
- investment cost
- description and cost of the counterfactual reference
- admissible cost

### ADMISSIBLE COSTS

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Admissible costs are determined as follows:

- if the costs of the investment in environmental protection can be identified as a separate investment within the total investment costs, those costs relating to environmental protection constitute the admissible costs;  
(e.g., adding an additional gas treatment component to a production unit, which is already compliant, which further reduces the level of pollutant emissions).
- in all other cases, the costs of the investment in environmental protection shall be determined by reference to a similar, less environmentally friendly investment that would have been plausible in the absence of aid. The difference between the costs of the two investments represents the costs related to environmental protection and constitutes the admissible costs.  
(e.g., when a gas treatment system is replaced by a new, more efficient system that achieves lower emission levels than required by the applicable standards and "commodo" obligations, a new, less efficient system that just meets the requirements (EU and LU standards) should be considered as a counterfactual reference. The allowable cost would be the extra cost of the performing system compared to the standard model system that just meets the requirements).

**N.B.** Costs not directly related to an increase in the level of environmental protection are not eligible.

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<sup>20</sup> In order to facilitate the processing of your application, please include in your application files all the information required in the order proposed. Including the information listed in the submission procedure chapter p.11

<sup>21</sup> The level of exceedance of applicable standards or the degree of improvement in the absence of such standards must be justified by an independent expert or by a performance guarantee from the company making the technology available (supplier), and/or the expertise of ILNAS (Institut luxembourgeois de la normalisation, de l'accréditation, de la sécurité et de la qualité des produits et services) may be taken into account.

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## CRITERIA

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- The general conditions for state aid relating to the aid scheme for environmental protection must be met.
- The project needs to be stabilised.
- No legally binding commitment should be made before the submission of the file and the start date of the work that is indicated in it. If a previously signed contract contains a suspensive clause stating that the obligation depends on the application for and receipt of State aid, this contract will not be considered as a legally binding commitment and the incentive effect will in principle be considered to have been fulfilled.
- A copy (preferably in electronic format) of all required authorisations (establishment, construction, operation) should be attached to the file. For projects in the development phase, applications for the authorisations required for the operation of the technical installations for which aid is requested must be submitted at the latest before they are submitted to the State Aid Commission. The State Aid can only be liquidated once all the required authorisations have been granted.
- The investment estimate must be based on offers (without obligation to order). A summary table showing the various cost positions of the project and the references of the related service offers must be attached.
- The level of exceeding the applicable standards or the degree of improvement in the absence of such standards must be justified by an independent expert or by a performance guarantee from the company making the technology available (supplier). The expertise of ILNAS (Institut luxembourgeois de la normalisation, de l'accréditation, de la sécurité et de la qualité des produits et services) or other similar bodies may be taken into account.
- A technical data sheet attesting the performance of the technology must be attached to the file.

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## EARLY ADAPTATION TO FUTURE EU STANDARDS

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**Article 5** follows the same logic as Article 4 but refers to the case of early adaptation of future Union standards.

In practice, it is recommended that the level of environmental protection of the measure and the period of anticipated adaptation of future EU standards of the measure be assessed by an independent expert at the time of submission of the application for support and/or that the expertise of ILNAS is taken into account.

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### (ART. 5) INVESTMENT AID FOR EARLY ADAPTATION OF FUTURE EU STANDARDS

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#### TECHNICAL AND PRACTICAL INFORMATION REQUIRED <sup>22</sup>

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Before applying for support under Art. 5 an environmental study is required and may be co-financed under Art. 14 - aid for environmental studies - carried out by an independent professional expert indépendant<sup>21</sup>. The information to be provided must include:

- a statement of the standards concerned (measurements and counterfactual reference)
- description of the technical measure envisaged
- level of exceedance of Community standards or degree of improvement in the absence of such standards
- duration/life expectancy of the measures envisaged
- investment cost
- description and cost of the counterfactual reference
- admissible cost

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#### ADMISSIBLE COSTS

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The standards must have been adopted and the investment must be implemented and completed at least one year before the date of entry into force of the standard in question.

Admissible costs are determined, in the same logic as under Art.4, as follows:

- if the costs of the investment in environmental protection can be identified as a separate investment within the total investment costs, those costs relating to environmental protection constitute the admissible costs;
- in all other cases, the costs of the investment in environmental protection shall be determined by reference to a similar, less environmentally friendly investment that would have been plausible in the absence of aid. The difference between the costs of the two investments represents the costs related to environmental protection and constitutes the admissible costs.

**N.B.** Costs not directly related to an increase in the level of environmental protection are not eligible.

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<sup>22</sup> In order to facilitate the processing of your application, please include in your application files all the information required in the order proposed including the information listed in the submission procedure chapter p.11

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## CRITERIA

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- The general conditions for state aid relating to the aid scheme for environmental protection must be met.
- The project needs to be stabilised.
- No legally binding commitment should be made before the submission of the file and the start date of the work is indicated in it. If a previously signed contract contains a suspensive clause stating that the obligation depends on the application for and receipt of State aid, this contract will not be considered as a legally binding commitment and the incentive effect will in principle be considered to have been fulfilled.
- A copy (preferably in electronic format) of all required authorisations (establishment, construction, operation) should be attached to the file. For projects in the development phase, applications for the authorisations required for the operation of the technical installations for which aid is requested must be submitted at the latest before they are submitted to the State Aid Commission. The State Aid can only be liquidated once all the required authorisations have been granted.
- The investment estimate must be based on offers (without obligation to order). A summary table showing the various cost positions of the project and the references of the related service offers must be attached.
- A technical data sheet attesting to the performance of the technology must be attached to the file.
- Early adjustment of the level of exceedance of the applicable standards must be justified by an independent expert.

## TECHNOLOGIES FOR IMPROVING THE ENERGY PERFORMANCE OF PROCESSES

**Article 6** concerns investment aid for energy efficiency measures.

This article covers all investment projects that enable companies to achieve energy efficiency objectives or even to reduce energy consumption (regardless of the source of fossil or renewable energy). Energy savings can range from equipment to industrial site and relate either to processes or utilities.

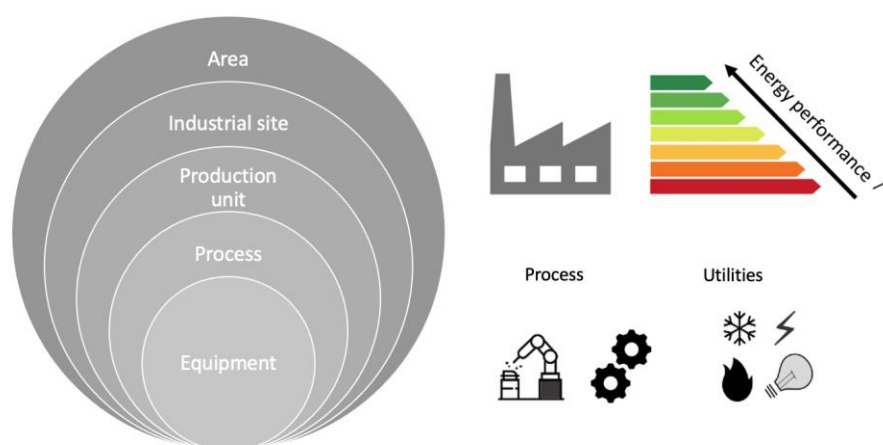


Figure 5: Art.5 Energy efficiency measures

Key actions to increase energy performance and rational use of energy are:

- Avoid over-consumption: adapt energy consumption/production to needs (i.e., optimise settings and setpoints)
- Use energy-efficient equipment/technology (i.e., with a higher energy performance than standard equipment/technology).
- Use process integration to optimise and recover energy losses.
- Rethink production processes / technological innovation<sup>23</sup>

As an example, some model measures are specified in the following paragraphs.

In practice, it is recommended in particular for large investment projects that the project be based on a prior energy study (which may under certain conditions be co-financed under Art. 14 see p. 77), and it is recommended that the improvement in energy performance be certified by an expert. In addition, for reasons of administrative simplification, holders are invited to submit a multi-annual plan grouping standard measures as proposed below.

Investments necessary to comply with applicable standards, as well as investments that are part of the normal renewal of equipment (depreciation) are not eligible (see also 'General principles of eligibility' p. 29).

<sup>23</sup> RDI projects can be co-financed under the amended Law of 17 May 2017 on aid schemes for research, development and innovation (see [guichet.lu](https://guichet.lu)).

## (ART. 6) INVESTMENT AID FOR ENERGY EFFICIENCY MEASURES

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### ENERGY EFFICIENCY MEASURES - UTILITIES AND PROCESSES

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#### TECHNICAL AND PRACTICAL INFORMATION REQUIRED<sup>24</sup>

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- Brief description of the project including deadlines (launch, completion)
- Location and plans (address, cadastral parcel number, location plan)
- Schematic diagram illustrating the measure
- Technical description of the measurement and related equipment
- Intrinsic energy data related to the measurement (e.g., installed power, efficiency, operating time, ...)
- Global energy balance
- Energy savings compared to the current situation, respectively compared to a new standard equipment (counterfactual reference)  
**New installation:** average energy saving compared to a standard equipment to be specified (technical description required) taken as a counterfactual reference  
**Replacement / Improvement of existing installations:** final energy savings in relation to the average consumption of the last three years (absolute value and, where appropriate, the value per unit produced)
- CO<sub>2</sub> saved [t/a]<sup>25</sup> compared to the current situation/counterfactual reference
  - If electrical energy is saved, the avoided CO<sub>2</sub> emissions have to be calculated on the basis of the product/supplier mix label<sup>26</sup>. A copy of the label of the substituted electricity is to be provided
- Expected lifetime of the measure
- Duration of operation of the old installations in case of substitution
- Average energy price (total cost) over the last three years for the energy carrier(s) concerned
- Financial details of the envisaged eligible measures and the theoretical measures corresponding to the counterfactual situation serving as a reference basis for calculating the additional costs of the envisaged solution
- Time of return on investment
- Technical data sheets and certificates
- Copy of the preliminary energy study:
  - If the energy efficiency measure implemented is the result of an environmental study carried out by an external service provider who may have received State aid (see Art. 14 p. 77), the report of the finalised study must be annexed.
  - If the energy efficiency measure implemented is a direct result of an energy audit, a copy of the energy audit must be attached.
  - If the applicant company has an energy or environmental management system certified according to ISO 50001 (or equivalent), the energy saving concept created within the company, respectively a summary of the results of the studies carried out internally will have to be annexed, as well as a recent copy of the certification.

