

Clean energy for
EU islands:
**Waste-to-Combustible-
to-Energy**
Saint Martin, France

Sustainable modernisation of waste recovery in Saint-Martin: Waste-to-Combustible-to-Energy

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Table of Contents

Introduction	5
Project description	6
Background	6
Objectives	7
Technology	8
Environmental assessment	8
Energy balance	9
Socio-economic assessment	9
Financial data	9
Scope of the technical assistance	9
Overview on EU regulation	10
EU Taxonomy	10
Existing financing schemes and funding opportunities for “Sustainable modernisation of waste recovery in Saint-Martin”	14
European Funding Programmes (InvestEU (2021-2027))	14
Recovery and Resilience Funds	14
The Recovery and Resilience Facility	14
Just Transition Mechanism (JTM)	15
European Structural and Investment Funds (ESIF)	15
Project Development Assistance (PDA)	16
European Energy Efficiency Fund (eeef) – Technical Assistance (TA) Facility	16
European Local Energy Assistance (ELENA)	17
Joint Assistance to Support Projects in European Regions (JASPERS)	17
European Islands Facility - New Energy Solutions Optimised for Islands (NESOI)	17
LIFE Technical Assistance Projects	17
Alternative financing schemes	18
Citizen Cooperatives	18
Crowdfunding	18
Purchase Power Agreement (PPA)	18
Guidelines for the application procedure	19
Complementary deliverables	20
Tools to estimate project and company’s cash-flows	21
Tool to estimate project risks	22
Training session on financial topics	23
Conclusions	24
Appendix	25
European Funding Programmes	25
Financial Institutions Instruments	25
Alternative financing schemes	27
Support services	28

List of Figures

Figure 1 - Map of Saint-Martin Island.	5
Figure 2 - Excerpt of the financial model tool provided to the island.	21
Figure 3 - Excerpt of the company financial spreadsheet provided to the island.	21
Figure 4 - Example of one of the risks that it is possible to estimate under the risk assessment tool.	22

List of Tables

Table 1 - Saint-Martin's electricity sector overview in 2020.	5
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Introduction

Saint-Martin is an overseas territory in the West Indies within the Caribbean region, as shown in Figure 1. The island is divided between France and Netherlands: 60% of the northern territory is French, also including some neighbouring islets with Île Tintamarre being the largest one. The remaining southern 40% of the island is the Dutch Sint Maarten. This island constitutes the only place in the world where France borders the Netherlands.



Figure 1 - Map of Saint-Martin Island.

According to the French census of January 2018¹, Saint-Martin has 34 065 inhabitants distributed over an area of 54.39 km², i.e. a population density of 640 inhabitants per km². In January 2017, the population was 35 334, as referred in the French census. This population decay between 2017 and 2018 was due to Hurricane Irma, which happened in early September 2017, and was responsible of destroying and damaging 95% of the infrastructures over the French territory of Saint-Martin.

An important characteristic of Saint-Martin's electricity sector is that 100% of the generation comes from diesel and heavy fuel oil: there are no renewable energy installations on the island, as shown in Table 1.

Table 1 - Saint-Martin's electricity sector overview in 2020.

ELECTRICITY SECTOR OVERVIEW	VALUE
Installed capacity	53 MW
RE Installed Capacity Share	0%
Peak demand	32 MW
Total generation	196 MWh
Electricity access (% of population)	100%

¹ <https://www.insee.fr/fr/statistiques/4989739?sommaire=4989761>

Project description

Background

For more than 13 years, the company VERDE SXM (one of the beneficiaries of this technical assistance) has been managing all waste in the French part of Saint-Martin in the form of two separate activities:

- A service of treatment of household and similar waste on behalf of the Overseas Collectivity of Saint-Martin (COM).
- The operation of the *Ecosite de Recyclage-Valorisation*, a facility owned by VERDE SXM. On this site, waste from economic activities or bulky household waste that can be recycled, is directed to the appropriate recovery channels.

This set of facilities located in Les Grandes Cayes, in the north-east of the island, responds to the strategy previously defined by local elected officials, and renewed since then to have in one place all the tools for waste treatment of the island.

The set of facilities includes public works equipment (compactor, hydraulic excavators, etc.) and specialised equipment for waste treatment. The clientele is composed of:

- Upstream:
 - the Collectivity of Saint-Martin: collector of household waste and sorted waste from individuals (green waste, household appliances, etc.)
 - the majority of the island's professionals: traders, industrialists, importers, craftsmen. It is the clientele producing so-called residual waste
- Downstream, service providers for the recovery of secondary raw materials:
 - French and international companies
 - Eco-organisations, such as CITEO, Ecologic, Récylum, SCRELEC
 - ADEME

Almost all possible recycling channels exist today on the Ecosite, such as metals, end-of-life vehicles (ELVs), mineral or edible oils, packaging, food glass, industrial cartons, batteries, lamps, organic matter, etc.

There is now space for improvement to guarantee the sustainability and competitiveness at long-term, namely on two levels:

- Improve upstream sorting by waste producers themselves, professionals, or individuals. Effective communication campaigns had taken place before Hurricane Irma and others will be relaunched shortly, with the Collectivity of Saint-Martin and eco-organisations.
- Develop the sector, often still undernourished, thanks to this improvement in sorting and increase their often very low profitability.

At the same time, the storage of final waste (after sorting and recycling) is now facing the end-of-life deadline of the Non-Hazardous Waste Storage Facility (NHWST), accelerated by the passage of Hurricane Irma. This deadline implies that new treatment objectives must be defined. The simplest solution is the extension of NHWST, but it faces several obstacles:

- The land on which this extension would be carried out does not belong to the Collectivity.
- The area which now includes the NHWST site is the Saint-Martin Nature Reserve.
- Failure to comply with the objectives of limiting landfill dictated by European regulations.

Objectives of Waste to Energy project in Saint-Martin

The private organisation VERDE SXM is aligned and engaged with the public authority 'Collectivité d'Outre-Mer de Saint-Martin' to develop an innovative project that would make possible to overcome the limitations listed in the previous subsection. This goal is supported by VERDE SXM and Collectivité's in-depth knowledge of the island's waste management, and on a continuous investigation for continuous improvement of their activity.

The project that VERDE SXM and Collectivité d'Outre-Mer de Saint-Martin intend to conduct in the island aims to modernise the recovery of waste from Saint-Martin through a global system to optimise the recycling and recovery of different waste and traceability of incoming flows on the Ecosite. More specifically the project's objectives are:

- Modernisation of the site entrance (reception, stool, visits).
- Creation of a resource centre.
- Reinforcement of the sorting of bulky items and waste of economic purposes.
- Treatment of residual and non-recyclable waste and development of their energy valorisation.

