



Energy Technology Development and Demonstration Program (EUDP)

Call for Applications
EUDP 2019-II
Deadline September 6, 2019, 15:00 CET

Unofficial translation

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Call for Applications for Funding from the Energy Technology Development and Demonstrations Program – EUDP 2019-II

The board of EUDP grants funding to innovative projects that contribute to fulfil the political objectives of Denmark within energy and climate as well as creating Danish jobs and export of energy technology.

EUDP is primarily funding development and demonstration projects. It is essential projects are described in relation to “state-of-the-art” of the technology and that the commercial perspectives of the projects are clarified since EUDP attaches importance to fund development of technologies which can lead to market dissemination – preferably at a global level.

EUDP urge to develop demonstration projects that reach to the market, including projects in which several steps of the development and demonstration of the technology is necessary in order to reach this level. Such projects are often characterized by a wider and more extensive group of stakeholders, larger budget and a longer time period.

Funding can be applied for by small, medium-sized and large companies also in collaboration with universities and government-approved research and organization institutes (GTS institutes). In such collaboration projects EUDP requires the participating companies take a leading position in the project to ensure subsequent commercialization.

Background

By 2050 Denmark must be independent of fossil fuels. At present, around half of the Danish electricity production is comprised of wind power, solar PV and biomass based decentralized combined heat and power. In a few years, most of Denmark's electricity and heat consumption is expected to be covered by renewable energy. This means that the focus in the coming years must be changed towards the use of electricity to i.a. transport and integration between the various sources of supply – including a sustainable gas grid. It is a challenge to be solved and requires intelligent and innovative solutions if Denmark is to succeed in phasing out fossil fuels and create an interconnected energy system based on renewable energy. For that reason, there is a need for an effort in a number of focus areas in order to fulfill the overall political objectives, as illustrated in Figure 1.

The objective concurrently is that the Danish supply sector is developed cost-effectively with regard to the consumers and in order for Denmark to stay competitive. This calls for energy technological focus areas of interdisciplinary character.

Novel digital solutions based on utilization of data, communication and computations are one of the most important keys to the transition. In addition, the digitization is an opportunity for Denmark to accelerate a leading position to develop solutions for digital and intelligent energy systems.

