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Public authority's guide for financing CACN solutions with innovative models and support schemes

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Abbreviations

CBI - Climate Bonds Initiative

CMU - European Commission Capital Markets Union

DHNS - Do No Significant Harm

EC – European Commission

ECs- Energy communities

EBRD – European Bank for Reconstruction and Development

EIB – European Investment Bank

EPC - Energy Performance Contract

ESCO - Energy Service Company

ESG – Environmental, Social, Governance

EUGBS – European Union Green Bond Standard

GLP - Green Loan Principles

ILO - International Labor Organization

LMA - Loan Market Association

MAR - Market Abuse Regulation

PPP - Public-Private Partnerships

OECD - Organisation for Economic Co-operation and Development

SFDR - Sustainable Finance Disclosure Regulation

SPO - Second Party Opinion

UN – United nations

Introduction

The Mediterranean region is experiencing an uneven energy transition, largely due to disparities in economic development, technological access, and financing. To meet the EU's updated climate and energy goals, investments in carbon neutrality and climate adaptation must at least double. Energy and climate adaptation projects—whether they focus on expanding renewable energy, improving energy efficiency, or building climate-resilient infrastructure—play a vital role in supporting local economic development, job creation, social inclusion, and public health.

Despite the ambitious objectives set by the **European Green Deal** and the **Fit for 55** package, available funding remains insufficient. While public sector projects often rely on EU grants or national funding, private sector initiatives are mostly backed by internal funds or loans. Public authorities need to explore innovative financing models and support mechanisms that can effectively combine public and private investment, while ensuring regulatory compliance and delivering strong environmental and socio-economic returns.

At the same time, the EU regulatory landscape is directing investment flows toward sustainable activities. Key instruments such as the **Sustainable Finance Disclosure Regulation (SFDR)**, the EU Taxonomy, and **ESG disclosure requirements for companies** define what qualifies as green and sustainable, helping to prevent greenwashing and reinforce investor confidence.

The European Commission **Capital Markets Union (CMU)** action plan followed by **Savings and Investments Union** plan further supports this transition by promoting better access to capital markets and alternative financing. Public projects are typically excluded from equity or quasi-equity financing models, as these instruments often require profit-sharing arrangements or partial ownership transfer—conditions that are incompatible with public sector governance and asset ownership. As a result, project developers are expected to consider innovative instruments such as green loans, green or sustainale bonds and crowdfunding.

However, to access these financing models, projects must demonstrate strict alignment with regulatory requirements. The SFDR requires financial actors to disclose how they account for sustainability risks. Compliance with the EU Taxonomy has become a critical precondition for securing investment. Financial institutions and platforms must prove alignment with these frameworks to ensure transparency and build trust—encouraging project developers to embed sustainability into their financial planning and reporting.

The INFIRE project will explore benefits of contractual and performance-based financing, debt instruments and public capital market solutions, including bonds. The goal is to build practical knowledge on financing approaches that align with the legal, financial, and operational

frameworks of public sector investments.

This guide offers a practical overview of innovative financing instruments and support schemes designed for carbon neutrality and climate adaptation (CACN) projects within the INFIRE framework. It outlines actionable steps for public authorities to access, structure, and combine various financial tools to accelerate implementation.

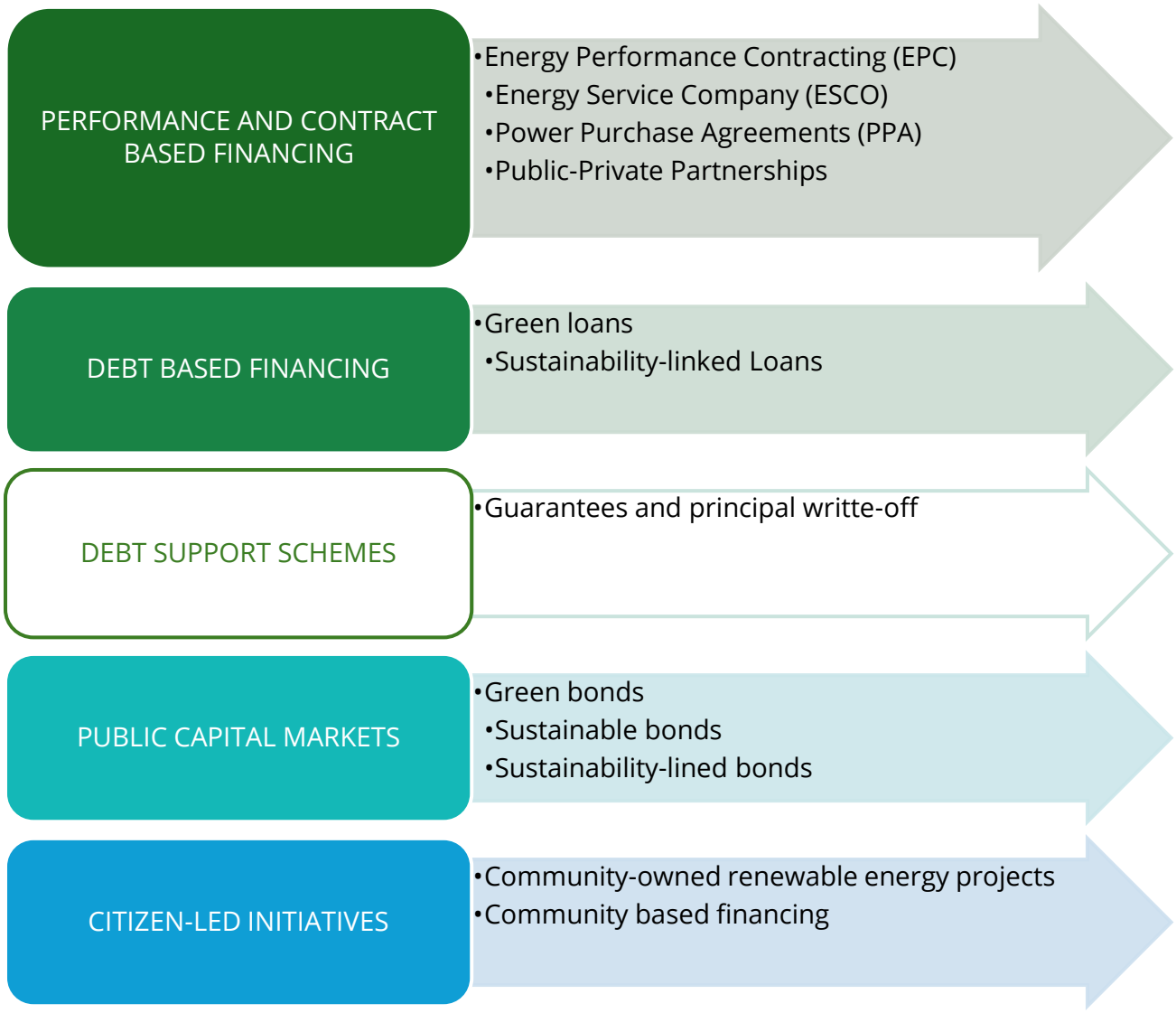


Figure 1: Alternative and innovative financing models applicable for CACN projects

Performance based financing models

Contract Models

Energy Service Company (ESCO) models

Description: ESCOs implement energy efficiency and climate adaptation measures under Energy Performance Contracting (EPC), typically financing the investment upfront. They are repaid over time from the guaranteed savings achieved through reduced energy consumption and operational costs.