To rely on such innovations in such a structuring project for the territory, the project leader (VERDE SXM) guaranteed with the public state (namely with the public entity involved on this TA - Collectivité d'Outre-Mer de Saint-Martin), that this process will meet the needs of the territory in terms of waste management, while ensuring industrial reliability in a constant search for preservation of the environment.

These aspects were already shown by the preliminary studies requested by the project makers in the first part of the waste to energy project in Saint-Martin, which was the subject of the first application for European Regional Development Fund (ERDF) grants. Some of the most important conclusions of the preliminary studies are described below:

- Field & Project. The land chosen to host the waste recovery project is particularly relevant because of its proximity to the NHWST and Ecosite sites and its distance from residents.
- Technical studies of the process have made possible to precisely define the appropriate process and scale of the unit for the territory of Saint-Martin, and to fit it perfectly into French regulations.
- Waste characterisation. To refine the waste to energy project, it was essential to have an exact knowledge of the quantities and nature of the deposit to be treated.
- Energy performance analysis: the demand for energy autonomy is a priority for the overseas territories. The project developers will make it possible by recovering non-recyclable waste into electricity. The studies conducted at the preliminary stage made possible to precisely determine the expected energy performance of the envisaged process.
- Development of the application for operating authorisation. As the additional activities envisaged are subject to the regulation of Classified Installations, an amending Application for Operating Authorisation must be drawn up, and submitted to the DEAL instructor services, to integrate them into those already authorised on the VERDE SXM website.
- Elaboration of the building permit. In parallel with the development of the application for operating authorisation and field studies, the file for the Application for a Building Permit is currently being prepared, also in close collaboration with the COM instructor services.

- Optimisation of recycling EPR channels. Even if it represents a major financial investment in waste management, the energy recovery project led by VERDE SXM only complements a more global policy.

Technology

The “sustainable modernisation of waste on the island of Saint-Martin” is based on the PI (Pollution-free Integrated Waste Management solution). This project on the island has the following main technical objectives:

- Reduction of the amount of waste landfilled.
- Implementation of a waste-to-energy solution with revenues from electricity generation.
- Definition of a technical solution adapted to the specificities of the island of St Martin: limited waste deposits and need for modularity.
- Response to storage facility of non-dangerous waste.

This plant consists of two main stages: 1) Preparation of RDF (refuse-derived fuel) and 2) Valorisation of RDF. The Valorisation of RDF stage includes:

- A Mouldering module that involves the following steps:
 - Pyrolysis at 330°C.
 - Gasification at 450°C.
 - Syngas production.
- A combustor module, involving:
 - Oxidation of syngas at 1 100°C for thermal production.
 - Gaseous effluent exchanger.
 - Gaseous effluent / combustion air exchanger.
- An electrical production module:
 - ORC Turbines.
 - Production of electrical and thermal energy: 2.4 MW electric + 6 MW thermal.
- A gaseous effluent treatment module.

The amount of yearly expected energy produced by the plant will lead to 18.6 GWh electrical energy with 13.4 GWh delivered to the electrical grid, including also 55.6 GWh for thermal energy used in the process.

Environmental assessment

With the waste to energy project in Saint-Martin is intended to energetically recover the island’s waste, reducing the quantity of waste into landfill disposal. The environmental benefits of the project are the following:

- Permanent limitation of the land right-of-way due to the limitation of landfill.
- Limitation of potential water, air, and soil pollution due to this limitation of the tonnage buried.
- Increase in the rate of recycling and recovery of waste in the territory.
- Limitation of potential pollution on the edge of the Nature Reserve adjacent to the site.

Energy balance

The project to be implemented in the island proposes a modernisation of the waste recovery of Saint-Martin through the establishment of a resource centre, an optimised sorting and recycling, and an innovative energy recovery of residual waste.

The resulting energy production will contribute to the energy autonomy sought in the territory of Saint-Martin. This green electricity will thus help limit the use and transport of fossil energy, an important source of GHG emissions. The Carbon Footprint of waste treatment will be greatly improved.

Socio-economic assessment

The expected socio-economic assessment of the project identified:

- New jobs will be created by the development of prior waste sorting and recycling operations.
- Current jobs will rise the competence to operate the new waste recovery unit.

Financial data

The CAPEX budget of the project is about **€32.2 million**.

According to the project beneficiaries, the project expects to receive between €13.1 million and €14.6 million, i.e., between 42% to 45% of the total CAPEX, being already granted with part of this total amount. The business plan was developed considering a percentage of subsidies of about 50% of the total investment, predicting that they could need a supplement in the final steps of the project. For this reason, the project beneficiaries are looking for other opportunities/grants to reach the 50% value as this structuring project is considered necessary for the waste management of the island.

Scope of the technical assistance

Considering the project's financial data presented in the previous sub-section, the main goal of the technical assistance required to Saint-Martin is to identify complementary funding and financing opportunities, as well as an overview of the EU regulation based on the EU taxonomy framework regarding Waste to Energy technology to be applied in Saint-Martin. This technical assistance process, which is described in the upcoming chapters, is focused on achieving the financial goals of the waste to energy project in Saint-Martin.

Overview on EU regulation

EU Taxonomy

The **EU Taxonomy regulation** emerged as a new classification tool to provide clarity for companies, capital markets, policymakers, and investors on which economic activities and projects are considered sustainable to invest in. The EU Taxonomy regulation and the sustainable finance principles aim to prevent greenwashing and avoiding financing and/or funding economic activities and projects that are not committed to climate, energy, circular and other relevant environmental and social targets³.

The **sustainable finance** principles, methods, screening criteria, environmental and sustainability assessment for economic activities and investment projects have been recently introduced in the EU through new regulations, along with respective criteria and tools. Therefore, environmental, social and governance (ESG) criteria should be considered when the public authorities and bodies, and private sectors (companies, MSME, etc.) are preparing and designing a project of investment².

Whether the project developers/promoters are interested to see their future investments financed and/or funded at European level, the sustainable finance principles must comply with the EU Taxonomy regulation².