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<sup>24</sup> Including the information listed in the chapter submission procedure p. 11

<sup>25</sup> The specific CO<sub>2</sub> emission values are available at the level of the RG of 5 May 2012 concerning the energy performance of functional buildings on page 1202 (100) of Chapter 8.2. of the Annex (Mémorial A, No. 96 of 11 May 2012).

<sup>26</sup> Grand-Ducal Regulation of 21 June 2010 on the labelling system for electricity.

- If the energy efficiency measure implemented is the result of studies carried out internally, the results of the studies should be annexed.

### TYPICAL ELIGIBLE ELEMENTS (EXAMPLES)

- Adaptations to the production process
  - Use of high-performance technologies
  - Optimisation of settings according to need and operating time
  - Combustion optimisation
- Adaptations to the level of utilities



- Compressed air
- Heating systems
- Pumping systems
- Refrigeration systems
- Ventilation systems
- Etc.

Figure 6: Energy efficiency measures of cross-cutting technologies.

- Cooling and air conditioning
  - absorption machines
  - adsorption machines
  - DEC / desiccant evaporative cooling
  - groundwater cooling
  - geothermal probes
  - investments ensuring the global energy optimisation of existing cold production installations leading to a final energy saving of at least 20% compared to the average of the last 3 years (integration of economisers, substitution of air cooling by a water-cooling system at the condenser, turbocore compressors or similar, cold recovery by adiabatic cooling of the exhaust air, regulation...).
- Electrically driven systems
  - traction systems using high-efficiency electric motors exceeding the requirements of the European eco-design regulation on electric motors (EC No 640/2009)
    - class IE4 (or IE3 with frequency inverter) according to IEC/EN 60034-30-1:2014 (counterfactual reference: class IE3) combined if necessary, with a frequency inverter
    - frequency inverters (retrofit)
- Industrial lighting (only if included in a package of energy saving measures)

- new lighting systems based on LED technology (T8 fluorescent tubes with electronic ballast taken as a counterfactual reference in all cases)
- investments ensuring the overall energy optimisation of existing industrial lighting installations, resulting in a final energy saving of at least 20% compared to the average over the last three years (replacement of T12 tubes or high-pressure mercury bulbs, optimisation of regulation, presence detectors, regulation according to the intensity of daylight, high-efficiency reflectors, electronic starters, etc.).
- Compressed air systems
  - new compressed air installations: use of blowers
  - investments for the renovation of compressed air installations resulting in a final energy saving of at least 20% compared to the average over the last three years (elimination of leaks, decentralised and/or centralised control, high-efficiency compressors, compressed air conditioning, renovation of pressure lines, reduction of pressure losses, etc.).
- Pumping systems
  - investments ensuring that the requirements of the European eco-design regulation for pumps are exceeded
  - investments ensuring the overall energy optimisation of industrial pumping systems resulting in a final energy saving of at least 20% compared to the average over the last three years (recovery, electronic valves, hydraulic optimisation, traction and transmission systems, frequency variator, etc.).
- Ventilation systems
  - investments ensuring that the requirements of the European eco-design regulation on ventilation systems are exceeded
  - investments ensuring the overall energy optimisation of ventilation systems leading to a final energy saving of at least 20% compared to the average of the last three years (high efficiency, flow and temperature settings, reduction of pressure drops, specific collection system, etc.).
- Industrial heating systems
  - investments ensuring the overall energy optimisation of heating systems resulting in a final energy saving of at least 20% compared to the average of the last three years (high efficiency, adjustments to requirements, insulation, etc.).

➔ This is a non-exhaustive list.



## INELIGIBLE ITEMS

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- Any investment that is part of the normal renewal of equipment (depreciation)
- Any investment necessary to comply with applicable standards
- Land
- Buildings and constructions intended to house the facilities
- Work not directly related to improving energy efficiency
- Planning studies and authorisation procedures (see Art. 14 thereof)
- Costs associated with measures/actions prescribed by law (e.g., safety equipment, acceptance/inspection costs, measures imposed as part of the operating permit, energy performance certificate, etc.).

## ADMISSIBLE COSTS

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Admissible costs are additional investment costs (extra costs) necessary to achieve a higher level of energy efficiency. They are determined as follows:

- (a) if the costs of the energy efficiency investment can be identified as a separate investment within the total investment costs, those energy efficiency costs shall constitute the admissible costs;
- (b) in all other cases, the costs of the energy efficiency investment shall be determined by reference to a similar, less energy-efficient investment that would have been plausible in the absence of aid. The difference between the costs of the two investments shall represent the costs related to energy efficiency and shall constitute the admissible costs.

For more details, please refer to the specific chapter "Counterfactual reference" p. 26

Costs not directly related to increasing the level of energy efficiency are not eligible.

## CRITERIA

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- The general conditions for state aid relating to the aid scheme for environmental protection must be met.
- The project needs to be stabilised.
- No legally binding commitment should be made before the submission of the file and the start date of the work is indicated in it. If a previously signed contract contains a suspensive clause stating that the obligation depends on the application for and receipt of State aid, this contract will not be considered as a legally binding commitment and the incentive effect will in principle be considered to have been fulfilled.
- A copy (preferably in electronic format) of all required authorisations (establishment, construction, operation) should be attached to the file. For projects in the development phase, applications for the authorisations required for the operation of the technical installations for which aid is requested must be submitted at the latest before they are submitted to the State Aid Commission. The State Aid can only be liquidated once all the required authorisations have been granted.
- The investment estimate must be based on offers (without obligation to order). A summary table showing the various cost positions of the project and the references of the related service offers must be attached.
- The technical data sheets attesting to the performance of the technologies used should be attached to the file.

## RECOVERY AND VALORISATION OF WASTE HEAT

The recovery and use of waste heat are one of the measures with considerable energy-saving potential, especially in industry where a lot of energy is lost in the form of waste heat. The recovery of waste heat in the form of heat, cold or electricity makes it possible to substitute other energy carriers and thus reduce energy consumption.

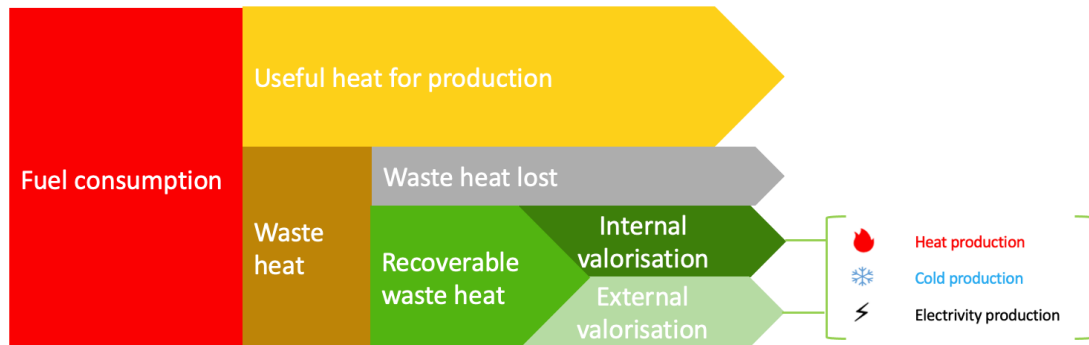


Figure 7: Recovery and valorization of waste heat.

It should be stressed that heat recovery must be part of a coherent energy efficiency approach, aiming first of all to reduce upstream heat requirements or even limit the heat released (i.e. optimised performance, appropriate insulation, etc.) and then maximising internal and external recovery by integrating processes and exploiting synergies. To this end, recovery should be carried out according to the following logic: start with the most energy-intensive processes, target the most easily recoverable waste and focus on the most efficient temperature levels.

It is recommended that companies carry out a prior energy integration study and validate the strategy for recovering the waste heat on the basis of a prior cost-benefit study which could potentially benefit from State aid (see Art. 14).

As an example, opportunities for heat recovery and valorisation are listed here.

Potential sources of waste heat are:

- heat sources at the level of the industrial process
- fumes from industrial furnaces, boilers, turbines, ...
- industrial drying
- refrigeration machines
- compressed air systems
- ventilation of the premises
- computer rooms
- ...