Benefits: Enables deep renovation and energy upgrades with minimal upfront cost for the public sector. Technical and financial risks related to project performance are transferred to the ESCO, ensuring strong delivery incentives.

Key steps: Project identification, preliminary energy audit, selection of ESCO through procurement, contract negotiation, implementation of measures, and ongoing energy performance monitoring.

Integrated service delivery: ESCOs provide a turnkey solution—covering technical design, investment financing, construction works, commissioning, and long-term energy management during the contract period.

Risk transfer: The ESCO bears the risk of underperformance, as payment is directly linked to achieving agreed energy savings. This aligns financial incentives with service quality and outcome reliability.

Outcome-based financing: The project is repaid from verified energy cost savings, reducing financial pressure on public budgets while ensuring measurable economic and environmental returns.

This type of activity is typically implemented by Energy Service Companies (ESCOs)—specialized firms that provide energy efficiency and energy management services.

Energy Performance Contracting (EPC) represents a key financing model for the energy renovation of public and commercial buildings. It enables significant reductions in energy consumption without requiring substantial upfront investment from the building owner.

Under an EPC model, the ESCO is responsible for delivering a full package of energy efficiency measures, including technical upgrades and the implementation of energy monitoring and

management systems. The ESCO's remuneration is directly linked to the level of energy savings achieved, meaning a large portion of the investment risk is assumed by the contractor.

For the public sector—often the main beneficiary—this approach allows project costs to be repaid from the resulting energy savings, minimizing the financial burden at the initial stages and enabling more efficient use of public budgets.

EPC projects, unlike traditional public procurement, are characterized by a holistic approach to investments in energy efficiency improvements. Cooperation between the public sector entity and the service provider is comprehensive and long-term. This is because the ESCO is responsible not only for making the necessary investments but also for achieving guaranteed energy savings, which translates into tangible economic and environmental effects.

In doing so, the ESCO's responsibility is not limited to providing the public entity with traditional guarantees or warranties of proper performance of works, supplies or services. The ESCO also bears the risk of not achieving, during the term of the EPC contract, specific savings in the energy consumption of specific buildings or installations due to its assumption of the task of implementing and operating an energy management system.

The ESCO is usually also responsible for securing financing for the project, and the payback must be closely tied to the energy savings guaranteed by the project.

EPC projects are financed (in whole or in part) by the savings generated by the public entity because of the EPC contract. These savings are generated primarily because of a reduction in heat and electricity consumption, but also due to a reduction in the cost of operating the facilities throughout the project life cycle (e.g., because of installing RES, reducing operating costs, using more durable materials, etc.).

Considering the above, energy modernization can include renovations that reduce energy consumption and the installation of equipment (e.g., RES) that lowers operating costs.

The following are the characteristic features of EPC projects:

- the goal of the project is to improve energy efficiency,
- the public sector unit cooperates with the ESCO to implement the EPC project,
- the cooperation between the public sector unit and the ESCO lasts for a period of time to ensure return on investment,
- ESCO provides a comprehensive approach to project implementation (design, financing, construction works, supplies, services),
- ESCO is responsible for energy management,

- ESCO is responsible for certain construction risks related to energy efficiency,
- ESCO's achievement of guaranteed energy savings, including economic and environmental effects,
- ESCO's financing of capital expenditures (in whole or in part) from energy savings and/or reduced energy costs obtained by the public entity,
- Potential lack of impact of EPC contract obligations on the public debt of the public sector entity.

The standard process and timeline for implementing an EPC project involves several stages of work:

- identification of the EPC project.
- appointment of the project team.
- development of preliminary analyses, including an energy audit.
- preparation of the procurement.
- conducting the ESCO selection procedure.
- conclusion of the EPC contract.
- implementation of the investment.
- project management during the term of the contract.

Public-Private Partnerships (PPP)

Description: A long-term contractual arrangement between a public authority and a private partner for the development, financing, and/or operation of public infrastructure or services. The private partner may finance the investment upfront and is repaid through public payments, user fees, or a combination of both.

Benefits: Enables delivery of infrastructure and services without immediate public expenditure; shares project risks; promotes innovation and efficiency through private sector expertise and long-term performance incentives.

Key steps: Needs identification, project concept development, team appointment, advisor selection, market and risk analysis, legal structuring, procurement process, bid evaluation, contract negotiation, and agreement signing.

Integrated service delivery: Private partners often provide design, construction, financing, operation, and maintenance of infrastructure and services over the contract term.

Risk transfer: Risks such as construction, availability, performance, and in some cases demand, are allocated to the private partner, depending on the contract structure.

Outcome-based financing: The private partner is compensated based on service availability, quality standards, or user demand. Payments may be linked to performance indicators, ensuring public value for money.

A Public-Private Partnership (PPP) is a cooperation model for delivering public services, based on a long-term contractual agreement that defines the allocation of responsibilities and risks between a public entity and a private partner.

The core objective of a PPP is to enable the private partner to deliver a defined public service, typically using public infrastructure.

PPP projects may involve the construction, expansion, or modernization of public infrastructure, combined with the provision of related services such as operation, maintenance, or management. In some cases, the focus is exclusively on delivering long-term services based on existing public assets.

The private partner is compensated either through regular payments from public funds or by obtaining the right to collect user fees during the term of the PPP contract, depending on the agreed structure of the partnership.

PPP projects may involve, for example, the construction or renovation of public infrastructure—such as buildings—by a private partner who also provides long-term financing for the investment. From the public entity's perspective, the PPP model allows for the deferral of large capital expenditures and enables the spreading of payments over the duration of the project. In most cases, the private partner begins receiving remuneration only once the service provision has commenced.

The private partner's compensation is typically calculated based on the estimated project costs and a return on the capital invested. However, the final payment amount depends on the actual achievement of performance targets as outlined in the PPP contract.

For the public authority, the main objective of implementing a PPP project is to ensure the delivery of public services at a high quality relative to cost—thus improving efficiency. For the private partner, the goal is to achieve a return on investment and generate profit from the capital deployed.