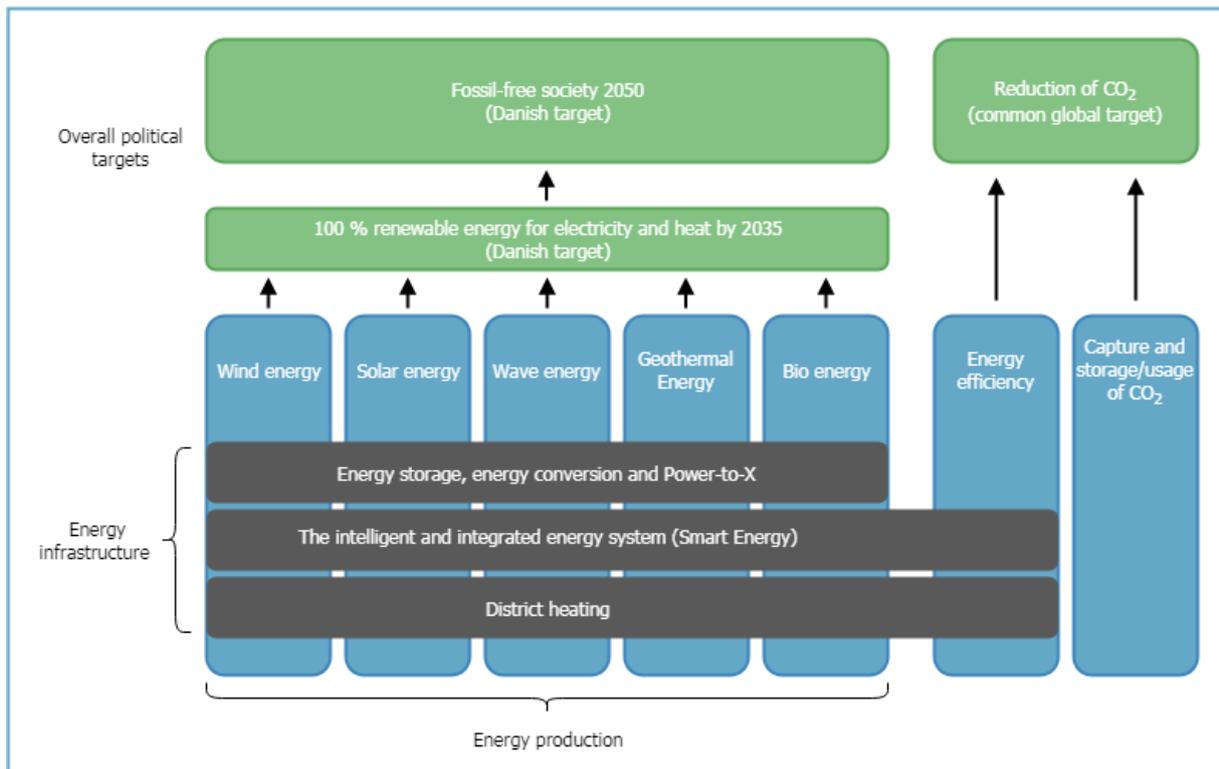


Figure 1. Focus areas within research, development and demonstration in relation to the objectives concerning energy policy.

When electricity is converted to other energy forms, it becomes possible to store the energy and is subsequently able to be utilized for different purposes such as heat, transport, industrial processes or backward conversion to electricity. The decisive factor in this context is that electricity is used where it yields most value at a given time. Thus, a development effort is needed within processes and facilities, which can convert and store electricity into other forms of energy. This requires a larger extend of integration of the supply sectors (electricity, gas and heat) and the transport sector.

There is a need for large scale development projects, which can convert electricity to hydrogen, bio methane, electro fuels, fertilizers, plastic, etc. in order to reach the goal regarding fossil fuel independence. It can e.g. occur through Power2X technology. For this process there is a need for carbon resources, which can be CO₂ from biogas facilities and in the long term from gasification and collection of CO₂ from the industry (e.g. cement plants) or perhaps extraction directly from the atmosphere.

The Power2X technology additionally can include CCU (carbon capture and usage) technology. Hereby, CO₂ is captured e.g. through upgrading biogas. Subsequently, the CO₂ is utilized for producing high value products such as jet fuels, methanol, alcohols, chemicals and plastics. High value products are particularly applicable for storage, wherefore CCU can be applied for utilizing wind and solar power in periods with high availability.

On this basis, the board of EUDP calls for applications for funding to different project types, cf. section 3. This includes the development of new energy technologies within the whole spectrum of energy supply, conversion to new energy carriers and storage for an efficient and flexible energy use.



It is essential that developed and demonstrated technologies are reaching the market. In that context, attention is directed towards The Danish Green Investment Fund (Danmarks Grønne Investeringsfond) and Vækstfonden's Early Engagement as possible sources of funding. See section 4.7 regarding other finance schemes.

1 Round of Applications 2019-II

Financial framework for the general funds:

250 m. DKK

Deadline for applications:

September 6, 2019, 15:00 CET

EUDP settlement:

December 9, 2019

1.1 General Funding

The EUDP funds development and demonstration of new energy technology. According to the [strategy](#), the main focus areas, also referred to as Danish positions of strength, are as follows:

- Wind power
- District heating
- Efficient energy use
- Bio energy
- Smart Energy and system integration
- Oil and gas

1.2 New in this Round

EUDP will require that the collaboration agreement must, at the latest, be signed and submitted 6 months after the notification date of the letter of intent unless otherwise agreed with the EUDP secretariat. Funding is not paid for projects as long as this condition is unfulfilled.

If the application is a re-application from previous rounds, it must be stated in the application and the associated journal number and project title of the previous project(s) must be specified.

1.3 Application Guidelines

EUDP refer to "[Application Guidelines](#)" for additional formal requirements. Applicants can contact the EUDP secretariat regarding questions in relation to the application material or regarding project proposals.

2 Purpose and Framework of EUDP

2.1 Legal Framework

The purpose of EUDP is to support the objectives relating to energy policies concerning i.a. security of supply, improve climate and environment and cost efficiency to ensure independence of fossil fuels for Denmark.

The legal framework for the Energy Technology Development and Demonstration Program (EUDP) is:

- Act no. 555 of June 6th 2007 with revision no. 1606 of December 22nd
- Order no. 133 of February 27th 2008.

Historically, the Danish energy and climate policy has been established through broad political agreements. This was also the case with the Danish Energy Agreement 2020-2024 of June 2018, which was signed by all parties of the Danish Parliament. The agreement entails i.a. that Denmark participates in the international collaboration related to Mission Innovation, which intends to accelerate the development of sustainable energy technologies. In this relation, the governmental funds technology are increased to DKK 580 million in 2020 to support research, development and demonstration of energy. DKK 500 million are allocated to the EUDP. After 2020, the intention is to further increase the governmental funds to research, development and demonstration of energy technology and climate. During the period of agreement, the funding will increase to DKK 1 billion in 2024.