Potential opportunities for internal or external heat recovery are the following, although the technical and economic feasibility depends on the thermal power available at the different temperature levels and the temporality:

- 250-540°C: Electricity generation using steam processes
- 125-400°C: Preheating of feed water, preheating of combustion air
- 70-450°C: Electricity production by CROs

- 80-160°C: Cold production for process cooling
- 125-275°C: Use in production or drying processes
- 75-125°C: Domestic hot water, heating / hot water, drying (and evaporation)
- >90°C: District heating network
- 30-75°C: Preheating of water, space heating with heat pumps

## TECHNICAL AND PRACTICAL INFORMATION REQUIRED <sup>27</sup>

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- Recent preliminary feasibility study (less than 2 years) on the project under consideration, particularly for large-scale projects where different valuation options are available.
- Brief description of the project and energy, environmental, economic and social objectives
- Description of the waste heat source
  - Synthetic description of the process producing waste heat
  - Nature of the waste heat source (gaseous, liquid, diffuse), availability during the year, temperature level, flow rate, ...
  - Thermal power recovered [MW], temperatures [°C], quantity recovered [MWh/a].
- Description on the use of waste heat
  - Description of the application (internal to the site: process or heating, external to the site: industrial or district heating network)
  - Description of the needs covered by the waste heat recovery project (heat and/or cold demand over the year (load curve), energy source and quantity substituted, rate of coverage of needs by heat recovery)
  - Estimation of energy needs before and after project implementation
  - Specify whether it is a new installation or a substitution
- Technical description of the installation and its performances
  - Description of the planned equipment and the technical characteristics (name of the supplier, sizing, efficiency, etc.).
- Description of the metering system and the monitoring of operation and performance (i.e., enabling the quantity of energy actually validated)
  - Schematic diagram of heat recovery with energy meters
- Global energy balance
- Environmental impact assessment
  - Fuel and energy savings
  - Emissions reduction and CO<sub>2</sub> saved [ t/a]<sup>25</sup>
- Project planning
- Expected lifetime of the measure
- Duration of exploitation of the old installations in case of substitution
- Average energy price (total cost) over the last three years for the substituted energy carrier(s)
- In the case of external heat recovery involving third parties: Documents certifying the commitment and information on the economic and contractual terms and conditions of the project (heat sale price, commitment period, etc.).
- Business plan

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<sup>27</sup> In order to facilitate the processing of your application, please include in your application files all the information required in the order proposed. See also chapter submission procedure p. 11.

## ELIGIBLE ELEMENTS

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- Heat capture system (for valorisation on another unitary process)
  - Heat recovery systems on a unitary process such as:
    - Industrial processes (distillation column, dryer, furnace, boiler...)
    - Utility processes (compressed air systems, ventilation, refrigeration, ...)
  - Technologies: Heat exchangers (liquid/liquid, liquid/gas, gas/gas) plate, tubular, fluidised bed; hoods
- Thermal lift systems
  - Heat pump
  - Mechanical steam compression
- Cold production systems
  - Heat pump in heat pump assembly
  - Absorption systems (H<sub>2</sub>O/ LiBr ou NH<sub>3</sub>/H<sub>2</sub>O)
  - Adsorption systems
- Storage systems (only if integrated in a fatal heat recovery project)
  - Steam accumulators
  - Hot water tanks
- Heat transport, distribution and recovery
  - Pipes, ducts, heat exchangers, meters, ...

Technical eligibility criteria :

- Thermal retrofit and cold production systems must meet at least the performance criteria set out in the applicable European eco-design regulations.

## INELIGIBLE ITEMS

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- The equipment upstream of the heat recovery exchanger.
- Heat storage systems alone.
- Simple replacement of installations, including heat exchangers, heat pumps, pipes, etc. (without increasing the amount of heat recovered).
- Equipment installed on a fatal energy source that has already been recovered.
- Investments to bring an installation into compliance with regulations.

## COUNTERFACTUAL REFERENCE

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- Not at all.

Generally speaking, the principle of additionality applies if it is a retrofit. However, a case-by-case analysis is necessary. Under certain circumstances, e.g. end of life of existing boilers, or increase in production capacity, a counterfactual reference will have to be taken into account.

## CRITERIA

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- The general conditions for state aid relating to the aid scheme for environmental protection must be met.
- The project needs to be stabilised.
- No legally binding commitment should be made before the submission of the file and the start date of the work is indicated in it. If a previously signed contract contains a suspensive clause stating that the obligation depends on the application for and receipt of State aid, this contract will not be considered as a legally binding commitment and the incentive effect will in principle be considered to have been fulfilled.
- A copy (preferably in electronic format) of all required authorisations (establishment, construction, operation) should be attached to the file. For projects in the development phase, applications for the authorisations required for the operation of the technical installations for which aid is requested must be submitted at the latest before they are submitted to the State Aid Commission. The State Aid can only be liquidated once all the required authorisations have been granted.
- The investment estimate must be based on offers (without obligation to order). A summary table showing the various cost positions of the project and the references of the related service offers must be attached.
- The technical data sheets attesting to the performance of the technologies used should be attached to the file.

## ENERGY-SAVING TECHNOLOGIES IN BUILDINGS

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**Article 7** concerns investment aid for projects promoting energy efficiency in buildings.

This Article 7 differs from the other articles on investment aid in the new law in that the aid cannot take the form of a capital grant but takes the form of an endowment, equity, guarantee or loan to an energy efficiency fund or other financial intermediary, which passes it on in full to the final beneficiaries, i.e., the owners or tenants of buildings. The Energy Efficiency Fund (EEF) to be created will be a dedicated investment instrument created to invest in projects to promote energy efficiency in buildings in both the residential and non-residential sectors. The EEF will be managed by an energy efficiency fund manager.

### (ART. 7) INVESTMENT AID FOR PROJECTS PROMOTING ENERGY EFFICIENCY IN BUILDINGS

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**Note:** *This article will enter into force once a Grand-Ducal regulation has been voted on the practical implementation of the fund for the promotion of energy efficiency in buildings, necessary for the co-financing of the projects submitted.*

## TECHNOLOGIES AIMED AT HIGH-EFFICIENCY CO-GENERATION

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**Article 8** introduces an aid scheme for investments in high-efficiency cogeneration installations, the latter being precisely defined in the relevant European texts for newly installed or renovated capacity, leading in the latter case to a significant increase in installed thermal and electrical capacity.

It is considered that cogeneration/combined heat and power installations using waste, including waste heat, as feedstock can make a positive contribution to environmental protection, provided that the principle of the waste hierarchy is not circumvented.

### (ART.8) AID FOR INVESTMENTS IN HIGH-EFFICIENCY COGENERATION

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#### TECHNICAL AND PRACTICAL INFORMATION REQUIRED <sup>28</sup>

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- Brief description of the project including deadlines (launch, phases, completion)
- Location and plans (address, cadastral parcel number, location plan)
- Schematic diagram of the installation
- Type of cogeneration plant (combustion engine, gas turbine, fuel cell)
- Cogeneration module data sheet
- Number of cogeneration modules
- Fuel(s) used
- Indications on the long-term security of fuel supply (i.e., offer/letter of intent without binding commitment)
- Purpose of the electricity generated (i.e., grid injection, self-consumption)
- Installed electrical power of each module [ kW]
- Electrical energy generated by each module [ kWh/a]
- Installed thermal power of each module [ kW]
- Thermal energy generated by each module [ kWh/a]
- Electrical and thermal efficiencies of each module according to Directive 2012/27/EU<sup>29</sup> and calculation of primary energy savings PES
- Installed thermal power at the boiler(s) [ kW]
- Heat supplied by the auxiliary boiler(s) [ kWh/a]
- Degree of thermal coverage of the cogeneration modules in terms of annual heat demand. Total annual heat demand at consumer level (including processes) [MWh/a] and connection capacity [kW].
- Global energy balance on a monthly basis
- Buffer tank volume
- Atmospheric emissions from cogeneration modules (CO, NO<sub>x</sub>, HC, particles)
- CO<sub>2</sub> saved [ t/a]<sup>25</sup> compared to counterfactual benchmark
- Energy and resources saved compared to the counterfactual benchmark
- Expected lifetime of the installation

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<sup>28</sup> In order to facilitate the processing of your application, please include in your application files all the information required in the order proposed. See also chapter submission procedure p. 11

<sup>29</sup> DIRECTIVE 2012/27/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 25 October 2012 on energy efficiency, amending Directives 2009/125/EC and 2010/30/EU and repealing Directives 2004/8/EC and 2006/32/EC <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32012L0027&from=EN>



- Remuneration for electricity generated [ct€/kWh] (at commissioning and expected average over the operating life)
- Connection to a heating network (yes/no) Supply of heat to a third party [% of heat generated] with indication of use
- Standard heat supply contract with the terms and conditions and the price for heat supply (Please note that no binding commitments must be entered into before the application is submitted in order to meet the incentive effect criterion (see p. 11))!
- Letter of Intent from the main heat consumers (Please note that no binding commitments must be made before submitting the application for support in order to meet the incentive effect criterion (see p. 11)!

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#### ELIGIBLE ELEMENTS

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- Power-heat cogeneration module(s) (internal combustion engine, gas turbine, fuel cell) and direct periphery (fuel supply, exhaust gas discharge, lubrication)
- Catalysts and silencers
- Buffer tank(s) and hydraulic integration
- Heat exchangers installed in the technical room including condensers (exhaust gas) for heat recovery
- Flue gas evacuation including filters
- Control system
- Electrical installations directly linked to the operation of the eligible elements, including MV/LV transformers.
- Labour directly linked to the implementation of eligible facilities
- Expenditure related to technology transfer
- Statement of costs related to the above-mentioned elements and references of the related service offers (summary table)

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## INELIGIBLE ITEMS

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- Any investment that is part of the normal renewal of equipment (depreciation)
- Work not directly related to the implementation of the measure
- Land
- Technical room and soundproofing
- Auxiliary boiler(s) fuelled with fossil fuel
- Planning studies and authorisation procedures (vor Art. 14 relating thereto)
- Heat distribution network (see related Art. 11)
- Costs associated with measures/actions prescribed by law (e.g. safety equipment, acceptance/inspection costs, measures imposed as part of the operating permit, energy performance certificate, etc.).

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## ADMISSIBLE COSTS

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Admissible costs are the extra investment costs relating to equipment necessary to enable the cogeneration installation to achieve a high degree of efficiency compared with a conventional electricity or heat production installation of the same capacity, or the extra investment costs necessary to modernise an installation which already achieves a high degree of efficiency in order to make it even more efficient.

The counterfactual scenario is a conventional heat or power generation system with the same capacity in terms of effective energy production.