The EU's Action Plan on Financing Sustainable Growth⁴, also including the EU Taxonomy, is framed under the European Green Deal and other climate and sustainability commitments to achieve the carbon neutrality by 2050. Hence, these new sustainable finance regulatory policies will ensure that future public, private and PPP investments support the decarbonisation of economic activities, the transition to a circular economy, a secure, clean and efficient energy production, as well as a resilient, healthy, fair and responsible recovery from the impacts of COVID-19 crisis².

The EU Taxonomy regulation defines six environmental objectives to assess whether an investment project or economic activity can be classified as environmentally sustainable³, namely:

- Climate change mitigation.
- Climate change adaptation.
- Sustainable use and protection of water and marine resources.
- Transition to a circular economy.
- Pollution prevention and control.
- Protection and restoration of biodiversity and ecosystems.

An investment project or an economic activity is considered taxonomy-aligned if meet the following four conditions⁵:

1. Be Taxonomy eligible: the project fits a NACE sector category identified as being the most relevant to achieve the environmental objectives, and at same time it must comply the technical screening criteria established under the EU Taxonomy.
2. Demonstrate Taxonomy alignment: the project of investment must make a substantially contribution to at least one of that six environmental objectives.

²https://ec.europa.eu/info/business-economy-euro/banking-and-finance/sustainable-finance_en

³https://ec.europa.eu/info/business-economy-euro/banking-and-finance/sustainable-finance/eu-taxonomy-sustainable-activities_en

3. Do No Significant Harm (DNSH): the project developers must demonstrate that the investment will not do significant harm to any of the five remaining environmental objectives.
4. The project/activity must comply with minimum requirements.

Thus, the Taxonomy is defined as a common classification system for sustainable economic activities, being a detailed and clear tool to support investors, companies, policymakers and project developers and promoters to foster the transition to a low-carbon, resilient and resource-efficient/circular economy. The Taxonomy defines quantitative and qualitative criteria/thresholds for each environmental objective and economic activity³.

Therefore, the EU Taxonomy will play a key role to achieving European Green Deal objectives, UN's 2030 Agenda for Sustainable Development Goals, 2015 Paris Agreement on Climate Change commitments, Recovery and Resilience Plans, and EU's climate and energy targets for 2050 towards a carbon neutrality in the economy and society.

According to the EU's Action Plan on Financing Sustainable Growth⁴, EU Taxonomy will be an essential guidance for investors: "Clear guidance on activities qualifying as contributing to climate change mitigation and adaptation, environmental and social objectives will help inform investors. It will provide detailed information on the relevant sectors and activities, based on screening criteria, thresholds, and metrics. This is an essential step in supporting the flow of capital into sustainable sectors in need of financing. An EU taxonomy will be gradually integrated into EU legislation to provide more legal certainty."

In this context, the EU Taxonomy can be used by islands as a framework to assess their current position and track progress in terms of climate and sustainable investment towards carbon neutrality, circular economy, and ecological transition⁵. Hence, the islands are encouraged to align and comply with the EU Taxonomy, as well as to be initiative-taking on applying the Taxonomy regulation to guide and assess the transformation driven by more sustainable business and public procedures, investments, and projects.

To assess EU Taxonomy alignment of this specific project, more details would be necessary, however in the next point it is presented preliminary overview.

The main processes involved in the Waste-to-Energy technology are:

- Co-incineration of waste in combustion plants (e.g., power plants) and in cement and lime production.
- Waste incineration in dedicated facilities.
- Anaerobic digestion of biodegradable waste.
- Production of waste-derived solid, liquid, or gaseous fuels.
- Indirect incineration following a pyrolysis or gasification step.

However, there are several key environmental and health concerns about some WtE processes regarding:

⁴<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52018DC0097>

⁵https://ec.europa.eu/info/sites/default/files/business_economy_euro/banking_and_finance/documents/sustainable-finance-taxonomy-faq_en.pdf

- The WtE incineration has been progressively withdrawn by the EU, in which some of the most important European financial institutions precluded this technology from funding and financial support, since waste incineration is considered a procedure with high CO₂ emissions. Additionally, the lack of contribution of the technology to circular economy is also a negative point of the process. As mentioned in the previous section, the EU has established ambitious targets to achieve carbon neutrality by 2050 and halve total residual waste by 2030, then waste incineration could compromise those commitments.

⁶ https://www.worldenergy.org/assets/images/imported/2013/09/Complete_WER_2013_Survey.pdf

⁸ Peter Slorach, HarishJeswani, Rosa Cuéllar-Franca, AdisaAzapagic, "Environmental sustainability of anaerobic digestion of household food waste", Journal of Environmental Management, Vol 236, April 2019 (<https://www.sciencedirect.com/science/article/pii/S0301479719301422>).

The plant to be implemented in Saint-Martin involves a gasification approach followed by an incineration stage of the synthetic produced gas. For this reason, in principle, it does not harm the objective of the circular economy transition according to EU taxonomy. Although, the whole technology and activity under the scope of the Saint-Martin waste management must be assessed to better ensure the alignment with EU taxonomy requirements.

More concretely, according to the Best Available Techniques (BAT) Reference Document for Waste Incineration¹⁰, the gasification is considered a high-performance process/technology, and in accordance with Article 13(1) of the Regulation (EU) 2020/852¹¹, in establishing and updating the technical screening criteria for the environmental objective of the transition to a circular economy, an economic activity is qualified as contributing substantially to the transition to a circular economy, including waste prevention, reuse and recycling, where that activity: **minimizes the incineration of waste and avoids the disposal of waste, including landfilling, in accordance with the principles of the waste hierarchy.** Therefore, the activity associated with Saint-Martin project is in line with the Article 13(1) of the Regulation (EU) 2020/852, since it **substantially contributes to the EU taxonomy objective of the transition to circular economy.** However it is important to highlight that, since is linked with the energy sector, the WtE Saint-Martin project may be framed in different EU Taxonomy activities, depending on the raw materials and type of operation/process, such as are available [here](#).

Moreover, a second delegated act with technical screening criteria for the 4 remaining objectives, including the transition to a circular economy objective, will be published in 2022¹². Therefore, the Commission will adopt a circular delegated act to:

- Establish technical screening criteria for determining the conditions under which a specific economic activity qualifies as contributing substantially to the transition to a circular economy.
- Establish, for each relevant environmental objective, technical screening criteria for determining whether an economic activity in respect of which technical screening criteria have established causes significant harm to one or more of those objectives.

The Commission adopted the circular delegated act by 31 December 2021, with a view to ensuring its application from 1 January 2023.