Aligning the goals of both parties is made possible through carefully structured negotiations and

the conclusion of a balanced PPP agreement. This agreement should ensure a fair allocation of risks, establish measurable quality standards, and define monitoring mechanisms to ensure contractual compliance throughout the project lifecycle.

The process and implementation of a PPP project typically involves several key stages, including:

1. Identification of the public service need;
2. Development of the project concept;
3. Appointment of a dedicated project team;
4. Engagement of an external advisor to support technical and financial aspects;
5. Conducting preliminary analyses (including market assessments, risk analysis, legal and regulatory review, stakeholder expectations, and technical feasibility);
6. Selection of the appropriate legal and institutional structure for PPP implementation;
7. Launch of the private partner selection process (usually involving competitive dialogue or negotiated procedures);
8. Submission of bids by interested private entities;
9. Evaluation of offers against defined criteria;
10. Selection of the preferred bidder and signing of the PPP agreement.

The signing of the contract with the private partner begins the implementation stage, where the private partner usually prepares the technical documentation first. The public entity may use external companies to oversee the work (contract engineer) to ensure the quality of the execution. A key element of the process is the precise definition of the roles and responsibilities of the private and public partner. Once the implementation stage is completed, the PPP project begins the maintenance stage. In this, the private partner takes steps to provide the declared service as defined in the contract. PPP agreements should define in as much detail as possible the scope of responsibilities that the private partner is required to perform.

Debt based financing models

Role of EU Taxonomy

The EU Taxonomy is a classification system that identifies environmentally sustainable economic activities to help direct investments toward the EU's climate and environmental goals. The EU Taxonomy is relevant for both commercial and public projects, but mandatory disclosure mainly applies to large financial and corporate entities. However, public projects seeking commercial and development banks loans or issuing green bonds are encouraged to follow EU Taxonomy principles to enhance transparency and credibility in sustainable investments.

The Regulation (EU) 2023/2631 requires alignment with the EU Taxonomy in the following areas:

- Use of Proceeds - at least 85% of proceeds must be allocated to activities aligned with the EU Taxonomy.
- Substantial Contribution – economic activities must contribute to at least one environmental objective.
- Do No Significant Harm (DNSH) – economic activities must not negatively impact any other environmental objectives.
- Minimum Social Safeguards – economic activities must comply with key human and labour rights standards, including:
    - OECD Guidelines for Multinational Enterprises,
    - UN Guiding Principles on Business and Human Rights,
    - UN Declaration on Human Rights,
    - International Labor Organization's (ILO) Fundamental Principles and Rights at Work.
- Technical Screening Criteria – economic activities must meet sector-specific sustainability performance thresholds.

The **EU Taxonomy Compass** is an online tool by the European Commission that provides easy access to the EU Taxonomy criteria, helping users navigate and apply sustainable finance rules consistently. EU Taxonomy Compass tool is available at: **EU Taxonomy Compass**[1].

[1] European Commission, EU Taxonomy Compass. Available at: https://ec.europa.eu/sustainable-finance-taxonomy/taxonomy-compass

Green Loans

Green loans are supported by a combination of EU directives, voluntary frameworks, and national regulations. The key EU regulatory frameworks aiming to encourage responsible investments are EU Taxonomy and Sustainable Finance Disclosure Regulation (SFDR). The role of EU Taxonomy is to provide a classification system for sustainable economic activities that is applied within the SFDR, providing guidance to financial institutions on eligible activities. Additionally, most European banks agreed to apply voluntary framework LMA's Green Loan Principles (GLP).

Description: Green loans are debt financial instruments designed to finance or refinance environmentally sustainable projects. According to the Loan Market Association's Green Loan Principles (GLP), these loans must be used exclusively for green investments that deliver clear environmental benefits. Green loans align closely with the Green Bond Principles (GBP) and are guided by EU-level regulations, such as the EU Taxonomy and the Sustainable Finance Disclosure Regulation (SFDR).

Benefits: Green loans promote responsible investment by enabling borrowers to align financing with their sustainability strategies. They improve access to climate finance for public and private entities and enhance the transparency and credibility of green projects, often supporting EU funding eligibility and ESG reporting.

Key requirements in pre-financing and post-financing period:

1. Define the green project and ensure alignment with EU Taxonomy and GLP.
    - Recommended: Develop a Green Loan Framework describing use of proceeds, sustainability strategy, and alignment with GLP.
    - Optional: Obtain an external review, such as a Second Party Opinion (SPO) or certification.
2. Select a green loan provider and determine loan structure.
3. Prepare documentation (e.g., business plan, environmental compliance).
4. Undergo lender evaluation and due diligence.
5. Disbursement and project implementation.
6. Report periodically and, if applicable, ensure external review.

Integrated Standards and Guidance: Green loans follow the four core components of the Green Loan Principles:

a. Use of Proceeds – funds must be allocated to projects in sectors such as renewable energy, energy efficiency, clean transport, green buildings, and climate adaptation.

b. Project Evaluation and Selection – borrowers must outline how projects are identified, evaluated, and aligned with environmental objectives.

c. Management of Proceeds – proceeds should be tracked via dedicated accounts or systems to ensure transparency.

d. Reporting – borrowers are expected to report annually on allocation and environmental impact. Reports may include qualitative and quantitative indicators, and reference methodologies used.

Risk Management: While green loans do not transfer performance risk in the same way as EnPC or PPP models, they require borrowers to adhere to strict criteria and reporting obligations. This enhances accountability and encourages sustainable project delivery.

Outcome-Based Financing: Although repayment is not directly tied to project savings (as in EnPC), green loans are performance-aligned financial products. They rely on clear environmental outcomes, often verified through external reviews and compliance with EU Taxonomy, which builds trust with lenders and stakeholders.

Green loans are financial products that encourage borrowers to engage in environmentally sustainable development or enhance their sustainability performance.

I. Green loan standards and principles

According to the **Loan Market Association's (LMA) Green Loan Principles (GLP)**, green loans are a type of loan intended to finance or refinance, new or existing green projects. The Loan Market Association's (LMA) Green Loan Principles (GLP) serve as voluntary guidelines for potential borrowers who wish to classify their loan as a green loan. The main participants in these transactions include financial institutions, typically banks, acting as lenders, and companies or individuals acting as borrowers. The key criterion for a green loan is the designated use of funds, which must be allocated to green projects. A project qualifies for a green loan if it delivers clear environmental benefits, which should be assessed, measured, and reported on throughout the project's duration and upon its completion.

Project eligibility is pre-defined and linked to EU Taxonomy environmentally sustainable economic activities:

- Renewable energy,
- Energy efficiency,

- Climate change adaptation,
- Pollution prevention and control,
- Green buildings,
- Environmentally sustainable management of living natural resources and land use,
- Terrestrial and aquatic biodiversity conservation,
- Clean transportation,
- Green technologies,
- Sustainable water and wastewater management,
- Circular economy.