See the relevant chapter on p. 26.

Non-exhaustive examples :

- Without a heating network:
  - Gas boiler(s) with the same thermal output
- With a heating network:
  - Decentralised individual gas-fired boiler(s) with the same total heat output / (assumption: new gas boilers)

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## CRITERIA

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- The general conditions for state aid relating to the aid scheme for environmental protection must be met.
- The project needs to be stabilised.
- No legally binding commitment should be made before the submission of the file and the start date of the work is indicated in it. If a previously signed contract contains a suspensive clause stating that the obligation depends on the application for and receipt of State aid, this contract will not be considered as a legally binding commitment and the incentive effect will in principle be considered to have been fulfilled.
- A copy (preferably in electronic format) of all required authorisations (establishment, construction, operation) should be attached to the file. For projects in the development phase, applications for the authorisations required for the operation of the technical installations for which aid is requested must be submitted at the latest

before they are submitted to the State Aid Commission. The State Aid can only be liquidated once all the required authorisations have been granted.

- The investment estimate must be based on offers (without obligation to order). A summary table showing the various cost positions of the project and the references of the related service offers must be attached.
- The technical data sheets attesting to the performance of the technologies used should be attached to the file.
- Minimum annual running time of each module: 3,000 hours.
- Compliance with the 'high efficiency' criterion according to Directive 2012/27CE<sup>29</sup> (see details below).

According to Directive 2012/27CE<sup>29</sup> high-efficiency cogeneration must meet the following criteria:

- cogeneration production from cogeneration units must provide primary energy savings (see definition below) of at least 10% compared to the reference data for separate production of heat and electricity,
- the production of small cogeneration units and micro-cogeneration units providing primary energy savings can be considered as high-efficiency cogeneration.

Calculation of energy savings (PES)

$$PES = 1 - \frac{1}{\frac{CHP_{H\eta}}{Ref_{H\eta}} + \frac{CHP_{E\eta}}{Ref_{E\eta}}}$$

where:

PES represents primary energy savings;

$CHP_{H\eta}$  is the thermal efficiency of cogeneration production, defined as the annual useful heat output divided by the amount of fuel consumed to produce the sum of useful heat and electricity from cogeneration.

$Ref_{H\eta}$  is the efficiency reference value for separate heat generation.

$CHP_{E\eta}$  is the electrical efficiency of cogeneration production, defined as the annual electricity production from cogeneration divided by the amount of fuel consumed to produce the sum of useful heat and electricity from cogeneration. Where a cogeneration unit generates mechanical energy, the annual electricity production from cogeneration may be increased by an additional element representing the amount of electricity equivalent to the mechanical energy. This additional element shall not create a right to issue guarantees of origin in accordance with Article 14(10);

$Ref_{E\eta}$  is the efficiency reference value for separate electricity generation.

The reference values are set out in the Annexes to the Commission Regulation (EU) 2015/2402 of 12 October 2015 revising the harmonised efficiency reference values for separate production

of electricity and heat in application of Directive 2012/27/EU of the European Parliament and of the Council and repealing Commission Implementing Decision 2011/877/EU<sup>30</sup>.

#### Calculation example for a cogeneration unit > 1 MWel:

Gas cogeneration unit with an electrical efficiency ( $CHP_{E\eta}$ ) of 35% and a thermal efficiency ( $CHP_{H\eta}$ ) of 53%.

Reference:

Separate electricity generation (built after 2016) based on natural gas: benchmark efficiency 53%.

Correction factor (100% off-site) for avoided mains losses (12-50kV connection voltage): 0.935

$$Ref_{E\eta} = 53\% * 0.935 = 49.555\%$$

Separate heat production (built after 2016, hot water) fuelled by natural gas

$$Ref_{H\eta} = 92\%.$$

The PES primary energy saving of the cogeneration unit is 22%. This cogeneration unit therefore satisfies the high-efficiency cogeneration criterion (PES > 10%).

$$PES = 1 - \frac{1}{\frac{CHP_{H\eta}}{Ref_{H\eta}} + \frac{CHP_{E\eta}}{Ref_{E\eta}}} = 1 - \frac{1}{\frac{53\%}{92\%} + \frac{35\%}{49.55\%}} = 22\%$$

<sup>30</sup> <https://eur-lex.europa.eu/legal-content/FR/TXT/PDF/?uri=CELEX:32015R2402&from=ES>

## TECHNOLOGIES USING RENEWABLE ENERGY SOURCES

**Article 9** establishes an investment aid scheme for the promotion of energy from renewable energy sources. According to the definition of the law, renewable energy sources include: wind, solar, geothermal, hydrothermal, oceanic and hydroelectric energy, biomass<sup>31</sup>, landfill gas, sewage treatment plant gas and biogas.

Investment aid is granted only for new installations. No aid may be granted or paid once the installation has started its activities. Maintenance and replacement of small parts and components of the installation, which are normally replaced during the expected lifetime of the installation, are not eligible. The modernisation or renovation of an existing installation may be eligible for investment aid under Article 9, where this operation concerns a significant part of the plant and extends its expected lifetime (i.e., similar to a new installation).

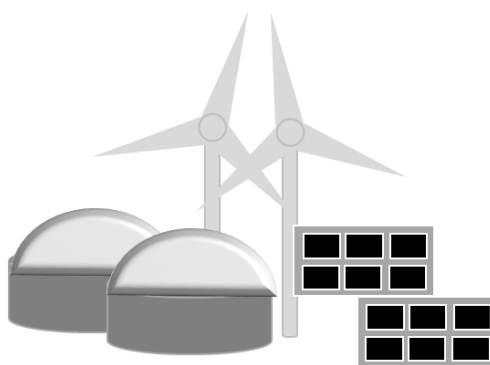


Figure 8: Art.9. Promotion of energy from renewable energy sources

This Article reflects the Union's renewable energy targets set out in Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources.

At the level of aid for biofuel production<sup>32</sup>, only sustainable biofuels<sup>33</sup> other than those produced from food crops are considered. Aid is not allowed for biofuels that are subject to an obligation to supply or incorporate biofuels.

Aid for hydropower installations is conditional on compliance with Directive 2000/60/EC given the risk of their impact on water supply systems and biodiversity.

Technologies for storing energy from renewable sources in combination with newly installed capacity can, where appropriate, underline the innovative nature of the investment.

Admissible costs are the extra investment costs necessary to promote the production of energy from renewable sources. They are determined as follows:

- a. if the costs of the investment in the production of energy from renewable sources can be identified as a separate investment in the total investment costs, for example because they

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<sup>31</sup> Biomass means the biodegradable fraction of products, waste and residues from agriculture (including plant and animal substances), forestry and related industries, including fisheries and aquaculture, as well as biogas and the biodegradable fraction of industrial and municipal waste.

<sup>32</sup> a liquid or gaseous fuel used for transport and produced from biomass.

<sup>33</sup> a biofuel that complies with the sustainability criteria set out in Article 17 of Directive 2009/28/EC.

- can be linked to a readily identifiable item added to a pre-existing installation, these costs relating to renewable energy sources constitute the admissible costs;
- b. if the costs of the investment in the production of energy from renewable sources can be determined by reference to a similar, less environmentally friendly investment which would have been plausible in the absence of aid, the difference between the costs of the two investments represents the costs related to the use of renewable energy and constitutes the admissible costs;
  - c. in the case of certain small installations for which it is impossible to imagine a less environmentally friendly investment due to the fact that there are no installations of limited size, the total investment costs incurred in order to achieve a higher level of environmental protection constitute the admissible costs.

For more details see the specific chapter "Counterfactual reference" p. 26.

Costs not directly related to an increase in the level of environmental protection are not eligible.

For projects benefiting from a feed-in tariff guaranteed by law (electricity injected into the network), the aid rate takes into account the specific cost of the energy generated and the Community guidelines on State aid for environmental protection.<sup>2</sup>

#### (ART.9) INVESTMENT AID FOR THE PROMOTION OF ENERGY FROM RENEWABLE SOURCES

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Here are some non-exhaustive examples of possible measures.

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## BIOMASS BOILERS

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### TECHNICAL AND PRACTICAL INFORMATION REQUIRED <sup>34</sup>

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- Brief description of the project including deadlines (launch, completion)
- Location and plans (address, cadastral parcel number, location plan)
- Schematic diagram of the installation illustrating operation
- Boiler technical data sheet
- Fuel used: type (wood chips, pellets, other fuel), quality, origin (supplier, perimeter, costs, etc.)  
Indications on the long-term security of biomass supply (i.e. offer/letter of intent without binding commitment)
- Installed thermal power [kW]
- Heat supplied by the boiler [kWh/a]
- CO<sub>2</sub> saved [ t/a]<sup>25</sup> compared to counterfactual benchmark
- Expected lifetime of the installation
- Connection to a heating network (yes/no)
- Supply of heat to a third party [% of heat generated] with indication of use
- Total annual heat demand at consumer level [MWh/a] and connection capacity [kW].
- Standard heat supply contract with the terms and conditions and the price for heat supply (Please note that no binding commitments must be entered into before the application is submitted in order to meet the incentive effect criterion (see p. 11))!
- Letter of Intent from the main heat consumers (Please note that no binding commitments must be made before submitting the application for support in order to meet the incentive effect criterion (see p. 11)!

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### ELIGIBLE ELEMENTS

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- Boiler(s) with automatic biomass fuel supply
- Fuel storage tank
- Automatic fuel supply system
- Heat exchangers
- Flue gas evacuation including filters
- Control system
- Electrical installations directly linked to the operation of the eligible elements
- Labour directly linked to the implementation of eligible facilities
- Expenditure related to technology transfers
- Heating network (see Art. 11 relating thereto)

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<sup>34</sup> In order to facilitate the processing of your application, please include in your application files all the information required in the order proposed. See also chapter submission procedure p. 11.