2.2 Board, Strategy and Outcome Measures

The EUDP is managed by an independent board of 7 members. The board is responsible for all decisions related to EUDP, including the prioritization and allocation of funds.

The board has devised a [strategy](#) for the period 2017-2019, which focuses on the Danish positions of strength within energy technology. Danish commercial potentials exist especially in areas, expected to have a significant demand in 5-10 years and at the same time have a great match with the Danish positions of strength in the industry and with regard to research, development and demonstration. Furthermore, it is possible to apply for funding to participate in international collaboration within EU, IEA and Mission Innovation (cf. section 3).

The strategy also sets a number of outcome measures, which forms the basis for an assessment of the potential impacts of applied projects related to the objectives of EUDP. It must be clarified in the applications, how the projects contribute to the following outcome measures:

- Security of supply.
- Independence of fossil fuels.
- Climate and environmental concerns.
- Cost efficiency.
- Utilization and development of Danish business potentials for financial growth and employment.
- Research that prepares for development and demonstration of new energy technology.

Furthermore, the outcome measures will be subject for an assessment at the end of the project.

3 Type of Projects

The EUDP provides funding to the following types of projects:

1. Development and demonstration including research.
2. Feasibility studies
3. International participation and collaboration in the IEA.
4. International collaboration in Mission Innovation.
5. The Strategic Energy Technology Plan (SET Plan) of EU.
6. Technology partnerships.
7. Dissemination projects.

3.1 Development and Demonstration Including Research

The EUDP mainly funds development and demonstration of new energy technology, but can also fund projects in which elements of research are present. These projects must prepare or directly support demonstration. Tangible plans must in this occasion be included. Applications with research content (research and/or post-graduate studies) are forwarded to Innovation Fund Denmark (Innovationsfonden) for research assessment pursuant to § 5 in the Act on the Innovation Fund Denmark. This assessment is based on section 9 in the Application Form and the appertaining **mandatory** Appendix 7 and Appendix 5 regarding CVs. These appendices must be filled out in English.

The EUDP applies Technology Readiness Levels (TRL)¹ for describing the maturity level of projects which clarified in the following.

- Research means that projects are original for the purpose of acquiring new knowledge and insight in relation to specific goals and applications (EU TRL step 2-4).
- Development means utilization of knowledge for producing new or improves existing materials, products, processes, methods, systems or services (EU TRL step 4-6).
- Demonstration means projects that conduct experimental testing of a technology, system or method at realistic conditions with the aim of subsequent market introduction or – if the demonstration prompt for this purpose – further development before market introduction (EU TRL step 6-8).

The board assesses the projects on the basis of the assessment criteria outlined in Table 1.

¹ See [here](#) for further information.

Criteria	It is emphasized (ref. to "Application Guidelines" in parenthesis) that:
1. Project objective	The objective and the state-of-the-art of the project are clearly described, including the maturity and risk of the applied project are clarified, <u>that</u> the project involve innovative technological development, <u>that</u> the project is feasible and <u>that</u> the technological solution is replicable and scalable (1.1, 1.2, 1.3).
2. Project schedule, structure and feasibility	The content of the project is clearly described and organized in work packages, <u>that</u> an appropriate number of milestones (technological and commercial) are specified (2) and <u>that</u> it is plausible the project can be carried out as described.
3. Outcome measures a) Security of supply b) Independence of fossil fuels c) Climate and environmental concerns d) Cost efficiency e) Utilization and development of Danish business potentials for financial growth and employment f) Research that prepares for development and demonstration of new energy technology	The outcome measures of the project related to the objectives of EUDP are described (3): The applicant must for the specified outcome measures qualitatively and with respect to point d) and e) wherever possible quantitatively explain in which way and to which extent the project is expected to contribute. Projects do not necessarily need to contribute to all outcome measures. f) E.g. number of publications in peer reviewed journals. (NB: point f) is only relevant if projects include research, see criterion no. 9)
4. Dissemination	It is described how the results of the project are disseminated (4).
5. Organization	The participating persons and their competencies (incl. project management competencies) are reasonably clarified, <u>that</u> the fields of experience of the participating companies are described and <u>that</u> it is justified if foreign participants apply for funding (5.1). Furthermore, it is emphasized <u>that</u> private companies to the extent possible take on a leading role in the projects for the purpose of the subsequent commercialization process (5.3).
6. Budget and financing	The size of the budget in the project is reasonable compared with the content of the project and the expected results, <u>that</u> the conditions for the central budget items are reasonably clarified and <u>that</u> the participants of the projects have confirmed their participation (6).
7. Incentive effect	It is made clear that the project will not be carried out without funding (7.1).
8. Market	The competitive situation and the expected market for the developed technology are described clearly (where, when and to which extent) and <u>that</u> the marketing plans are described clearly (8.3, 8.4 and 8.5). Furthermore, the target group and the value proposition (finances, convenience, functionality, etc.) must be described clearly as well as the expected impacts of the project must be clarified (8.2).
9. Research content	Projects that contain research and/or post-graduate studies must contain a clear description of the research-related content corresponding to the requirements, described in the section related to research (9.1). The Innovation Fund Denmark conducts a technical assessment of the research content of the application. Please note the information for the research assessment must be worked out as a separate appendix, which must be independently readable of the remaining application. The separate appendix must be written in English.