II. Key components of green loan financing

To classify a loan as green, the following four core components of the GLP must be observed:

Use of Proceeds: Funds must be exclusively applied to eligible green projects with measurable environmental benefits. Categories include renewable energy, energy efficiency, climate adaptation, pollution prevention, green buildings, biodiversity, sustainable land use, clean transport, circular economy, and water management. Borrowers are advised to allocate proceeds in a separate account or establish an internal tracking method.

Project Evaluation and Selection: Borrowers should describe the environmental sustainability objectives and explain how projects are selected, including criteria, risk management, and alignment with the eligible categories. A documented evaluation process is expected.

Management of Proceeds: A transparent and traceable method must be in place to manage loan proceeds, such as a designated sub-account. Borrowers must track the allocation and ensure proceeds are used only for green purposes.

Reporting: Borrowers should provide regular (at least annual) updates on the use of proceeds, project performance, and environmental impact. Quantitative indicators, impact metrics, and disclosure of methodologies used for measurement are recommended. Joint reports may be issued if multiple green financing products are in use.

III. Key steps for green loan financing

The process of obtaining a green loan may vary depending on national regulations; however, significant differences are unlikely. The key steps are outlined below:

1. Defining the Green project – identify the project or assets to be financed and ensure alignment with the EU Taxonomy and the Green Loan Principles (GLP).
2. Developing and publishing a "Green Loan Framework" – while not mandatory, the GLP recommends this as a best practice for transparency. The framework should describe:
    i. How the green loan aligns with the four core components of the GLP.
    ii. How the project fits into the borrower's broader sustainability strategy.
    iii. Relevant timeframes for the project.
    iv. If a company utilizes multiple sources of green financing, it is common practice to provide a joint Green Financing Framework rather than separate documents for each financial product.
3. Obtaining an external review - not mandatory but recommended. Borrowers are encouraged to appoint an external reviewer to provide a Second Party Opinion (SPO) assessing the project's overall alignment with green financing standards.
4. Selecting a green loan provider - choose a financial institution that offers green loans and determine the appropriate loan type for financing the project. Banks are the most common providers.
5. Preparing required documentation - gather and submit essential documents, including business plan, financial reports and reports demonstrating compliance with relevant regulations.
6. Evaluation and due diligence - the financial institution assesses whether the project qualifies for green financing.
7. Receiving funds and project implementation - upon loan approval, the borrower receives funds and must ensure they are used exclusively for the green project.
8. Reporting and External review - is subject to lending institution procedures (commercial or development bank) and serves as as additional assurance that allocated funds are used correctly.

Blended finance as a support for debt models

For public authorities, blended finance is an effective way to enhance access to debt instruments such as green loans or bonds by reducing risks for lenders and improving affordability for project developers. Within the EU framework, blended finance is often supported through EU budgetary instruments[2] (ESIF, InvestEU, OPCC), national development banks, or European financial institutions (e.g., EIB, EBRD). For public authorities, it provides additional security and affordability when accessing debt instruments. Two commonly applied schemes relevant for carbon neutrality and climate adaptation projects are **principal write-off instruments** and **guarantee schemes**.

I. Financial instruments in the form of principal write-off

Description: Financial instrument in a principal write-off form, reduces the outstanding loan amount if the project achieves predefined performance criteria (e.g., energy savings, CO_2 reduction, or social inclusion targets). It effectively converts part of the debt into a grant after successful implementation.

Benefits:

- Incentivizes project developers to deliver measurable sustainability outcomes.
- Improves affordability of debt financing by lowering the final repayment burden.
- Encourages banks to provide loans for projects with higher upfront costs but strong environmental impact.

Application to Public authorities: Public entities can apply for loans under EU or national blended finance programs where a portion of the principal is written off once the project delivers on agreed performance indicators. For example, energy efficiency loans for municipal buildings may benefit from a 20–30% write-off after verified reductions in energy consumption.

Key Conditions:

- Alignment with EU Taxonomy and national energy/climate policies.
- Independent verification of results (e.g., energy audits, monitoring reports).
- Technical documentation on compliance with application requirement and/or transparent reporting on savings and impacts to justify the write-off.

[2]European Commission, Combination of financial instruments and grants. Available at: https://www.fi-compass.eu/sites/default/files/publications/Combination%20of%20financial%20instruments%20and%20grants_1.pdf

II. Financial instruments in the form of guarantee schemes

Description: Guarantee schemes provide partial risk coverage to lenders, reducing their exposure to default and enabling more favorable loan terms for borrowers. Guarantees may cover first loss, partial risk, or full credit risk, depending on program design.

Benefits:

- Reduces financing costs by lowering interest rates or collateral requirements.
- Unlocks lending to municipalities, SMEs, or energy cooperatives that might otherwise lack sufficient credit history.
- Increases leverage by mobilizing significant private capital with limited public resources.

Application to Public authorities: Public authorities can access loans from commercial or development banks that are backed by national or EU guarantee facilities (e.g., InvestEU, national promotional banks). Guarantees can support investments in energy renovation, renewable energy, or adaptation measures, ensuring broader financing access.

Key Conditions:

- Guarantee coverage ratio (typically 50–80% of loan value).
- Compliance with EU state aid rules and financial regulations.
- Eligible project categories aligned with sustainable finance criteria.

Public capital markets

In the EU capital markets, green and sustainability-linked bonds can be listed or admitted to trading on two main types of markets: SME Growth Markets and Regulated Markets. SME Growth Markets, a subcategory of multilateral trading facilities (MTFs), are tailored for small and medium-sized enterprises, offering lighter regulatory requirements and greater flexibility. Regulated markets, governed by stricter EU financial regulations, provide higher transparency and investor protection, making them more suitable for larger issuers. Both markets play a key role in facilitating sustainable finance by enabling companies and public authorities to raise funds for environmentally and socially responsible projects.

Stock Exchanges and Trading venues in EU

Regulated Markets

A Regulated Market in the EU is a securities trading venue that operates under MiFID II and is subject to strict transparency, investor protection, and reporting requirements. These markets are officially recognized and supervised by national competent authorities (NCAs) and must comply with EU-wide rules, including the Market Abuse Regulation (MAR) and Prospectus Regulation (PR). Strict regulation protects investors and regulates capital markets in the EU:

- Markets in Financial Instruments Directive II (MiFID II)[3] - governs the functioning of regulated markets, ensuring strict transparency, investor protection, and reporting obligations,
- Prospectus Regulation (EU) 2017/1129[4] - requires issuers on regulated markets to provide a full prospectus unless an exemption applies, ensuring investor confidence.
- Market Abuse Regulation (EU) 596/2014[5] - fully applies, requiring strict compliance with rules on insider information and market manipulation prevention.
- EU Taxonomy Regulation (EU) 2020/852[6] - please refer to the section *Debt models: Green Loans (Legislation)* for more details.