¹⁰ https://eippcb.jrc.ec.europa.eu/sites/default/files/2020-01/JRC118637_WI_Bref_2019_published_0.pdf

¹¹ <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:32020R0852>

¹² https://ec.europa.eu/info/business-economy-euro/banking-and-finance/sustainable-finance/eu-taxonomy-sustainable-activities_en

Existing financing schemes and funding opportunities for “Sustainable modernisation of waste recovery in Saint-Martin”

This section presents an outline of the different funding mechanisms and schemes currently available in the EU and France. It offers guidance on which path to take and where to look with regards to financing energy transitions. This section will briefly explore the financing schemes, with each of the concepts having links to further reading. Next to these, the guide includes information about support services and innovative financing schemes.

It is worth to highlight that both TA project beneficiaries have proven to have a deep knowledge about the funding options more suitable to Saint-Martin project. Below, there is an inventory, not only for complementary funding opportunities, but also financing schemes. The most suitable possibilities are available below, while complementary information is available on the appendix to this report.

European Funding Programmes (InvestEU (2021-2027))

The InvestEU programme congregates the InvestEU Fund, the InvestEU Advisory Hub and the InvestEU Portal, constituting a multitude of EU financial instruments currently available to support investment projects in the EU. From the [European Fund for Strategic Investments \(EFSI\)](#), this programme will provide a budget guarantee to support investment and access to finance in the EU for the period 2021-2027. InvestEU aims to trigger at least €650 billion in additional investment. To find out more information about InvestEU, including details on what exactly it will finance, and its budget for doing so, see [here](#).

Recovery and Resilience Funds

The Covid-19 pandemic has uncovered many truths about the lack of economic resilience in isolated areas. Islands have been subject to significant economic consequences. Recovery and resilience funds have been created to respond to the questions asked by the COVID-19 pandemic, by incentivising the adoption of clean technologies and renewables, upskilling local labour forces, renovating buildings to increase their energy efficiency, modernising digital tools, and more. The subsections below list the most important of such funds that could help to build economic resilience in islands.

The Recovery and Resilience Facility

The Recovery and Resilience Facility (RRF) will support reforms and investments undertaken by Member States through providing EUR 672.5 billion in loans and grants. This scheme aims to mitigate the economic and social impacts derived from pandemic crisis through accelerating the green and digital transitions in the Member States. Hence, the countries developed Recovery and Resilience Plans with big packages of reforms and investment projects for private and public sectors, making the European economies and societies more resilient, sustainable, and better prepared to face this crisis. To benefit from the support of the Facility, these reforms and investments should be implemented by end-2026. The plans should effectively address challenges identified in the [European Semester](#), particularly the [country-specific recommendations](#) adopted by the Council. The European Commission defined the following areas to Member States put forward investment and reform plans:

- Power up: clean technology and renewables.
- Renovate: energy efficiency of building.
- Recharge and refuel: sustainable transport and charging stations.
- Connect: roll-out of rapid broadband services.
- Modernise: digitalisation of public administration.
- Scale-up: data cloud capacities and sustainable processors.
- Reskill and upskill: education and training to support digital skills.

France has requested a total of €40.9 billion in grants under the RRF. The French plan is structured around the three pillars of resilience, green and digital transformation. It places a particular emphasis on the fight against climate change thanks to investments in energy-efficiency, sustainable transport, and green technologies. The plan includes 50% of investments for the climate transition and 25% of investments in favour of the digital transition. From these, the French RRF includes:

- €5.8 billion for energy retrofitting.
- €7.0 billion for green infrastructure and mobility.
- €5.3 billion for green energy and technology.

More information can be found [here](#).

Just Transition Mechanism (JTM)

The JTM addresses the social and economic effects of the green (and digital) transition, focusing on the regions, industries and workers who will face the greatest challenges, and mobilising at least €150 billion over the period 2021-2027, through three pillars:

1. A new Just Transition Fund of €40 billion,
2. InvestEU 'Just Transition' scheme mobilising €30 billion, and
3. EIB public sector loan facility of €10 billion.

Hence, the JTM is a key tool to ensure that the transition towards a climate-neutral economy happens in a fair way, to minimise the socio-economic impact of the transition. More information on the JTM can be found [here](#).

European Structural and Investment Funds (ESIF)

In Europe, EU funds have provided grants to support environmental investments in low-income regions. Over half of EU funding is channelled through ESIF. The application of ESIF on each Member State results from the partnership agreement between EC and respective Member State, which also involves stakeholders at the local and/or regional levels.

These funds are relevant for the EU Islands Energy Transition projects, given that ESIF focusses on innovation, sustainability and regional economic development and growth, while stimulating eco-friendly innovation and sustainable growth. For these funds, clean energy initiatives and solutions are welcome. From the ESIF, it is important to highlight:

- European Regional Development Fund (ERDF). The ERDF, one of the ESIF, finances programmes from Member States' administrations at national, regional, and local levels. These public administrations are responsible by choosing which projects to finance and take responsibility for day-to-day management. For the period 2021-2027, ERDF is reinforcing the budget for investments in a smarter, greener, more connected, more

social, and closer to European citizens. Thus, ERDF aims to stimulate a smart, sustainable, and inclusive growth, as well as a territorial cohesion in EU regions and cities. The ERDF support can be provided through grants and, increasingly, through financial instruments. For more information, see [here](#).

- The Cohesion Fund (CF) for the period 2021-2027 is continuing to focus the investment in environmental and transport infrastructures. CF will drive the investments towards a Smarter Europe, through innovation, digitisation, economic transformation, supporting also MSME. This Fund also aims to contribute for a greener and carbon neutral Europe, committing the Paris Agreement and investments in clean, renewable, and efficient energy transition to mitigate the climate change. For more information, see [here](#).

The CF also funds the European regions interested in creating a sustainable waste management system, on the regions that have low recycling rates and high dependence from landfills – an important instrument for investing on waste separation collection and treatment. This includes sorting, preparation for reuse, recycling, treatment (biowaste and residual waste) and valorisation infrastructure in line with the waste management hierarchy.

The treatment and valorisation activities and facilities are not deeply developed in most Member States. For this reason, ERDF and CF stimulate the investment in facilities for the treatment of residual waste in these Member States to achieve the target set in the Circular Economy Package, as suggested in Article 6(1) g) of the European Commission's proposal for the ERDF and CF. Hence, a careful design and execution of the whole waste management system should be performed from communication, collection, treatment, and valorisation of the residual waste stream, to achieve high recycling rates with low landfill disposal rates. When applying this holistic process to waste management, together with the environmental and human health protection, the project becomes eligible for these financing programmes.