Table 1. Assessment criteria for development and demonstration projects.

3.2 Feasibility studies

A feasibility study can be a first step for an application for EUDP related to larger development and demonstration projects. Feasibility studies must initially address opportunities and challenges related to the subsequent projects applied for at EUDP.

Applications for feasibility studies will be assessed on the basis of the following criteria:

- The feasibility study must cover the potential and feasibility of the subsequent project.
- It must contain a clear scope and definition of the project, including the organization and financing of the project.
- Clear commercial perspectives in the subsequent project must be clarified.
- Whether the feasibility study involves an end-user/customer.

3.3 International Participation and Collaboration in the IEA

Denmark participates in the International Energy Agency (IEA) Energy Technology Network, which cover a large number of technology or theme specific agreements – so-called Technology Collaboration Programs (TCPs) – between IEA member countries regarding collaboration within research, development and demonstration in the field of energy.

Within these agreements, experts from research institutions and industry from different countries collaborate regarding exchange of information, sharing of results and conducting analyses and explorative studies in the form of reports and publications. This typically occurs through participation in an Executive Committee (ExCo) for each TCP or in the specialized *annexes* or *tasks* within the individual TCP.

By applying, EUDP can fund Danish participation in such annexes or tasks that involves:

- A technology area of particular Danish interest.
- That the applicant has a professional self-interest in participating.
- That the application has an adequate overview of relevant Danish players and stakeholders within the area of technology in question.
- That the application contains a plan for dissemination activities, which must be conducted in relation to the relevant Danish players and stakeholders within the technology area. In order to participate in tasks/annexes, a minimum requirement is to set up an electronic newsletter or similar (e.g. website), which is offered to all players and stakeholders and is disseminated at least two times a year. This can e.g. happen in relation to the applicant's participation in meetings, workshops, etc. or by the appearance of new reports, analyses or other initiatives from IEA. During the project period, there must be arranged at least one workshop/seminar addressing Danish players and stakeholders within the relevant technology area. This can take place in collaboration with other related IEA collaborations or the like.

EUDP can fund Danish participation as *alternate*² in ExCos in relation to management of the interests of Denmark in IEA in collaboration with the *delegate* from the Danish Energy Agency. The tasks as alternate primarily consist of participating in biannual meetings, including preparing and coordinate the Danish opin-

² *Alternate* is a substitute to the delegate representing Denmark in IEA.

ions on strategic decisions, as well as conducting country reports, etc. When applying, the EUDP application template must be used, in which sections 3, 8, 9 and 10 and subsections 1.2-1.6 and 6.2-6.3 can be omitted.

If an IEA collaboration contains *actual technology development activities*, it is possible to apply for funding to the Danish part of the project in the ordinary way as a technology development project at EUDP, see section 3.1. Such applications are marked as *research, development and/or demonstration*.

3.4 International Collaboration in Mission Innovation

Denmark is a part of Mission Innovation (MI). The ambition is that the participating countries in MI are doubling the public funds to research for energy technologies during a five-year period towards 2020. The Danish funds to MI are primarily granted within the framework of the Act on the EUDP. It is possible to obtain funding to MI activities in two ways:

- 1) Danish participation in working groups under the so-called Innovation Challenges, which i.a. includes the areas: smart grid grid innovation, heating/cooling systems to buildings and conversion and storage of solar energy. The criteria for this correspond to the assessment criteria to obtain funding to Danish participation in annexes and tasks within IEA, cf. section 3.3.
- 2) Actual technology development projects with foreign project participants from the participating countries in the MI initiative. The main applicant must be situated in Denmark and the project must consider development of energy technology in Denmark. The assessment criteria for these applications are outlined in section 3.1.