## INELIGIBLE ITEMS

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- Land
- Heating room
- Mobile engines
- Auxiliary boiler(s) fuelled with fossil fuel
- Planning studies and authorisation procedures (see Art. 14 thereof)

## COUNTERFACTUAL REFERENCE

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- Gas boiler(s) with the same thermal output

## CRITERIA

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- The general conditions for state aid relating to the aid scheme for environmental protection must be met.
- The project needs to be stabilised.
- No legally binding commitment should be made before the submission of the file and the start date of the work is indicated in it. If a previously signed contract contains a suspensive clause stating that the obligation depends on the application for and receipt of State aid, this contract will not be considered as a legally binding commitment and the incentive effect will in principle be considered to have been fulfilled.
- A copy (preferably in electronic format) of all required authorisations (establishment, construction, operation) should be attached to the file. For projects in the development phase, applications for the authorisations required for the operation of the technical installations for which aid is requested must be submitted at the latest before they are submitted to the State Aid Commission. The State Aid can only be liquidated once all the required authorisations have been granted.
- The investment estimate must be based on offers (without obligation to order). A summary table showing the various cost positions of the project and the references of the related service offers must be attached.
- The technical data sheets attesting to the performance of the technologies used should be attached to the file.
- Storage systems (biomass fuel) >10t ventilated and equipped with a CO detector.
- Compliance with the sustainability criteria for biomass must be ensured.



### TECHNICAL AND PRACTICAL INFORMATION REQUIRED <sup>35</sup>

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- Brief description of the project including deadlines (launch, phases, completion)
- Location and plans (address, cadastral parcel number, location plan)
- Schematic diagram of the installation
- Substrate used [basic substrate, co-fermentation substrate, organic dry matter content, methanogenicity, residence time, average temperature of the fermentation process, average volume load of organic dry matter (Raumbelastung)]
- Letter of Intent for biomass supply (Please note that no binding commitments must be made before submission of the application to meet the incentive effect criterion).
- Biogas valorization
  - Treatment and injection into the natural gas network, or
  - Cogeneration unit (electricity and heat production)
- Global energy balance on a monthly and annual basis
- Energy and resources saved compared to the counterfactual benchmark
- CO<sub>2</sub> saved [ t/a ]<sup>25</sup> compared to counterfactual benchmark
- Expected lifetime of the installation
- Biomethanizer and biogas treatment :
  - Type of digester used
  - Number of digesters, respective volumes and quality of thermal insulation
  - Brief description of the hygienisation installation (if existing)
  - Brief description of the substrate mixing plant
  - Biogas generated (average flow rate, average methane content)
  - Brief description of biogas treatment (co-generation or injection into a gas network)
  - Brief description of the biogas storage (type of tank, volume)
  - Post-fermentation 'Nachgärbehälter' (number of units and respective volumes)
- If injection into the natural gas network
  - Agreement in principle to inject gas into the network
  - Methods of injection
  - Injection tariff [€/Nm<sup>3</sup>] (at commissioning and expected average over the operating life)
- If cogeneration unit
  - Installed power and efficiency
  - Injection tariff [ct€/kWh] (at commissioning and expected average over the operating life)
  - % of heat recovered (process and marketing)
  - Connection to a heating network (see Art. 11 p. 69)
  - Information on the use of commercially available heat and on customers
  - Total annual heat demand at consumer level [MWh/a] and connection capacity [kW].
  - Standard heat supply contract with the terms and conditions and the price for heat supply (Please note that no binding commitments must be entered into before the application is submitted in order to meet the incentive effect criterion (see p. 11!)

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<sup>35</sup> In order to facilitate the processing of your application, please include in your application files all the information required in the order proposed. See also chapter submission procedure p. 11

- Letter of Intent from the main heat consumers (Please note that no binding commitments must be made before submitting the application for support in order to meet the incentive effect criterion (see p. 11!)

---

## ELIGIBLE ELEMENTS

- Digesters
- Hygiene installation
- Substrate mixing plant
- Biogas treatment plants (washing, filtering, drying ...)
- Biogas storage facilities
- Post-fermentation 'Nachgärbehälter' (number of units and respective volumes)
- Cogeneration unit
- Piping, pumps, control systems, water supply, drainage and wastewater treatment

---

## INELIGIBLE ITEMS

- Any investment that is part of the normal renewal of equipment (depreciation)
- Work not directly related to the implementation of the measure
- Land
- Auxiliary boiler(s) fuelled with fossil fuel
- Planning studies and authorisation procedures (except environmental studies under Article 14)
- Heat distribution network (see Art. 11 on p. 69)
- Costs associated with measures/actions prescribed by law (e.g., safety equipment, acceptance/inspection costs, measures imposed as part of the operating permit, energy performance certificate, etc.).

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## COUNTERFACTUAL REFERENCE

The counterfactual scenario is a conventional heat or power generation system with the same capacity in terms of effective energy production.

The differential between the electricity/gas feed-in tariff and the specific cost of the electricity/gas generated is taken into account.

See the relevant chapter on p. 26.

---

## CRITERIA

- The general conditions for state aid relating to the aid scheme for environmental protection must be met.
- The project needs to be stabilised.

- No legally binding commitment should be made before the submission of the file and the start date of the work is indicated in it. If a previously signed contract contains a suspensive clause stating that the obligation depends on the application for and receipt of State aid, this contract will not be considered as a legally binding commitment and the incentive effect will in principle be considered to have been fulfilled.
- A copy (preferably in electronic format) of all required authorisations (establishment, construction, operation) should be attached to the file. For projects in the development phase, applications for the authorisations required for the operation of the technical installations for which aid is requested must be submitted at the latest before they are submitted to the State Aid Commission. The State Aid can only be liquidated once all the required authorisations have been granted.
- The investment estimate must be based on offers (without obligation to order). A summary table showing the various cost positions of the project and the references of the related service offers must be attached.
- The technical data sheets attesting to the performance of the technologies used should be attached to the file.
- For biogas installations benefiting from an electricity feed-in tariff, the conditions for the allocation of the manure premium and the heat premium must be met.

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## HEAT PUMPS

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N.B. This applies only to heat pumps for space heating and the production of domestic or process hot water. Heat pumps used in industrial processes to recover waste heat are covered by Art. 6 (see p. 43).

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## TECHNICAL AND PRACTICAL INFORMATION REQUIRED <sup>36</sup>

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- Brief description of the project including deadlines (launch, completion)
- Location and plans (address, cadastral parcel number, location plan)
- Operating mode (monovalent, bivalent, multivalent)
- Schematic diagram of the installation illustrating operation
- Type of heat pump (air/water; water/water; direct evaporation/water; air/air)
- Heat source: geothermal probes, earth register, groundwater, other
- Refrigerant (type, quantity)
- Heating power [kW]
- Electrical power [kW]
- COP to DIN EN 255
- Heat supplied by the heat pump as it is operated [ kWh/a]
- CO<sub>2</sub> saved [ t/a]<sup>25</sup> compared to counterfactual benchmark
- Expected lifetime of the installation
- Connection to a heating network (yes/no)
- Supply of heat to a third party [% of heat generated] with indication of use

---

## ELIGIBLE ELEMENTS

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- Heat pump(s)
- Capture system at the heat source
- Heat exchangers
- Control system
- Electrical installations directly linked to the operation of the eligible elements
- Heating network (see Art. 11 relating thereto)

---

## INELIGIBLE ITEMS

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- Land
- Trench repairs
- Heating room
- Auxiliary boiler(s) fuelled with fossil fuel
- Planning studies and authorisation procedures (see Art.14 relating thereto)

---

## COUNTERFACTUAL REFERENCE

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- Gas boiler(s) with the same thermal power (cost indicated by MECE on the basis of Fraunhofer Institut)

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<sup>36</sup> In order to facilitate the processing of your application, please include in your application files all the information required in the order proposed. See also chapter submission procedure p. 11.

## CRITERIA

---

- The general conditions for state aid relating to the aid scheme for environmental protection must be met.
- The project needs to be stabilised.
- No legally binding commitment should be made before the submission of the file and the start date of the work is indicated in it. If a previously signed contract contains a suspensive clause stating that the obligation depends on the application for and receipt of State aid, this contract will not be considered as a legally binding commitment and the incentive effect will in principle be considered to have been fulfilled.
- A copy (preferably in electronic format) of all required authorisations (establishment, construction, operation) should be attached to the file. For projects in the development phase, applications for the authorisations required for the operation of the technical installations for which aid is requested must be submitted at the latest before they are submitted to the State Aid Commission. The State Aid can only be liquidated once all the required authorisations have been granted.
- The investment estimate must be based on offers (without obligation to order). A summary table showing the various cost positions of the project and the references of the related service offers must be attached.
- The technical data sheets attesting to the performance of the technologies used should be attached to the file.

## USE CASE – INDUSTRIAL HEAT PUMPS

Company: F  
Activity: industrial  
Size: Large company

**Issue:** The heat requirements of the industrial site are currently covered by two gas boilers. The replacement of these two boilers by one or more heat pumps combined with the recovery of waste heat, which allows for the energy released in the process to be used (insofar as waste heat is available) and thus optimizes the energy efficiency of the heat pumps, making it possible to save on gas, in line with a global approach of decarbonisation through electrification.