Waste-to-Energy facilities can receive funding from the ERDF and Cohesion Funds. A waste management integrated approach within the circular economy needs an outlet for residual waste. If there is no environmentally sound treatment for this waste there is a risk that the production cycle will be contaminated with pollutants showing up in products, on uncontrolled landfills or in open burning poses risks of damage for human health and the environment. Waste-to-Energy preserves the value of this residual waste by turning it into electricity and/or heat (cogeneration) under strictly controlled conditions, preventing resource losses, decreasing the need for fossil fuels, increasing energy security, and reducing GHG emissions. This is key to make the bridge between the circular economy, energy union and climate change objectives.

Project Development Assistance (PDA)

PDAs are facilities provided by the European Commission to support public authorities and public administrations in developing bankable sustainable energy projects. They aim to bridge the gap between sustainable energy plans and real investment, through technical and advisory support to prepare and mobilise investment into sustainable energy projects. This support is available through direct funding grants to public bodies, and thereafter private sectors, through the following channels.

European Energy Efficiency Fund (eeeF) – Technical Assistance (TA) Facility

The [eeeF-TA Facility](#) supports investment projects in the sector of energy efficiency, small-scale renewable energy, and public urban transport. The eeeF aims to bridge the gap between

sustainable energy plans and real investments by allocating consultant services to the planned investment programmes (for example for feasibility studies, energy audits and evaluating the economic viability of investments, legal support). It also covers direct staff costs of the TA beneficiaries. For more information about the eeeF, see [here](#).

European Local Energy Assistance (ELENA)

ELENA is a joint initiative by the [European Investment bank](#) (EIB) and the European Commission under the Horizon Europe programme. ELENA provides grants in technical assistance addressed to energy efficiency and renewable energy investments for building and urban transport sectors. Activities eligible for ELENA grant support include technical studies, energy audits, project bundling, legal advice, project management, financial advisory, business plans, and tendering procedure preparation. For more information about ELENA, see [here](#).

Joint Assistance to Support Projects in European Regions (JASPERS)

JASPERS is a partnership between the European Commission and the EIB aimed at improving the quality of investments supported by the ERDF, the CF, the Connecting Europe Facility, and the Instrument for Pre-accession Assistance. JASPERS helps European cities and regions absorb European funding opportunities through innovative projects. JASPERS offers free of charge assistance for local authorities and project promoters. Areas of assistance includes project review and advice, strategic support, capacity building, implementation technical support and independent quality review. Regarding energy efficiency, JASPERS supports projects in the [energy and solid waste](#) areas, and helps them to expand or upgrade gas distribution and storage facilities; build wind farms, solar rooftops, geothermal and biomass facilities; rehabilitate district heating plants and networks; retrofit old buildings; decontaminate polluted sites; establish and extend integrated waste management systems; and build waste-to-energy facilities. To follow the action for the period 2021-2027, or for more information on JASPERS programme, see [here](#).

European Islands Facility - New Energy Solutions Optimised for Islands (NESOI)

NESOI is an H2020 funded facility focused on inhabited EU islands. This facility will fund 60 successful energy transition projects while mobilising more than €100 million of investment, with the objective of significantly reducing CO₂ and GHG emissions by 2023. The islands can be benefited through the facility in training, technical support, cooperation opportunities and robust funding opportunities to help energy transition plans translate into renewable energy projects, building and energy infrastructure retrofitting, energy bills reduction, local job creation and more. NESOI has also available a [Self-Check Eligibility Tool](#), which will help the promoters to discover if the islands energy transition project proposal is eligible for NESOI support. For more information on NESOI, see [here](#).

LIFE Technical Assistance Projects

The LIFE technical assistance project funding includes:

1. projects for the preparation of Strategic Nature and Integrated Projects. These projects are meant at providing financial support to help applicants to prepare a project for a maximum LIFE contribution of €70 000.
2. Projects to facilitate the upscaling or replication of results funded under the LIFE programme under other EU funds.
3. Projects for the capacity building of Member States authorities with low effective participation.

The project promoters and developers can get in touch with the national contact point for the LIFE programme [here](#). The country factsheet helps project developers on the application and organising information/networking events and proposal writing workshops. This funding supports the project developers in communicating and disseminating the project results. Inspiring stories examples are available [here](#).

Alternative financing schemes

Citizen Cooperatives

Energy cooperatives are a democratic model that involve all citizens interested in decision making and financial and economical participation in renewable energy or energy efficiency projects. After purchasing a cooperative share and becoming a member or co-owner of local renewable energy and energy efficiency projects, members can share the profits and buy electricity at a fair price. More information about citizen cooperative models available [here](#).

Crowdfunding

Crowdfunding is an alternative source of income for local governments and project promoters, which can draw support from people across entire countries and increasingly internationally. Crowdfunding is initiated with citizens voluntarily investing a certain financial amount into a proposed project. This initiative and method are particularly addressed for funding small projects which can raise finance along the time, and it is free of fees.

It is also a good way to analyse the public's reaction and social perception to a project idea. The common obstacles that crowdfunding is facing are related to the big effort in building up public trust and interest, and there is no guarantee that the funds collected will reach the required funding target. There are several types of crowdfunding models, the most useful ones for island projects are the lending-based, reward-based, and equity-based models. More information available [here](#) and [here](#) with examples of best practices.

Purchase Power Agreement (PPA)

A PPA supports the power sector public-private partnerships (PPP), which is defined as the primary agreement between a public sector purchase "offtaker" and a privately-owned power producer. The public sector purchaser "offtaker" is defined as being often a state-owned electricity utility, in jurisdictions where the power sector is largely state operated. It frequently delivers the primary revenue stream which underwrites the PPP project. Therefore, the structure and risk provision regime under the PPA is fundamental to the private sector to raise finance for the project, recover its capital costs and earn a return on equity.

PPA's are used for power projects where:

- There is a competition possibility from inexpensive or subsidised national or international competition (e.g., where a neighbouring plant is producing power with a lower price) - the PPA provides some certainty of being protected from such competition.
- The predicted project revenues would or else be inexact and thus some guarantee as to amounts purchased and price paid are mandatory for the project viability.
- The purchaser demands to assure supply security.

Learn more about PPAs [here](#).