3.5 The Strategic Energy Technology Plan (SET Plan) of EU

EUDP funds participation in large European projects, which contribute to implementing European initiatives under the Strategic Energy Technology Plan (SET Plan) of EU. The projects must concurrently be within the scope of EUDP's objectives. In this context, EUDP funds participation in relevant ERA-NET Cofund initiatives under Horizon 2020.

Unless otherwise advised, these types of projects are assessed on the basis of the specified criteria in section 3.1, Table 1.

3.6 Technology Partnerships

The program can fund:

- Specific initiatives that take place as part of the development of collaboration between public and private players, e.g. strategies, action plans, market research, etc.

Furthermore, for these the following requirements apply:

- Specific focus areas must be identified, which can create basis for establishing project consortiums for advancing project application to e.g. EUDP.
- The effects of EUDP funding must be clarified for the establishment/improvement of the strategic partnership and for the demand of specific strategies, action plans, etc. of the branch of trade.
- The applications must refer to one of the specific technology areas in the EUDP [strategy](#). It must be stated which activities are applied for and who carry out the activities.
- The projects must be managed by companies.



3.7 Dissemination Projects

Funding can be granted to specific dissemination or information regarding relevant energy technological knowledge, which is beyond the dissemination effort conducted as part of the funded projects.

4 General Information

4.1 Who Can Apply?

Funding from EUDP can be applied by private companies, public companies or knowledge institutions, including universities and government-approved research and organization institutes (GTS institutes), which is registered in the Central Business Register of Denmark.

Foreign project participants can apply for funding as long as the project can contribute to advance technology development in Denmark and the main applicant is registered with Danish CVR number.

Funding cannot be granted to companies that have not complied with claims for reimbursement of funding, which the European Commission has by earlier decision declared illegal and incompatible with the internal market.

4.2 Language

The application must be in **English**, if the application exceeds funding above DKK 3 million. If the funding applied for is lower than DKK 3 million the application can be written in either English or Danish. It is possible to apply for exemption to write the application in Danish if the is below DKK 15 million. If research or post-graduate studies are included in the project the application must be in English.

4.3 How Much Funding Can Be Applied For?

EUDP funding is granted within the framework of the EU state aid rules, which defines the maximum limit for the funding percentages.

Each project participant must state in the budget how one's effort in the project expects to be financed by funding, self-financing and possible third party funding.

- **Funding amount**

There is no upper or lower limit for the funding amount in DKK that can be applied for.

- **Funding percentage**

The funding percentage is not fixed for all projects. The applicant states the applied funding percentage in the budget. By decision regarding funding, the board of EUDP determines the funding percentage for every project participant within the framework of the EU state aid rules. The decision is i.a. based on company size, project type, commercial aspects, involved technical and economic risks, etc. The funding percentage is determined in consideration of an assessment of the incentive effect, see Table 1 regarding assessment criteria.

Projects, which are within the scope of the EU state aid rules, are able to be granted funding up to the permitted level within these regulations. The permitted funding percentages are listed in the [EUDP rules](#).

Public funding of research and development activities, which is undertaken by non-profit institutions of higher education or public research bodies, are as a general rule not affected by the EU state aid rules for research and development and innovation. For such activities the funding percentage can be **90 %** at most.

For research institutions/universities up to **70 %** is granted for funding of the costs eligible for support for participating in the IEA collaboration. Overhead for research institutions/universities are allowed according to the budget guidelines of the Ministry of Finance not exceed 44 %. Companies are granted funding according to the limits for governmental support for research, development and innovation by the European Commission – for further information see the [EUDP rules](#).

For research institutions/universities up to **60 %** is granted for funding of the costs eligible for support for feasibility studies. Overhead for research institutions/universities are allowed according to the budget guidelines of the Ministry of Finance not exceed 44 %. Companies are granted funding according to the limits for governmental support for research, development and innovation by the European Commission – for further information see the [EUDP rules](#).

Applicants in single person businesses, which cannot document expenditure on wages (and thereby a cost eligible for support for wages), can apply for funding on the basis of a fixed hourly wage at DKK 350. The funding for expenditure on wages is in these instances determined as a percentage of DKK 350. This form for funding are granted similarly to the general funding on the basis of art. 25 of the General Block Exemption Regulation of EU.