**Project:** Recovery/upgrading of waste heat - Installation of 2 heat pumps:

- Installed thermal capacity: 2,000 KW
- Type of heat pump: water/water
- Temperature: 45°C / 85°C
- Annual heat production: 10,000 MWh
- Equivalent full power hours: 5,000 h/a
- COP : 3.0 (average annual coefficient of performance based on useful heat, in energy terms)
- COP: 4.2 (nominal coefficient in terms of power)

### ENVIRONNEMENTAL IMPACT

AVERAGE NET ANNUAL SAVINGS IN FINAL ENERGY (15 YEARS) AND CO<sub>2</sub> COMPARED TO A NEW GAS BOILER :

- 13,400 MWH/YEAR - GAS SAVINGS
- 4,500 MWH/YEAR - NET ADDITIONAL ELECTRICITY CONSUMPTION

SOIT

1,650 TONNES OF CO<sub>2</sub>/YEAR

### ECONOMIC IMPACT

ESTIMATED ANNUAL SAVINGS :

120,000 €/ YEAR

### PROJECT COSTS

Total Project :

800.000 €

(HEAT PUMPS AND PERIPHERY)

Eligible Cost :

800.000 €

Hypothetical reference investment :

400.000 €

(NEW GAS BOILER WITH IDENTICAL INSTALLED THERMAL POWER )

Admissible Cost = Eligible costs-hypothetical reference investment: 400.000 €

### CACULATION OF STATE AID

STATE AID RATE ON ADMISSIBLE COSTS LEADING TO A STATE AID ALIGNED WITH THE PROPORTIONALITY CRITERIA OF A STATE AID :

24%

(Large enterprise in the context of energy efficiency aid, Art.6)

ELEMENTS TAKEN INTO ACCOUNT FOR THE CALCULATION OF THE AID RATE :

- Return on investment in the order of half the technical life of the equipment and not less than 3 years.

- Taking into account the energy balance

- COP > 2.5

PROPORTIONALITY:

- With similar grants, reasonable internal rate of return

- With other comparable projects

AMOUNT OF AID GRANTED :

96.000 €

i.e. 24% of admissible costs

i.e. 12% of total project costs

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## WIND TURBINES AND WIND FARMS

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### TECHNICAL AND PRACTICAL INFORMATION REQUIRED <sup>37</sup>

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- Brief description of the project including deadlines (history, launch, completion)
- Installation of wind turbines and connection infrastructures on the basis of a plot plan
- Number of wind turbines
- Type and manufacturer of machine and installed power (per machine)
- Measured and certified power curve
- Copies of productivity, noise and shade studies
- Noise emission measurement certificate according to DGW ( $v_{10} = 6$  m/s;  $v_{10} = 95\%$  nominal power)
- Net electrical energy generated [kWh/a] (fed into the electricity grid) and calculation source (scenario P90)
- Injection tariff [ct€/kWh] (at commissioning and expected average over the operating life)
- CO<sub>2</sub> saved<sup>20</sup> [t/a] compared to the counterfactual reference
- Expected life of the project
- Description of the involvement of local populations and municipalities

### ELIGIBLE ELEMENTS

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- Wind turbines (including transport, assembly and commissioning)
- Foundations and trenches
- Simple trench repair (standard filling materials)
- Electrical installations (transformers, monitoring, protection, metering, cables) and telecommunications installations directly linked to the operation of eligible elements
- Expenditure related to technology transfer

### INELIGIBLE ITEMS

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- Land
- Civil engineering (except wind turbine foundations)
- Trench repair layers such as asphalt, paving stones, ...
- Planning studies and authorisation procedures (see Art.14 relating thereto)
- Costs of compensation measures prescribed under the amended law of 19 January 2004 on the protection of nature and natural resources.

### COUNTERFACTUAL REFERENCE

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- Gas-fired power plant (cogeneration plant) of equivalent capacity part of the existing power plant fleet in the European interconnection network

---

<sup>37</sup> In order to facilitate the processing of your application, please include in your application files all the information required in the order proposed. See also chapter submission procedure p. 11.

- The difference between the feed-in tariff for the electricity generated and the average purchase price of electricity on the market is taken into account.

## CRITERIA

---

- The general conditions for state aid relating to the aid scheme for environmental protection must be met.
- The project needs to be stabilised.
- No legally binding commitment should be made before the submission of the file and the start date of the work is indicated in it. If a previously signed contract contains a suspensive clause stating that the obligation depends on the application for and receipt of State aid, this contract will not be considered as a legally binding commitment and the incentive effect will in principle be considered to have been fulfilled.
- A copy (preferably in electronic format) of all required authorisations (establishment, construction, operation) should be attached to the file. For projects in the development phase, applications for the authorisations required for the operation of the technical installations for which aid is requested must be submitted at the latest before they are submitted to the State Aid Commission. The State Aid can only be liquidated once all the required authorisations have been granted.
- The investment estimate must be based on offers (without obligation to order). A summary table showing the various cost positions of the project and the references of the related service offers must be attached.
- The technical data sheets attesting to the performance of the technologies used should be attached to the file.
- Wind measurement campaign carried out in accordance with an EU standard in force for a minimum duration of 12 months (see eligibility under Art. 14).



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## SOLAR THERMAL SYSTEMS

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### TECHNICAL AND PRACTICAL INFORMATION REQUIRED <sup>38</sup>

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- Brief description of the project including deadlines (launch, completion)
- Place of implementation and plans (address, cadastral parcel no.)
- Layout plan of the solar thermal collectors (roof, facade) with data on orientation (azimuth) and inclination
- Collector type (bare absorber, flat glass, vacuum tubular, air)
- Use of solar heat [process, domestic hot water, supplementary heating, cooling (solar cooling)].
- Total gross area of solar thermal collectors
- Type and manufacturer of solar thermal collectors
- Technical data sheet showing the performance of the solar collector according to an EU standard.
- Useful heat (or cold) supplied by the solar system [kWh/a] and source of calculation
- CO<sub>2</sub> saved [ t/a]<sup>25</sup> compared to counterfactual benchmark
- Expected lifetime of the installation
- Connection to a heating network (yes/no)
- Supply of heat/cold to a third party [% of heat generated] with indication of use

### ELIGIBLE ELEMENTS

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- Solar thermal collectors and fixing system
- Solar circuit (piping, valves, control system, pumps, fans, wiring, pipe and tank insulation, calorimeter, heat exchangers)
- Storage tanks
- Hydraulic and electrical installations directly linked to the operation of the eligible elements

### INELIGIBLE ITEMS

---

- Land
- Heating room
- Roof and façade work
- Modification of existing electrical and heating/cooling installations
- Boiler(s) fuelled with fossil fuel
- Planning studies and authorisation procedures (except environmental studies under Article 14)

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<sup>38</sup> In order to facilitate the processing of your application, please include in your application files all the information required in the order proposed. See also chapter submission procedure p. 11.

## COUNTERFACTUAL REFERENCE

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- Not at all.  
Generally speaking, the principle of additionality applies if it is a retrofit. However, a case-by-case analysis is necessary. In certain circumstances, a counterfactual reference will have to be taken into account.

## CRITERIA

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- The general conditions for state aid relating to the aid scheme for environmental protection must be met.
- The project needs to be stabilised.
- No legally binding commitment should be made before the submission of the file and the start date of the work is indicated in it. If a previously signed contract contains a suspensive clause stating that the obligation depends on the application for and receipt of State aid, this contract will not be considered as a legally binding commitment and the incentive effect will in principle be considered to have been fulfilled.
- A copy (preferably in electronic format) of all required authorisations (establishment, construction, operation) should be attached to the file. For projects in the development phase, applications for the authorisations required for the operation of the technical installations for which aid is requested must be submitted at the latest before they are submitted to the State Aid Commission. The State Aid can only be liquidated once all the required authorisations have been granted.
- The investment estimate must be based on offers (without obligation to order). A summary table showing the various cost positions of the project and the references of the related service offers must be attached.
- The technical data sheets attesting to the performance of the technologies used should be attached to the file.
- A calorimeter should be provided to count the heat generated.

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## PHOTOVOLTAIC INSTALLATIONS

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For photovoltaic (PV) installations benefiting from a feed-in tariff (operating aid) on the basis of the amended Grand-Ducal Regulation of 1 August 2014 relating to the production of electricity based on renewable energy sources or following a call for tenders organised by the Ministry of Energy, no investment aid is granted.

State aid for photovoltaic installations is in principle operating aid in accordance with the rules of the guidelines<sup>39</sup>,

In practice, since 2018, the Minister of Energy has been issuing calls for tenders for the construction and operation of new power plants (of a certain capacity) using photovoltaic energy. The bidders offering the most advantageous price, benefit for 15 years from a market premium contract for the injection of the electricity produced. The terms of these calls for tenders specify that the market premium awarded for photovoltaic energy cannot be combined with investment aid.

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<sup>39</sup>COMMUNICATION FROM THE COMMISSION Guidelines on State aid for environmental protection and energy for the period 2014-2020  
(2014/C 200/01) *Operating aid granted for energy from renewable sources Aid for electricity from renewable energy sources*

## (ART. 10) INVESTMENT AID FOR THE REMEDIATION OF CONTAMINATED SITES

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**Article 10** establishes an investment aid scheme for the remediation of contaminated sites.

According to the "polluter pays principle", the costs of combating pollution should be borne by the polluter who causes it. Aid for the remediation of contaminated sites is justified in cases where the person responsible for the contamination under the applicable law cannot be identified<sup>40</sup>.

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### TECHNICAL AND PRACTICAL INFORMATION REQUIRED <sup>41</sup>

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- Brief description of the project including deadlines (launch, phases, completion)
- Location and plans (address, cadastral parcel number, location plan)

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### ADMISSIBLE COSTS

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- Admissible costs correspond to the costs incurred in the work (environmental damage, including damage to the quality of the soil and surface or groundwater), remediation costs less any increase in the value of the land
- Financial assistance can be up to 100% of admissible costs.