Guidelines for the application procedure

1. Identify a relevant funding programme.

- First identify a relevant funding programme. Then, select a call for proposals that best fits the description of the project, and carefully follow the specific application guidelines.
- Since each funding programme prioritises a different EU objective, checking the priority of each funding programme is critical. It is also important to pay attention to the different ways of project managing and different types of actions for each programme
- The project will only be accepted for funding if the priorities match those of the funding programmes objectives. It is therefore important to clearly outline the projects objectives and joint activities needed at a European level and to start finding as soon as possible potential European partners for the project, if required by the fund.
- Since the project will likely need a source of co-financing, check for internal resources from the organisation/promoters, given that it will be necessary much time and hard work into writing a project proposal. So, making sure there are enough staff resources available.
- Finally, keep up to date with information regarding the chosen funding programme. For instance, subscribe to the newsletters, or study the work programmes which can be found on the respective websites and official tender platforms as the European [“funding & tender opportunities portal”](#).

2. Choose amongst the call for proposals.

- All relevant documents such as the call for proposals, the programme guide, the applicants guide, and the application form need to be studied. It is also important to download the budget and other kind of official templates, if available. Summarising the most important information will help to understand more about the specific calls.
- The most important elements to consider in a call for proposals are the objectives, eligible actions, eligibility criteria (e.g., eligible countries and beneficiaries, minimum and maximum budget, eligible expenditure, eligible activities), co-financing rules and rates, administrative requirements, application form needed, selection process and evaluation methodology and criteria, and the deadline for submission.

3. Developing a project.

- Construct a summary of the project idea and write a preliminary 2-3 pages about the objectives, target group, list of work packages with respective milestones and main deliverables, the ideal project partnership (e.g., types of organisations, sectors) and respective project management governance model. Make sure to detail the situation that the project wishes to improve thanks to the EU funding, i.e., a description of the expected project impacts on regional and sector economies, society, public health, environment, and sustainability according to EU funding objectives and goals. The sequence of actions during the project should be logical and linked to the project description, then a logic list of work packages of tasks is essential. The expected results and indicators of impacts should also be clearly defined. Finally, make it clear which actions the project should fund.

4. Identifying partners and stakeholders.

- The active participation of the main key stakeholders affected by the problem addressed, as well as the integration of experts to help solve the problem throughout the project, is key to ensuring a successful project partnership.

- To identify the best partnership, the following questions need to be defined: who is affected by the problem? who will use the solutions/tools developed in the project and how they can be involved? who can help with solving the addressed problem?
- Distinguish partners (other organisations that will be involved in the proposal directly and its execution) from other stakeholders (e.g., organisations that can be indirectly affected or involved with the project or that might also benefit from the results and impacts).

5. Communication, dissemination, and exploitation.

- Communication, dissemination, and exploitation are crucial horizontal activities which must be taken up in EU-funded projects. These activities not only inform about the project and promote its results, but they also ensure that other entities can make concrete use of those projects results and learn from success and/or mistakes. The replication of the results, through other stakeholders, public authorities, and organisations from different regions within the field of the project (i.e., increasing the project network), plays a key factor to achieve a successful project.
- The EU funding programme will better consider projects that contain good strategies to share, communicate, replicate, and invite other entities to exploit results. This is seen as a key added value in a project proposal.

See [here](#) for more guidelines on dissemination and exploitation activities.

6. Combining EU funds.

- There are EU funding programmes focusing on similar objectives, it is possible to combine them which can help to boost project results and impacts.
- For example, synergies can be exploited between the new Horizon Europe and CEF (Connecting Europe Facility) actions. Both programmes also develop synergies with other programmes too, e.g., in the promotion of hydrogen as an alternative fuel. The [MEHRLIN](#) project in northern Italy is an example of integration of different funding sources, namely CEF, H2020 and LIFE. This project is financing the construction of H₂ stations for buses through CEF, whilst the Zero Emission LIFE IP is financing the deployment of a fleet of 28 hydrogen fuel-cell cars. In the H2020 JIVE project, 27 fuel-cell buses for the same location will also be supported. More information is available [here](#). There are additional examples of synergies between CEF and H2020 projects [on Intelligent Transport Systems](#) and [Safe and Green Aviation](#). Other examples of H2020 and CEF Transport projects are available in the [TRIMIS database](#)¹³.

See [here](#) and [here](#) for more details on synergies between funds.

Complementary deliverables

As mentioned in the previous sections, project developers already have a financial model already structured and well developed. However, it was agreed in the training session on financial topics (section below) that CE4EU will deliver a standardised tool to present the project's financial model and risk assessment, although this was not agreed in the support agreement.

¹³ <https://ec.europa.eu/inea/en/synergies>

Tools to estimate project and company's cash-flows

In Figure 2 and Figure 3 is shown an excerpt of the Saint-Martin financial model tool delivered, which contents and indicators are typically used by investors in their financial analysis. The main difference between the files is that the financial model tool predicts the cash flow of the project, while the company financial spreadsheet is a file that can be filled for a SPV (i.e., with the data for the different company of the consortium), for a specific company in case of equity interest, etc.

Clean energy for EU islands								
Cash-Flow	2021	2022	2023	2024	2025	2026	2027	2028
Volume of business	-	-	-	-	-	-	-	-
EBITDA	-	-	-	-	-	-	-	-
EBITDA margin	-	-	-	-	-	-	-	-
Amortizations	-	-	-	-	-	-	-	-
EBIT	-	-	-	-	-	-	-	-
EBT	-	-	-	-	-	-	-	-
Operating taxes	-	-	-	-	-	-	-	-
NOPLAT	-	-	-	-	-	-	-	-
Operating Cash-Flow	-	-	-	-	-	-	-	-
Working capital	-	-	-	-	-	-	-	-
CAPEX	-	-	-	-	-	-	-	-
Final Operating Cash-Flow	-	-	-	-	-	-	-	-

Figure 2 - Excerpt of the financial model tool provided to the island.