4.4 Direct Refusal

Applications can immediately be refused if:

- The application is not submitted with the required appendices prior to the deadline.
- The project is assessed to be outside the scope of EUDP.
- The application form, including the budget form, is not completed in accordance to the requirements of the application guidelines.
- Appendices for research assessment are not enclosed to the application (applies for projects with research content – see Table 1 point 9).

4.5 Project activities that are not supported

It is not possible to receive funding for activities, which aim to:

- Develop business models, market analyses and other commercial market activities, including distributing existing technology or involving commercial operation of facilities, etc.
- Expand infrastructure.
- Carry out pre-production planning or streamlining production or control processes, etc.³

4.6 If Funding are Granted

Information related to the projects, which have received funding, are published on:

- The website of the Danish Energy Agency with project title and main applicant and also on:
 - www.energiteknologi.dk and www.energiforskning.dk with a short description of the objective of the project and information regarding project participants and budget.

³ jf. OECD's Frascati Manual.

When a project has obtained a funding commitment, a number of requirements must be fulfilled in relation to the completion of the project. The requirements are stated in the [EUDP rules](#), i.a. the following applies:

- **Project agreement**

The project manager and the additional participants of the project have **one month** to accept the project agreement after receiving the letter of intent. The project is not allowed to start before an agreement between the project participants and EUDP has been signed. If required, the agreement can determine a specification of milestones and outcome measures or other project conditions before initiation.

- **Collaboration agreement**

A signed collaboration agreement by all participants must be available, which i.a. concerns distribution of rights between the participants and financial aspects, no later than **6 months** after the letter date of the letter of intent, unless otherwise agreed with the EUDP secretariat. Funding payment will not occur as long as this condition is unfulfilled.

- **Coordination, reporting and financial statement obligation**

The project responsible company/institution is responsible for the progress and economy of the project and manages the contact with EUDP. This involves i.a. collecting information regarding economic and technical conditions from the project participants and pass on funding from EUDP to the partners in the consortium.

- **Dissemination and utilization of results and rights**

Project results must be available for the public, however with consideration of acquired patents, if any. In particular instances EUDP can allow for specific results to be unpublished. A final report is conducted at project completion, which is eligible for publication.

The project responsible company can during the project be asked to provide photos of the project activities and products for use at the web portals.

- **Funding payment**

Funding is as a general rule paid according to the General Block Exemption Regulation of EU. Funding is paid on the basis of specification of the actual expenditures eligible for funding and the funding percentages, which are stated in the project agreement for each beneficiary. Please note that funding is paid on the basis of actual expenditures, including actual wages. Funding is *not* paid on the basis of budget figures.

Along with payment of funding, status reporting of the project's technical progress must be available. Payment occurs generally 2 times annually, unless otherwise agreed with the EUDP secretariat.

It is a condition for funding that the *activity is not initiated* prior to receiving a funding commitment.

4.7 Other Finance Schemes

Other finance schemes exist for research, development, demonstration and/or market maturation of energy technologies. An overview of finance schemes are seen on www.statens-tilskudspuljer.dk. In particular, the following are mentioned:

- ELFORSK funds research, development and demonstration projects within efficient electricity use in the end-consumption.
- Innovation Fund Denmark funds research and innovation.
- The Danish Green Investment Fund grants loans to companies, which accelerate the green transition. For more information see <https://gronfond.dk/en/>.
- The Danish Growth Fund grants loans and guarantees for Danish companies in all professions and at all stages of their development. For more information see <https://vf.dk/en/>.

5 Application Material

An application consists of the following appendices:

Appendix 1: Application form (word file).

Appendix 2: Budget (excel file).

Appendix 3: Gantt chart (excel file).

Appendix 4: Business Model Canvas (word file).

Appendix 5: CVs – CV for the project manager as a minimum (assemble in one file).

CVs for all project participants must be in English if research is included (assemble in one file).

Appendix 6: Declaration of participation for all parties, cf. application guidelines point 6.1 (assemble in one file).

Appendix 7: If research is included in the applied project, specific requirements are applicable. See the specific requirements in the application guidelines point 9.

Appendix X: Other appendices, if applicable.

Appendices 1-6 must always be submitted. Appendix 7 must be send if research or post-graduate studies are included in the project.

Additional appendices can, if applicable, be enclosed to e.g. project description, business plan, etc.

Appendices cannot substitute the completion of the application form and all sections must be filled in substantially.