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### CRITERIA

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- The general conditions for state aid relating to the aid scheme for environmental protection must be met.
- The project needs to be stabilised.
- No legally binding commitment should be made before the submission of the file and the start date of the work is indicated in it. If a previously signed contract contains a suspensive clause stating that the obligation depends on the application for and receipt of State aid, this contract will not be considered as a legally binding commitment and the incentive effect will in principle be considered to have been fulfilled.
- A copy (preferably in electronic format) of all required authorisations (establishment, construction, operation) should be attached to the file. For projects in the development phase, applications for the authorisations required for the operation of the technical installations for which aid is requested must be submitted at the latest before they are submitted to the State Aid Commission. The State Aid can only be liquidated once all the required authorisations have been granted.

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<sup>40</sup> In particular, the Commission will take the view that aid for the remediation of contaminated sites can only be granted where the polluter - i.e. the person liable under the law applicable in each Member State, without prejudice to the Environmental Liability Directive (Directive 2004/35/EC) and other relevant EU rules - is not identified or cannot be held legally responsible for financing the remediation in accordance with the "polluter pays principle".

<sup>41</sup> In order to facilitate the processing of your application, please include in your application files all the information required in the order proposed. See also chapter submission procedure p. 11.

## (ART. 11) INVESTMENT AID FOR EFFICIENT HEATING AND COOLING NETWORKS

**Article 11** introduces a scheme for investment aid for efficient heating and cooling networks<sup>42</sup>.

As part of the Europe 2020 strategy, the EU has set itself the goal of increasing its energy efficiency by 20% by 2020. To help achieve these targets, efficient heating and cooling networks should be promoted.

"Efficient heating and cooling network" refers to a heating or cooling network using at least 50 per cent renewable energy, 50 per cent fatal heat, 75 per cent heat from cogeneration or 50 per cent of a combination of these types of energy or heat. This definition includes the heat/cold production installations and the network (including related installations) necessary to distribute heat/cold from the production units to the customer's premises;

It is considered that heating networks using waste, including waste heat, as a feed fuel can make a positive contribution to environmental protection, provided that the principle of waste hierarchy is not circumvented.

The implementation of heating and cooling networks must first of all be linked to the construction, extension or renovation of one or more production units so that they can constitute an efficient heating and cooling network, compared to a conventional production installation. A distribution network forming part of a district heating and cooling system is eligible for support under Art. 11 on a stand-alone basis, provided that

- (a) it connects production units to final consumers;
- (b) it distributes the heat/cooling produced by an efficient district heating and cooling system meeting the requirements of Article 2(41) and (42) of Directive 2012/27/EU;
- (c) all other relevant conditions are met.

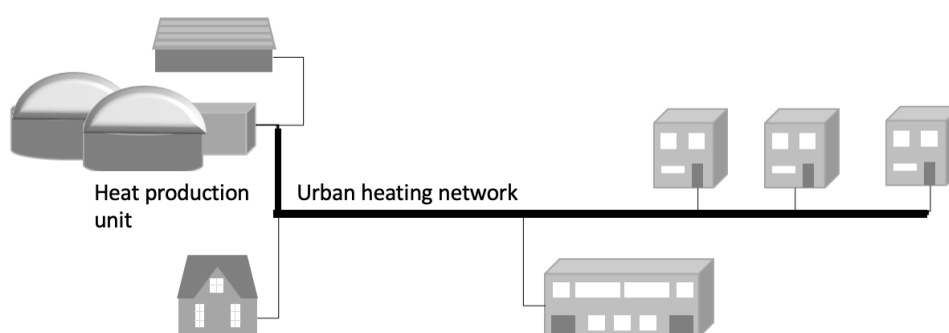


Figure 9: Art. 9 Efficient heating and cooling networks combined with a production unit.

<sup>42</sup> A heating and cooling network corresponding to the definition in Article 2(41) and (42) of Directive 2012/27/EU (26). This definition includes heat/cold production installations and the network (including associated installations) necessary to distribute heat/cold from the production units to the customer's premises.

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## TECHNICAL AND PRACTICAL INFORMATION REQUIRED <sup>43</sup>

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- Brief description of the project including deadlines (launch, phases, completion)
- Location and plans (address, cadastral parcel number, location plan)
- Technical data of the network (length, heat transfer fluid, temperature level, type of piping,)
- Total annual heat demand at consumer level [MWh/a] and connection capacity [kW].
- Quantification of the contribution to the objective of environmental protection (i.e. amount of energy/resources/CO2 saved, efficiency gains, ...).
- Expected lifetime of the measure
- Quotations for the implementation of the network (pipelines, civil engineering, ...) (Please note that no order must be placed before the submission of the application to meet the incentive effect criterion!)
- Detailed business plan
- Standard heat supply contract including the terms and conditions of connection and the price of heat (Please note that no binding commitment must be made prior to the submission of the application to comply with the incentive effect criterion!).
- Letter of intent to connect to the network of major customers. (Please note that no binding commitment must be made prior to the submission of the application to meet the incentive effect criterion!).

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## ELIGIBLE ELEMENTS

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- Construction, extension or renovation of one or more production units that are an integral part of an efficient heating and cooling network.
- Heat pipes and laying
- Trenches
- Simple trench repair (standard filling materials)
- Transfer stations and breakthroughs
- Grid monitoring device

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## INELIGIBLE ITEMS

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- Land
- Related civil engineering
- Trench repair layers such as asphalt, paving stones, ...
- Costs associated with the removal and disposal of an old heating network
- Planning studies and authorisation procedures (except environmental studies under Article 14)

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## ADMISSIBLE COSTS

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- Production unit :

Admissible costs for the production installation are the additional costs necessary for the construction, extension or renovation of one or more production units in order for them to form an efficient heating and cooling network, compared with a conventional production installation.

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<sup>43</sup> In order to facilitate the processing of your application, please include in your application files all the information required in the order proposed. See also chapter submission procedure p. 11.

- Efficient heating or cooling network

Admissible costs for the distribution network are investment costs. The amount of aid for the distribution network shall not exceed the difference between the admissible costs and the operating margin. The operating margin, on the other hand, is the difference between the discounted revenues and the discounted operating costs over the corresponding life of the investment, where this difference is positive. Operating costs include costs such as personnel, materials, contracted services, communications, energy, maintenance, rentals, administration, but do not include, for the purposes of this Regulation, depreciation charges or financing costs if these have been covered by investment aid. Discounting operating revenues and costs using an appropriate discount rate allows a reasonable profit to be made;

It follows that, depending on the selling prices of thermal energy and the quantities of energy transported by the networks, no financial aid may be allocated.

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#### CRITERIA

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- The general conditions for state aid relating to the aid scheme for environmental protection must be met.
- The project needs to be stabilised.
- No legally binding commitment should be made before the submission of the file and the start date of the work is indicated in it. If a previously signed contract contains a suspensive clause stating that the obligation depends on the application for and receipt of State aid, this contract will not be considered as a legally binding commitment and the incentive effect will in principle be considered to have been fulfilled.
- A copy (preferably in electronic format) of all required authorisations (establishment, construction, operation) should be attached to the file. For projects in the development phase, applications for the authorisations required to operate the technical installations which are the subject of the aid application must be submitted at the latest before they are submitted to the State Aid Commission. The State Aid can only be liquidated once all the required authorisations have been granted.
- The investment estimate must be based on offers (without obligation to order). A summary table showing the various cost positions of the project and the references of the related service offers must be attached.
- Heating and cooling networks must be insulated to limit losses as much as possible. Only insulation class 3 is eligible.
- The implementation of heating and cooling networks must first of all be linked to the construction, extension or renovation of one or more production units so that they can form an efficient heating and cooling network, compared to a conventional production installation.

A distribution network that is part of a district heating and cooling system is eligible as an autonomous system, provided that it connects the production units to the final consumers and complies with all the conditions in force.

## (ART. 12) INVESTMENT AID FOR THE RECYCLING AND REUSE OF WASTE

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**Article 12** establishes an investment aid scheme for the recycling and reuse of waste.

In line with the waste hierarchy set out in the EU Waste Framework Directive, the Seventh Environmental Action Programme identifies waste re-use and recycling activities as key priorities of EU environmental policy. The waste hierarchy includes (a) prevention, (b) preparation for reuse, (c) recycling, (d) other recovery, including energy recovery, and (e) disposal.

The granting of aid is linked to a series of seven conditions [points 2, 3, 4, 5, 6, 7 and 10] which are not explained in detail in this document, but a few important points should be made:

- Investment aid is granted for the recycling and re-use of waste **generated by other undertakings** and does not cover the recycling and re-use of the beneficiary's own waste.
- Aid does not indirectly relieve polluters of charges which they would have to bear under EU law or of charges which should be regarded as normal costs for a company (polluter pays principle).
- Investments go beyond the state of the art <sup>44</sup>

This article pays particular attention to this article in the context of the implementation of projects that respond to the principles of the circular economy.

**N.B.** Waste management must respect the principle of waste hierarchy.

The Community guidelines<sup>2</sup> state that: "State aid for waste management, in particular for activities aimed at the prevention, reuse and recycling of waste, can make a positive contribution to the protection of the environment, provided that it does not circumvent the principles mentioned in the previous point. This concerns the reuse or recycling of water or minerals which would not otherwise be used as waste. In the light of the "polluter pays principle", in particular, businesses which generate waste should not be relieved of the cost of treating such waste. Moreover, the normal functioning of the market for secondary materials should not be adversely affected".

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<sup>44</sup> State of the art means a process in which the prevention, reuse, recycling or recovery of a waste product for the manufacture of a finished product is a common and economically viable practice. Where appropriate, this concept of 'state of the art' should be interpreted from the point of view of the common market and Union-wide technologies.