Financial data for company representation template

please note that this sheet updates automatically after the data is added to the other sheets (yellow cells)

Company:	Company XYZ Ltd
Year ended:	2020 to 2024
Currency:	EUR

Key financial metrics	2020	2021	2022	2023	2024
Revenue	-	-	-	-	-
Gross profit	-	-	-	-	-
Earnings before interest, tax and amortization (EBITDA)	-	-	-	-	-
Profit after tax	-	-	-	-	-

Assets	-	-	-	-	-
Liabilities	-	-	-	-	-

Cashflow	-	-	-	-	-
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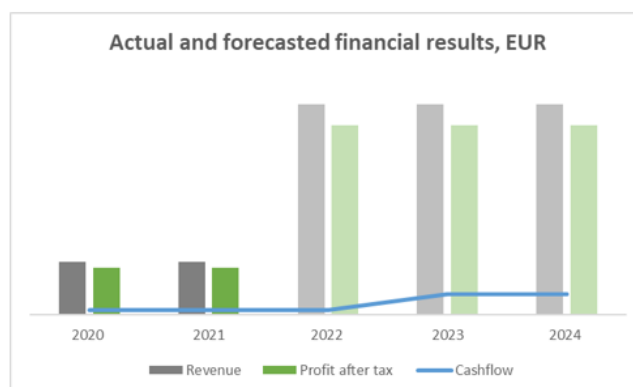


Figure 3 - Excerpt of the company financial spreadsheet provided to the island.

Tool to estimate project risks

The Clean Energy for EU islands secretariat also provided a risk assessment tool to estimate the risks associated to the Saint-Martin project implementation in a quantitative and qualitative manner. Project developers should migrate the risk assessment that they already made into this standardised way to present it to the investors. In Figure 4 is depicted an example of the risk assessment tool.



Clean energy
for EU islands

This risk is related to the project promoting entity

KPI	Result	Points
Liquidity		
Current Ratio	#DIV/0!	#DIV/0!
Quick Ratio	#DIV/0!	#DIV/0!
Comparison	#DIV/0!	#DIV/0!
Solvency		
Solvency Ratio	#DIV/0!	#DIV/0!
Profitability		
Net Profit Margit	#DIV/0!	#DIV/0!
Commercial Profitability	#DIV/0!	#DIV/0!
Repayment Capacity Ratio	#DIV/0!	*

Documentation	Y/N
Balance sheet (last 3 years)	
Income statement (last 3 years)	
External credit rating report (if applicable)	

* The Repayment Capacity Ratio analyses the time (in years) to pay off a long-term debt and interest with its current Self-Financing Capacity.
 * If Repayment Capacity Ration in years is higher than the duration of Engineering, Procurement and Construction - 2 points; if not - 4 points

Supply chain ratios		
Working Capital	0	4
Days of Receivables	#DIV/0!	+
Days of Payables	#DIV/0!	#

+ If this KPI is increasing throught the time - 4 points; If this KPI is decreasing throught the time - 2 points;
 # If this KPI is increasing throught the time - 4 points; If this KPI is decreasing throught the time - 2 points;

Total Score	
	#DIV/0!
	#DIV/0!

Figure 4 - Example of one of the risks that it is possible to estimate under the risk assessment tool.

Training session on financial topics

On 7 December 2021, a training session on financial topics took place between the Clean Energy for EU Islands financial team and Saint-Martin Island project developers. The training session was collaborative: after the topics that CE4EUI financial team considered relevant to Saint-Martin project were presented, a fruitful discussion about financing options for the project took place.

Initially, the session was based on the importance of financial topics in the project development, and on how to mind the financial gap between the projects and the financial sector. On one hand, islands have good projects, they are looking for money, but they face some complications to find it. On the other hand, the financial sector has capital available, but they struggle to find the suitable projects to invest in. Therefore, the work of the CE4EUI financial team is to close this gap, i.e., to **build a bridge between the “Sustainable modernisation of waste recovery in Saint-Martin” and the financial sector** via the [EU Islands Marketplace](#).

Since project beneficiaries already had extensive knowledge about the different funding programmes, a more tailored approach was taken. The discussion focused on the funding programs best suited to the project and different possibilities to fund and finance Saint-Martin project during distinct stages of development. In that context, insights on how to apply to the PDAs (the ones listed above) as well as the suitability of the project in obtaining financing from crowdfunding and using a PPA model were deemed useful. Also, the Project Maturity Level (PML)¹⁴ framework was presented – according to the data provided by the island, and discussion throughout the technical assistance process, the **Saint-Martin project** is at Project Maturity Level **3**, i.e. a low maturity level.

The financing schemes applicable for Saint-Martin project were also overviewed, among the most relevant guidelines for the application process. Then, the EU Taxonomy for sustainable activities was presented, followed by the most relevant business models that Saint-Martin project may take into consideration.

Finally, the CE4EUI toolbox for the Saint-Martin technical assistance was presented, i.e., the deliverables from CE4EUI to Waste-to-Energy project developers. Beyond these deliverables above-mentioned on this report, it was presented and explained the [technology solutions booklet](#), [EU Islands financing corner](#) and [EU Islands Marketplace](#), in which was presented the [project intake form](#) and CE4EUI [investor network](#).

¹⁴ PML is a framework to rank projects according to their maturity level. The project maturity levels to assess incoming project ideas are the following:

- PML 1 – Potential project identified (project or technology apparently suitable for intervention).
- PML 2 – Project potential quantified (via audit, study, benchmarking, etc.).
- PML 3 – Project investment estimated, and suitable business models identified.
- PML 4 – Technical project and business case developed.
- PML 5 – Investment-ready (business case and tender model confirmed).
- PML 6 – Investment offer or tendering requirements created (ready to sign or launch tender).

Conclusions

Since the project promoter (VERDE SXM) has been managing all waste in the French part of Saint-Martin, they aim to optimise, modernise, and decarbonise the process of generating electricity from waste. The CE4EUI technical assistance focused on the funding and financing possibilities for Saint-Martin project and on the overview of the EU regulation for waste-to-energy technology focused on the “do no significant harm” approach from the EU Taxonomy. It is worth to highlight that, throughout the technical assistance process, the project promoter has proven to have a deep knowledge about the funding options more suitable to Saint-Martin project. Our mission was to present complementary funding opportunities, but also financing schemes that may help to VERDE SXM to implement the project.

Appendix

European Funding Programmes

European Funding Programmes refer to direct funding grants offered by the European Commission or its executive agencies for projects with specific objectives.

JPI Urban Europe Calls

Created in 2010, JPI Urban Europe is addressed to the current global urban challenges, with the ambition to develop a European research and innovation hub on urban matters and create European solutions through coordinated research. JPI Urban Europe strives to encourage this fundamental transnational research through joint calls for research and innovation projects. Currently, there is some open calls related to energy, which can be found [here](#).