[3] EC, Markets in Financial Instruments Directive II (MiFID II, available at: https://eur-lex.europa.eu/eli/dir/2014/65/oj/eng
[4] EC, Prospectus Regulation. Available at: https://eur-lex.europa.eu/eli/reg/2017/1129/oj/eng
[5] EC, Market Abuse Regulation. Available at: https://eur-lex.europa.eu/eli/reg/2014/596/oj/eng
[6] EC, EU Taxonomy Regulation. Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32020R0852

- EU Green Bond Standard (EU GBS)[7] - more details in the text below, section *Debt models: Green Bonds (Legislation)*.
- Corporate Sustainability Reporting Directive (CSRD) (EU) 2022/2464[8] - obligates large companies and listed SMEs on regulated markets to provide detailed sustainability reports.

SME Growth Markets

SME Growth Market serves as trading venue for small-to-mid projects financed with capital markets instruments. Although it provides "lighter" rules and regulations, investors protection is equal to Regulated markets. Regulation concerning SME growth capital markets in the EU:

- Markets in Financial Instruments Directive II (MiFID II) – establishes SME Growth Markets as a special category of MTFs, with less stringent disclosure and reporting requirements to support smaller issuers.
- Prospectus Regulation (EU) 2017/1129 – exempts SME Growth Market issuers from the full Prospectus requirements, allowing simplified disclosure in certain cases.
- Market Abuse Regulation (EU) 596/2014 – requires issuers on SME Growth Markets to disclose inside information but allows lighter reporting obligations compared to regulated markets.
- EU Taxonomy Regulation (EU) 2020/852 – please refer to the section *Debt models: Green Loans (Legislation)* for more details.
- Corporate Sustainability Reporting Directive (EU) 2022/2464 – applies to larger SMEs that meet specific size thresholds, requiring sustainability-related disclosures. For more details on categories and sizes of entities, please refer to the Directive 2013/34/EU[9].

I. Stock Exchanges requirements

Reporting requirements: The main difference in reporting requirements is that issuers on regulated markets must comply with comprehensive financial and sustainability reporting standards, including the Corporate Sustainability Reporting Directive (CSRD) for larger companies, while issuers on SME Growth Markets face less stringent reporting obligations, with exemptions or simplified disclosures to reduce administrative burdens.

[7] EC, Green Bond Standard. Available at: https://eur-lex.europa.eu/EN/legal-content/summary/european-green-bond-standard.html
[8] EC, Corporate Sustainability Reporting Directive. Available at: https://eur-lex.europa.eu/eli/dir/2022/2464/oj/eng

Investment advisory/Underwriting: The underwriter and investment advisory is subject to legislation for EU capital markets. Approved by national sock exchanges and/or regulators, advisory services are provided by investment banks, brokerage houses or specialised investment houses. They sssists in defining bond terms (maturity, coupon, issuance volume) and preparing the Prospectus or other listing documents.

SME Growth Market investors: Potential investors in bonds on the SME growth markets are retail investors (citizens), private equity companies, banks and other financial institutions, crowdfunding platforms, venture capitalists.

Regulated market investors: Potential investors in bonds on the regulated markets are institutional investors such as pension funds and insurance companies, asset management companies, investment banks, mutual- and hedge funds, banks and other financial institutions, retail investors (citizens), governments and their institutions.

The investor base for SME Growth Markets is more diverse and focused on growth-oriented and impact investments, while regulated markets attract more institutional investors seeking stability, liquidity, and transparent reporting.

II. Fund raising documents

The main difference in prospectus requirements between SME growth markets and Regulated markets is that issuers on regulated markets must provide a full prospectus under the Prospectus Regulation (EU)2017/1129, ensuring extensive disclosure, while issuers on SME Growth Markets benefit from lighter requirements, including exemptions and simplified prospectuses to ease access to capital. More details on prospectus requirements available in the text above, section *Debt models: Green bonds (Legislation*

Financial instruments on public capital markets

Green Bonds

Description: Green bonds are debt instruments issued to finance or refinance projects that deliver measurable environmental or sustainability benefits. These bonds must comply with defined standards—such as the EU Green Bond Standard (EuGB), the ICMA Green Bond Principles (GBP), or the Climate Bonds Standard—ensuring that the use of proceeds, project selection, and reporting align with EU sustainability objectives. Issuers may be public or private entities, and bonds can be listed on Regulated or SME Growth Markets.

Benefits: Green bonds attract environmentally focused investors and enhance the issuer's sustainability profile. They support access to capital markets, diversify funding sources, and improve financial terms through credibility and transparency. For public entities, green bonds align with EU climate goals and may enhance eligibility for co-financing from EU programs. For the private sector, they offer ESG positioning, visibility, and investor trust.

Risk Management: Although green bonds do not transfer operational or performance risks like EPC or PPP models, issuers are held accountable through regulatory compliance, external reviews, and transparent reporting. This ensures environmental credibility and reduces greenwashing risks.

Outcome-Based Financing: Green bonds are tied to environmental outcomes rather than financial savings. Success is measured by verified alignment with green objectives, impact indicators, and regular public reporting—enhancing market discipline and investor confidence.

I. Green bond standards

If a public authority has ambition to finance or co-finance CACN project on public capital markets, there are few standards that match requirements of EU Taxonomy.

Green bond standards establish the criteria that ensure transparency, credibility, and environmental integrity in the issuance of green bonds. The three most recognized frameworks guiding issuers in the EU and globally are the ICMA Green Bond Principles (GBP), the Climate Bonds Standard (CBS) developed by the Climate Bonds Initiative (CBI), and the EU Green Bond Standard (EU GBS) introduced under Regulation (EU) 2023/2631. Project eligibility is in-line with Green Loan Standard and EU Taxonomy.

i. ICMA Green Bond Principles (GBP) & Sustainability-Linked Bond Principles (SLBP)

The International Capital Market Association (ICMA) has published a set of voluntary guidelines for issuing bonds related to environmental sustainability. Among these, the Green Bond Principles[10], provide best practices for issuing green bonds. The ICMA GBP are voluntary guidelines that define four core components for green bonds: use of proceeds, project evaluation and selection, management of proceeds, and reporting. They are widely used by issuers and investors as a best-practice framework and form the foundation for most green bond frameworks globally.

ii. Climate Bonds Standard (Climate Bonds Initiative)