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## TECHNICAL AND PRACTICAL INFORMATION REQUIRED <sup>45</sup>

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- Brief description of the project including deadlines (launch, phases, completion)
- Location and plans (address, cadastral parcel number, location plan)
- Quantification of the contribution to the objective of environmental protection (i.e. amount of energy/ resources/ CO<sub>2</sub> saved, efficiency gains, ...).
- Source, type and quantity of waste
- Technical description of the treatment technology
- Justification that the process goes beyond the state of the art<sup>44</sup>
- Description of the end use of the product generated as a result of the treatment and the potential outlets.
- Standard contract/ Letter of intent from potential customers for waste treatment, respectively for the outlets of the treated/ valorised product. (Please note that no binding commitments should be made before submission of the application to meet the incentive effect criterion).
- Description of the baseline scenario, i.e. conventional process with the same capacity.

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## ELIGIBLE ELEMENTS

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- Investments that go beyond the state of the art<sup>44</sup>  
Beyond the state of the art, normally refers to new innovative technologies, meaning new and unproven technologies compared to the state of the art in the industry, which present a risk of technological or industrial failure and does not refer to the optimisation or scaling up of an existing technology.

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## INELIGIBLE ITEMS

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- Investment linked to the recycling and reuse by a company or an individual of his or her own waste (part of the polluter pays principle)
- Land
- Related civil engineering
- Costs associated with measures/actions prescribed by law (e.g., safety equipment, acceptance/inspection costs, measures imposed as part of the operating permit, energy performance certificate, etc.).

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## IMPOSSIBLE COSTS

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Admissible costs are the extra investment costs necessary to carry out an investment leading to better or more efficient recycling or reuse activities, as compared to a conventional process of reuse and recycling activities of the same capacity that would be developed in the absence of aid.

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<sup>45</sup> In order to facilitate the processing of your application, please include in your application files all the information required in the order proposed. See also chapter submission procedure p. 11.

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## CRITERIA

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- The general conditions for state aid relating to the aid scheme for environmental protection must be met.
- The project needs to be stabilised.
- No legally binding commitment should be made before the submission of the file and the start date of the work is indicated in it. If a previously signed contract contains a suspensive clause stating that the obligation depends on the application for and receipt of State aid, this contract will not be considered as a legally binding commitment and the incentive effect will in principle be considered to have been fulfilled.
- A copy (preferably in electronic format) of all required authorisations (establishment, construction, operation) should be attached to the file. For projects in the development phase, applications for the authorisations required for the operation of the technical installations for which aid is requested must be submitted at the latest before they are submitted to the State Aid Commission. The State Aid can only be liquidated once all the required authorisations have been granted.
- The investment estimate must be based on offers (without obligation to order). A summary table showing the various cost positions of the project and the references of the related service offers must be attached.
- The technical data sheets attesting to the performance of the technologies used should be attached to the file.

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## (ART. 13) INVESTMENT AID FOR ENERGY INFRASTRUCTURE

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**Article 13** introduces an investment aid scheme for energy infrastructure.

A modern energy infrastructure is essential for an integrated energy market, which in turn is indispensable for ensuring energy security within the EU and for the EU to meet its broader climate and energy objectives.

By energy infrastructure, we mean for electricity: transport infrastructure, distribution infrastructure, electricity storage, equipment or installations essential to ensure safety, installations related to the safe and efficient operation of systems and intelligent networks, while specifying that each of the above-mentioned infrastructure elements correspond to a very precise regulatory framework set out in the definitions under Article 2 of the Act.

Energy infrastructure for gas means: gas and biogas transmission and distribution pipelines, underground storage facilities, reception facilities and facilities related to the safe and efficient operation of systems (see detailed definitions under Article 2 of the Law).

The article also covers oil transport and storage infrastructure and the transport and storage of carbon dioxide (CO<sub>2</sub>).

The aid is granted for energy infrastructure located in assisted areas and fully subject to tariff and access regulation in accordance with the internal energy market legislation.

The amount of aid shall not exceed the difference between the admissible costs and the operating margin of the investment.

Aid for investments in gas and electricity storage projects and in oil infrastructure must be notified to the European Commission.

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### TECHNICAL AND PRACTICAL INFORMATION REQUIRED <sup>46</sup>

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- Brief description of the project including deadlines (launch, phases, completion)
- Location and plans (address, cadastral parcel number, location plan)

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### ELIGIBLE ELEMENTS

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- Transport infrastructure
- Distribution infrastructure
- Equipment or installations essential to ensure safety
- Installations related to the safe and efficient operation of systems and smart grids
- Gas and biogas transmission and distribution pipelines
- Reception facilities
- Transport and storage of carbon dioxide (CO<sub>2</sub>)

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### INELIGIBLE ITEMS

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- Gas and electricity storage projects
- Petroleum infrastructures

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<sup>46</sup> In order to facilitate the processing of your application, please include in your application files all the information required in the order proposed. See also chapter submission procedure p. 11.

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## ADMISSIBLE COSTS

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Admissible costs are investment costs. The amount of aid does not exceed the difference between the admissible costs and the operating margin of the investment. The operating margin is deducted from the admissible costs ex ante or by means of a recovery mechanism.

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## CRITERIA

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- The general conditions for state aid relating to the aid scheme for environmental protection must be met.
- The project needs to be stabilised.
- No legally binding commitment should be made before the submission of the file and the start date of the work is indicated in it. If a previously signed contract contains a suspensive clause stating that the obligation depends on the application for and receipt of State aid, this contract will not be considered as a legally binding commitment and the incentive effect will in principle be considered to have been fulfilled.
- A copy (preferably in electronic format) of all required authorisations (establishment, construction, operation) should be attached to the file. For projects in the development phase, applications for the authorisations required to operate the technical installations which are the subject of the aid application must be submitted at the latest before they are submitted to the State Aid Commission. The State Aid can only be liquidated once all the required authorisations have been granted.
- The investment estimate must be based on offers (without obligation to order). A summary table showing the various cost positions of the project and the references of the related service offers must be attached.
- Energy infrastructure is fully subject to regulation in terms of tariffs and access in accordance with/ to the:
  1. amended law of 1 August 2007 on the organisation of the electricity market;
  2. amended law of 1 August 2007 on the organisation of the natural gas market;
  3. Regulation (EC) No 713/2009 of the European Parliament and of the Council of 13 July 2009 establishing an Agency for the Cooperation of Energy Regulators;
  4. Regulation (EC) No 714/2009 of the European Parliament and of the Council of 13 July 2009 on conditions for access to the network for cross-border exchanges in electricity; and
  5. Regulation (EC) No 715/2009 of the European Parliament and of the Council of 13 July 2009 on conditions for access to the natural gas transmission networks.

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## (ART. 14) ENVIRONMENTAL STUDIES

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**Article 14** introduces an investment aid scheme for environmental studies.

The article covers aid for studies, in particular energy audits, directly linked to investments in favour of environmental protection covered by the law (Art.4-13 see above).

This type of study is particularly appropriate to/ for:

- evaluate and justify an investment project beforehand under Art. 4 and 5, the exceeding of the applicable standards or the degree of improvement in the absence of such standards
- evaluate different options (e.g., for internal or external heat recovery, or for evaluating different potential technologies for production modernisation) in detail prior to an investment project and to identify the most appropriate one on the basis of a cost-benefit analysis
- study the technical and economic feasibility of an investment project beforehand
- the detailed design of a particular measure identified in the mandatory energy audit (audit in itself not eligible for state aid)
- carry out wind studies to estimate the wind potential of a site with a view to the installation of a wind farm (Art. 9)
- carrying out a life cycle analysis prior to an investment project to assess the overall impact in terms of environmental protection
- carry out an energy integration study (pinch analysis) to identify opportunities for optimisation, heat recovery and valorisation

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### TECHNICAL AND PRACTICAL INFORMATION REQUIRED <sup>47</sup>

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- Description of the environmental protection objective pursued
- Purpose of the study/ brief description of the study
- Offer specifying the services provided (Please note that no binding commitment must be made before submission of the application to comply with the incentive effect criterion)!
- For large-scale studies, it is recommended to provide a business plan for the investment measures under study.

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### ELIGIBLE ELEMENTS

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- Cost of the study drawn up by external professional service providers specialising in the fields of energy and the environment (i.e., design, engineering and consultancy firms).

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<sup>47</sup> In order to facilitate the processing of your application, please include in your application files all the information required in the order proposed. See also chapter submission procedure p. 11.

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#### INELIGIBLE ITEMS

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- Studies carried out internally
- Mandatory energy audits
- Costs not directly related to the study (e.g., travel costs, insurance costs, coordination costs, ...)

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#### ADMISSIBLE COSTS

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Admissible costs are the costs of the environmental study (excluding non-eligible items).

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#### CRITERIA

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- The general conditions for state aid relating to the aid scheme for environmental protection must be met.
- No legally binding commitment should be made before the submission of the file and the start date of the work is indicated in it. If a previously signed contract contains a suspensive clause stating that the obligation depends on the application for and receipt of State aid, this contract will not be considered as a legally binding commitment and the incentive effect will in principle be considered to have been fulfilled.
- No aid is granted to large enterprises for energy audits carried out in an independent and cost-effective manner by qualified or accredited experts or implemented and supervised by independent authorities pursuant to Article 11 of the amended Law of 5 August 1993 on the rational use of energy, except where the energy audit is carried out in addition to the energy audits required by this Law.
- Studies carried out by large companies can only benefit from State aid when a real incentive effect can be justified (e.g., large-scale studies).

## GENERAL REMARKS - DISCLAIMER

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This application guide has been written with the aim of facilitating the application of the stipulations of the law of 15 December 2017. Nevertheless, involuntary errors or omissions are always possible and therefore the authors decline all responsibility with regard to use by the reader of the elements of this guide. The reader shall remain responsible for the final verification in this respect.

Furthermore, the authors are open to any suggestions that could help improve this guide. For this purpose, please use the following e-mail address: [fae@eco.etat.lu](mailto:fae@eco.etat.lu)

This guide does not claim to be exhaustive.