LIFE

LIFE programme is the EU's funding instrument for the environment and climate action created in 1992. The LIFE's new programme for period 2021-2027 aims to contribute to the shift towards a clean, circular, energy-efficient, low-carbon and climate-resilient economy, and the transition to clean energy. This new updated programme has a budget of €5.45 billion, containing two main portfolios: Environment and Climate Action. To support the shift towards clean energy, especially for those regions that are prone to falling behind and that have difficulty attracting funding like EU islands, the new programme would encourage investment and activities focusing on energy efficiency and small-scale renewables. More information on the new LIFE programme can be found [here](#).

URBACT

The URBACT programme offers grants in supporting the implementation of integrated action plans, such as a CETA and in the preparation of bankable projects. The 2014-2020 programme offered funding for projects worth up to €1.5 million. The programme was organised around four main objectives: 1) capacity for policy delivery, 2) policy design, 3) policy implementation, and 4) building and sharing knowledge. The new URBACT IV programme 2021-2027 is currently being prepared. Explore URBACT's networks, cities, countries [here](#) and examples of projects covered by URBACT [here](#). For news on the upcoming programme period, see [here](#).

Financial Institutions Instruments

European Fund for Strategic Investments (EFSI)

EFSI, an initiative launched jointly by the EIB Group and the European Commission, is one of the three pillars of the Investment Plan for Europe, consisting of a guaranteed instrument that allows the EIB to increase its risk bearing capacity to lend to higher risk projects, for example those related to smart cities where research and innovation are a major component. Under EFSI, urban and regional development projects are two important components of EIB financing activities. By reducing the risk, EFSI provides opportunities to know and explore new markets, as well as to develop new types of financial products. Local authorities, public sector companies or other public

organisations can benefit from project loans, technical assistance for projects development. Learn more about the fund [here](#), and how to apply for a loan [here](#).

European Investment Bank

The European Investment Bank (EIB), to meet the EU climate and environmental commitments, created the Climate Bank Roadmap. This roadmap provides the guidelines for climate and sustainable development finance while supporting the EU Green Deal.

The EIB states that the framework for climate action and environmental sustainability financing aims to align with the DNSH principle that was defined in the EU Taxonomy Regulation, as mentioned previously in the EU Taxonomy section.

The above changes in financial mechanisms have been allowed and encouraged by the following legislation:

- Renewable Energy Directive.
The Renewable Energy Directive (REDII) supports policies for the renewable energy production and promotion in the EU. In 2018, the revised Renewable Energy Directive was officially published, mentioning that when promoting renewable energy actions, Member States should consider the waste hierarchy and circular economy principles, having as priority options of waste prevention and recycling. It is later explicitly stated that the waste incineration will not be granted for renewable energy production unless there is first compliance with the separate collection obligations according to the Waste Framework Directive (Directive 2008/98/EC).
- Circular Economy Action Plan.
The European Commission targeted to halve residual waste in the EU by 2030 by adopting the Circular Economy Action Plan (CEAP) in 2020 and building on circular economy actions. The European Parliament own-initiative report on the CEAP highlights that “Member States must strengthen prevention and preparation for reuse, increase high-quality recycling and move away from landfilling waste, while minimising incineration, in line with the waste hierarchy.”

Investment Loans

When a single large investment project from cities or regions needs long-term funding, the European Investment Bank (EIB) can provide dedicated project-specific loans, known as Investment loans. EIB lends to individual projects for which total investment cost exceeds €25 million, and this EIB support is often the key to attracting other investors. These loans can cover up to 50% of the total cost for both public and private sector promoters, but on average this share is about one-third. Learn more about the loans [here](#).

Framework Loans

Framework loans are used to finance projects in different sectors regarding infrastructure, energy efficiency/renewables, transport, and urban renovation, which are re-grouped in a multi-component, multi annual investment programmes. Framework loans are the most flexible financial instrument for cities and regions. For more information, see [here](#).

National Promotional Banks (NPBs)

NPBs support commercial banks' lending to low-carbon projects across Europe by using financial instruments that mix public and private funding. They function as financial intermediaries for EIB group investments directed to small-scale projects. NPBs channel EIB loans to businesses and local authorities in their home countries. This method of financing is relevant for all sectors of interest to cities and their investments plans, from urban development and housing to transport, energy and adaptation to climate change. More information available [here](#).

Alternative financing schemes

Green Municipal Bonds

A green municipal bond works exactly like a regular municipal bond, however the green bonds only fund projects that have positive environmental and/or climate benefits. Bonds provide the bond issuer (borrower) with external funds to finance long-term investments and the bond holder (lender) with a return on the investment. Green bonds can be issued by development financial institutions (e.g., World Bank, EIB), commercial banks, municipal authorities, or corporations. Based on this, local island governments can benefit from green bonds by either issuing their own green bonds, or by aligning investment plans with other issuers. Thus, green bonds can enhance an issuer's reputation, as these bonds display their commitment towards climate related issues. On this note, local governments may also use green bonds to make a political statement and demonstrate their commitment to certain environmental objectives. Green bonds have the potential to attract climate aligned investors who may have mandates to invest in green ventures. This is an important benefit of issuing a green bond and the reason many green bonds issued are reported as being oversubscribed. More information about the bonds can be found [here](#).

Revolving Funds

A revolving fund is a reserve of money used to finance a particular set of activities by lending to one or more borrowers. From the borrower is expected to repay the original sum, over a given period, that restocks the fund. Usually, an interest is charged to the borrower as a fee for administrative costs but also to protect the fund from being depleted. An advantage to this method is that, once implemented, the revolving fund model can be self-sustaining. Also, the repayments by the borrower can be utilised to finance additional similar purpose projects, creating a pipeline of green investments. More information is available [here](#).

Soft loans

Soft loans provide homeowners with money at a lower-than-market interest rate, and they are commonly used for energy efficiency measures and projects. It represents an incentive to carry out energy efficient renovation works. They provide long-term financial coverage to help bridge the pre-commercialisation financing gap for energy efficiency projects by direct subsidies on interest payments, risk premiums, or by capital gains to a revolving fund. Loan conditions include:

- Extended payback periods.
- Low or zero interest rates.
- Short-term interest deferral periods.
- Inclusion of payback grace periods.

Lear more about soft loans [here](#).

Support services

EIB Advisory Hub

The EIB offers a wide range of technical and advisory services (PDA) that cover all stages of the investment project cycle, as the European Investment Advisory Hub, a partnership between the EIB and the European Commission. The Advisory Hub acts as a single point of entry to a wide range of advisory and technical assistance services. It supports project promoters from the public and private sectors in the identification, development, and preparation of investment projects across the EU. For the public sector, the services of the Hub are available free of charge. See [here](#) for more information.