Climate Bond Initiative has published the Climate Bonds Standard, a globally recognized best-practice framework for labelling green entities and investments[11]. It serves as a voluntary scheme outlining the requirements for certification in alignment with the goals of the Paris Agreement[12]. Issuers are recommended to obtain certification under this Standard to confirm that their bond meets required criteria. This certification enhances investor confidence by ensuring transparency

and alignment with global sustainability goals. The Climate Bonds Standard goes further by introducing science-based eligibility criteria and requiring pre- and post-issuance certification by approved verifiers. It aligns closely with the Paris Agreement targets and is often chosen by issuers seeking third-party credibility and climate impact assurance.

iii. European Green Bond Standard (EUGBS)

The primary regulation governing green bonds in the EU is the European Green Bonds Regulation (EU) 2023/2631, which took effect on December 21, 2024. This regulation establishes uniform requirements for issuers wishing to use the designation 'European Green Bond' or 'EuGB' for their bonds. Additionally, it provides optional disclosure templates for bonds marketed as environmentally sustainable and for sustainability-linked bonds. By setting clear criteria, this regulation aims to foster a credible and transparent green bond market within the EU. The EU Green Bond Standard (EU GBS) is a legally binding regulation applicable within the EU from December 2024. It sets mandatory requirements for issuers using the “European Green Bond” (EuGB) label, including full alignment with the EU Taxonomy, detailed pre- and post-issuance reporting, and supervision of external reviewers by the European Securities and Markets Authority (ESMA). It enhances trust and comparability in the EU capital markets.

Regulatory framework:

- EU Green Bond Standard (Reg. 2023/2631) – mandatory for bonds labeled “EuGB”; requires pre- and post-issuance review and specific reporting templates.
- EU Taxonomy Regulation (EU) 2020/852 – activities financed must meet environmental, DNSH, and social safeguards criteria.
- Prospectus Regulation (EU) 2017/1129 – governs bond disclosures depending on market type.
- Market Abuse Regulation & CSRD – apply to transparency, insider information, and sustainability reporting for listed entities.
- Climate Bonds Standard (CBI) – optional international certification for additional investor confidence.
- ICMA GBP and SLBP – common market references, especially for SME Growth Market issuers.

II. Key components of Green Bond financing

Green bonds must align with the four core components to ensure investors protections and qualify for Green bond verification. Key components are similar to Green loan standards and can

be used for both financing models.

- Use of Proceeds - 85- 100% of proceeds must finance eligible green activities, such as climate mitigation/adaptation, clean transport, circular economy, or biodiversity.
- Project Evaluation and Selection -transparent criteria and methodology must guide project inclusion and risk assessment.
- Management of Proceeds - proceeds must be tracked separately (e.g., sub-account or portfolio approach) with full traceability.
- Reporting - issuers must publish annual allocation and impact reports, disclosing project performance, alignment with environmental objectives, and use of unallocated funds.

III. Key steps for Green Bonds financing

The issuance process for a green bond is generally consistent across EU Member States, as it is shaped by common regulatory frameworks such as the EU Green Bond Standard, EU Taxonomy, and ICMA Green Bond Principles (GBP). While national administrative procedures may differ slightly, the core steps remain largely uniform. The key stages are outlined below:

1. Defining the Green Project - initial step should identify the eligible project(s) or assets to be financed or refinanced by ensuring full alignment with the EU Taxonomy Regulation and the four core components of the Green Bond Principles (GBP complying with clear environmental objectives and measurable impact indicators.
2. Developing and publishing a Green Bond Framework (GBF) - is a critical document that outlines how the bond adheres to the Green Bond Principles and it should describe:
    - Use of proceeds and eligible project categories;
    - Evaluation and selection process for green projects;
    - Management of proceeds and transparency measures;
    - Reporting commitments, including allocation and impact reporting.
3. The framework should align with the issuer's broader sustainability strategy and ESG targets. In case of for European Green Bonds (EuGB), GBF should incorporate the Green Bond Factsheet, based on the EU GBS template (Annex I of Regulation 2023/2631), is also required for European Green Bonds (EuGB).
4. Obtaining an external review/verification – is not mandatory under ICMA GBP, but an independent Second Party Opinion (SPO) is highly recommended for credibility. For EU

Green Bonds, external verification is mandatory both pre- and post-issuance, in line with Regulation (EU) 2023/2631. Additional certifications, such as the Climate Bonds Standard from the Climate Bonds Initiative (CBI), can further enhance investor trust.

5. Selecting an underwriter and structuring the bond - a financial intermediary (underwriter or arranger) to support structuring the bond, pricing, and investor outreach . The underwriter assists in defining bond terms (maturity, coupon, issuance volume) and preparing the prospectus. If listed on a Regulated market, a full Prospectus must be approved by the national financial authority in accordance with the Prospectus Regulation.
6. Structuring the bond terms – determining key characteristics such as coupon rate maturity, redemption features.
7. Risk assessment – evaluating the risks associated with the bond issuance.
8. Pricing - setting the price at which the bond will be issued, ensuring it is competitive and attractive to investors.
9. Issuance and listing - conduct a market placement, which may include a roadshow or investor meetings. The bond is then listed on a selected trading venue—either a regulated market or SME Growth Market. If possible, use a segment dedicated to green or ESG-labelled securities to enhance visibility among sustainability-focused investors.
10. Use of Proceeds and fund allocation – 85 -100% of the net proceeds must be allocated to eligible green projects or assets. Funds should be tracked via a dedicated sub-account or internal tracking mechanism. Any unallocated proceeds should be managed in line with sustainability guidelines (e.g., held in green money market instruments or government bonds).
11. Reporting and post-issuance disclosures - issuers are required to publish Allocation Reports at least annually, and Impact Reports at least once during the bond's lifecycle. These reports must include project descriptions, use of proceeds, environmental performance, and unallocated balances. For EU Green Bonds, external verification of the Allocation Report is mandatory, as per Annex IV of the Regulation (EU) 2023/2631. ICMA recommends making reports publicly available to enhance transparency and build investor confidence.

Citizen-led initiatives

Citizen-led initiatives are emerging as powerful tools for financing and implementing small-scale climate adaptation and carbon neutrality (CACN) projects at the local level. There are three (3) main categories of citizen-led initiatives - **crowdfunding, crowdinvesting, and energy communities**—that enable citizens to become active participants in the green transition, not only as consumers but also as co-investors, co-owners, and decision-makers.

Energy communities (ECs)

Energy communities (ECs) are citizen-driven organizations that allow local actors—such as residents, municipalities, and SMEs—to jointly produce, consume, share, and manage energy. Legally recognized under the EU Renewable Energy Directive (RED II) and Internal Electricity Market Directive (IEMD), they take the form of Renewable Energy Communities (RECs) or Citizen Energy Communities (CECs). While RECs are focused on renewable sources within a geographic area, CECs allow broader participation across the energy market. ECs offer multiple benefits, such as reducing the NIMBY effect, increasing local acceptance, and improving the long-term sustainability of building renovations by involving users as co-owners.

ECs can undertake a wide range of activities including generation (e.g., solar PV), storage, energy efficiency upgrades, peer-to-peer energy sharing, and educational outreach. They support social goals like reducing energy poverty and increasing energy democracy. Even in countries where legislation is still being implemented, ECs can operate through mechanisms like virtual net metering and collective self-consumption.

Crowdfunding and Crowdinvesting

When it comes to financing models, citizens can finance their projects via crowdfunding and crowdinvesting platforms, supported by the EU regulatory framework. For capital raises under EUR 5 million, crowdfunding campaigns benefit from exemptions under the Prospectus Regulation, lowering administrative burdens while enhancing investor protection. Projects over EUR 1 million must provide simplified prospectuses or technical documentation, especially if listed on SME Growth Markets or regulated exchanges.

These models are ideal for engaging local communities in public building renovation and renewable energy projects. They attract diverse investors—citizens, municipalities, cooperatives,

and institutional actors—and foster local economic development by keeping value within the community. Transparent reporting, robust governance, and compliance with EU sustainability standards (e.g., EU Taxonomy, CSRD) are critical for long-term credibility and scale-up.

Crowdfunding

Description: Crowdfunding is a financing mechanism that enables project developers, municipalities, SMEs, or citizens to raise funds directly from a broad base of individual contributors via digital platforms. Contributions are usually in small amounts, aggregated to finance projects with environmental or social impact. Crowdfunding campaigns may be donation-based, reward-based (contributors receive symbolic or in-kind benefits), or lending-based (contributors are repaid with or without interest). It is widely used for community-driven climate adaptation and carbon neutrality (CACN) projects such as solar roofs, energy cooperatives, and circular economy initiatives.

Benefits: Crowdfunding democratizes access to finance and strengthens community engagement by enabling citizens to directly support sustainable projects. For public authorities, it builds social acceptance and ownership, while private developers benefit from visibility, early testing of project viability, and complementary finance alongside grants or loans. It provides flexibility, increases participation in local green transitions, and fosters trust in sustainability goals.

Risk Management: The main risks include project immaturity, limited fundraising potential, and reputational exposure if targets are not met. To mitigate these, platforms apply due diligence on project quality, while transparent communication ensures credibility. EU regulations on crowdfunding service providers (Reg. (EU) 2020/1503) harmonize investor protection standards, requiring clear risk disclosure, governance structures, and accountability of project promoters.

Outcome-Based financing: Unlike bonds, crowdfunding is not tied to capital market standards but relies on project credibility and impact communication. Success is measured by the ability to mobilize target funding and deliver promised outcomes, such as installed renewable energy capacity, avoided CO_2 emissions, or community co-benefits. Transparent reporting and periodic updates ensure ongoing investor and contributor confidence.

Regulatory framework:

- Regulation (EU) 2020/1503 on European Crowdfunding Service Providers (ECSP) – harmonized rules for lending- and equity-based crowdfunding.
- EU Taxonomy Regulation (EU) 2020/852 – projects financed must comply with environmental and DNSH criteria.

- Consumer Protection & AML Rules – apply to all financial platforms to ensure transparency, risk disclosure, and fraud prevention.
- CSRD & Sustainability Reporting – relevant for crowdfunding platforms that qualify as large entities or listed SMEs.

Key steps for Crowdfunding:

1. Defining the Project – identify eligible sustainable activities and align with EU Taxonomy objectives.
2. Selecting a Crowdfunding Platform – choose an EU-licensed platform under Regulation 2020/1503.
3. Preparing the Campaign – develop a clear business case, communication materials, and funding targets.
4. Compliance & Disclosure – prepare Key Investment Information Sheet (KIIS) and risk disclosures.
5. Launching the Campaign – promote the project through the platform, ensuring wide citizen reach.
6. Fund Management – allocate proceeds transparently to project activities and provide regular updates.
7. Reporting – communicate results and impacts (environmental, financial, social) to contributors.

Crowdinvesting

Description: Crowdinvesting (equity-based crowdfunding) is a financing model where individual investors collectively provide capital to a project or company in exchange for equity or profit-sharing rights. Unlike donation or reward-based crowdfunding, Crowdinvesting involves a financial return linked to the project's performance. It is increasingly applied to renewable energy cooperatives, sustainable start-ups, and local green infrastructure projects, providing both financing and community ownership.

Benefits: Crowdinvestingattracts local stakeholders as co-owners of CACN projects, fostering long-term commitment and trust. It broadens access to private capital, reduces dependency on traditional lenders, and enables citizens to share in the financial returns of green projects. For municipalities, it enhances transparency and public participation, while for companies it strengthens ESG credentials and diversifies funding sources.

Risk management: Risks include financial underperformance, illiquidity of shares, and governance challenges in managing multiple small investors. Regulation (EU) 2020/1503 on European Crowdfunding Service Providers (ECSP) introduces safeguards, including investor classification, investment limits for retail investors, mandatory risk warnings, and standardized disclosure documents. Independent due diligence and platform supervision further reduce risks of greenwashing or mismanagement.

Outcome-Based financing: Crowdinvestment returns to project outcomes, aligning financial incentives with environmental performance. Returns may be distributed as dividends, profit-sharing, or capital gains depending on project success. For green projects, outcome indicators include renewable energy production, cost savings, or carbon reductions. Transparent impact reporting ensures that investors see both financial and environmental returns, reinforcing trust and market credibility.

Regulatory framework:

- Regulation (EU) 2020/1503 (ECSP) – covers equity- and lending-based crowdfunding, including crowdinvesting platforms.
- EU Taxonomy Regulation (EU) 2020/852 – ensures financed activities meet environmental and DNSH requirements.
- Prospectus Regulation (EU) 2017/1129 – applies if public offerings exceed €5 million.
- MiFID II & MAR – apply if crowdinvesting platforms qualify as investment firms or offer tradable securities.
- CSRD – for entities exceeding reporting thresholds, requiring ESG disclosures.

Key steps for Crowdinvesting:

1. Defining the Business Model – ensure the project/company fits equity or profit-sharing models.
2. Platform Selection – use a licensed EU platform under Regulation 2020/1503, specialized in equity offers.
3. Preparing Investment Documents – develop financial projections, risk disclosures, and governance plans.
4. Regulatory Compliance – ensure KIIS preparation; assess need for a Prospectus if exceeding €5 million.
5. Launching the Investment Offer – market the project to attract both retail and professional investors.

6. Fund Allocation & Governance – integrate investors as shareholders or partners; establish transparent governance.
7. Reporting & Returns – provide regular updates, disclose impact metrics, and distribute dividends or profit shares.

By combining technical innovation with social engagement and accessible financing, citizen-led initiatives are a strategic asset for public authorities seeking to implement inclusive, locally anchored CACN projects.

Conclusions

The Mediterranean's energy transition demands a financing approach that is faster, more diversified, and compliant with EU sustainability rules. Public authorities face a dual challenge: scaling investment to meet the **European Green Deal and Fit for 55 targets**, while ensuring **that every euro mobilized delivers verifiable environmental and socio-economic value**. Grants and budget funds remain insufficient and a proactive mix of performance-based contracts (EPC/ESCO, PPP), debt instruments (green loans and bonds), and citizen-led models (crowdfunding, crowdinvesting, energy communities) is required to close the funding gap and accelerate project delivery.

Regulation is no longer a barrier but the blueprint for credibility and access to capital. The EU Taxonomy, SFDR, CSRD and—where relevant—the EU Green Bond Standard set the language of "what counts as green," reduce greenwashing risks, and build investor confidence. Public sponsors that integrate these rules early—linking project scoping, technical screening criteria, DNSH checks, minimum social safeguards, and transparent reporting—will reach bankability faster, face lower diligence friction, and unlock a broader investor base across banks, platforms, and capital markets.

Performance-based models should be the default for renovation and efficiency projects. EPCs transfer delivery risk to ESCOs and tie repayment to verified savings, freeing scarce public budgets for priorities with no revenue backstops. For larger, service-intensive assets, PPPs align lifecycle performance with payments and can defer upfront fiscal impact when structured prudently. In parallel, green loans offer near-term, taxonomy-aligned funding with clear allocation and impact reporting, while green bonds—on SME Growth or regulated markets—can aggregate portfolios, diversify funding sources, and strengthen transparency through external reviews and annual impact reports. Citizen-led finance is a strategic complement, not a niche. Crowdfunding and crowdinvesting expand participation, build local ownership, and de-risk uptake for municipal programs (solar roofs, resiliency micro-measures, circular economy pilots). Energy communities can anchor long-run behavioral and cost outcomes by turning users into co-owners. When designed with robust disclosure and simple impact KPIs, these vehicles mobilize small tickets at scale and reinforce social license for public investments.

The pathway from idea to investment must be standardized. Public authorities should institutionalize a consistent pipeline process:

1. Screen project concepts to comply with EU Taxonomy and policy goals;
2. Run preliminary baseline analysis, status-quo-audits, risk allocations and the sustainability needs of local administration;

3. Asses the financial viability, the investment payback period and the possibility of achieving social benefits alongside financial results;
4. In the case of smaller cities or municipalities, consider the possibility of consolidating/merging projects
5. Prepare projects for advanced levels of funding or co-financing through another source of funding external reviews, and data systems for allocation and impact reporting;
6. Choose the optimal financing model based on risk allocation, financial and economic feasibility and reporting capacity;
7. Engage stakeholders in cross-sectoral dialogue to detect private investor demands and present public project pipeline;
8. Design sustainable finance strategy and monitor outcomes with a lean KPI set (energy saved, tCO_2e avoided, resilience metrics, inclusion indicators) and publish annual results;
9. Encourage pilot projects to test innovative financing models, build practical know-how, and generate replicable case studies that can be scaled across regions;
10. Develop roadmaps and action plans based on sustainable finance strategies and pilot-project outcomes.

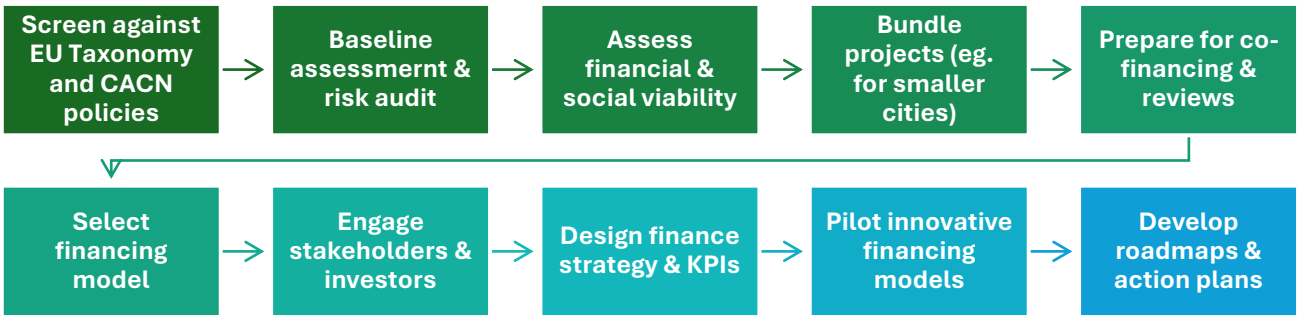


Figure 2: Pathway for financing CACN projects

Capacity and governance are as critical as capital. Dedicated internal teams, template documents, standard contracts, and pre-agreed KPIs shorten lead times and reduce transaction costs. Early engagement with national regulators, exchanges, development banks, and platforms helps align documentation and timelines. Where skills are thin, **technical assistance and model contracts**—together with **external verifiers and advisors**—can bridge gaps without delaying execution. Within INFIRE, the objective is practical: equip public authorities with a ready-to-use key steps screening, structuring, financing, and monitoring carbon neutrality and climate adaptation projects—fully aligned with EU Taxonomy, sustainable finance regulations, and market standards—to accelerate implementation while ensuring transparency, investor confidence, and measurable impact.

Table 1: Comparation of innovative financing models for CACN projects

Financing Model	Description	Main Financing Source	Repayment Mechanism	Risk Allocation	Key Benefits for Public Sector	Compliance Requirements
Energy Performance Contracting (EPC)	Performance-based contract where ESCO finances and implements energy upgrades, repaid from guaranteed savings.	ESCO or private financier (repaid from energy savings)	From achieved energy savings	ESCO bears performance risk	No upfront cost, transfers risk, guaranteed savings	EPC contract, energy audit, savings verification
Public-Private Partnership (PPP)	Long-term cooperation between public entity and private partner to deliver infrastructure or services, with risk-sharing.	Private partner (repaid by public payments or user fees)	Public budget or concession/user fees	Risks shared between public and private partner	Access to private capital and expertise, long-term service quality	PPP agreement, risk and service quality definition
Green Loans	Loan product financing green projects aligned with EU Taxonomy and GLP, issued by banks or financial institutions.	Commercial or development banks	Scheduled loan repayment by borrower	Borrower bears repayment and compliance risk	Affordable financing for green assets, aligned with EU green policies	EU Taxonomy, Green Loan Principles (GLP), SFDR
Green Bonds	Debt instrument issued in capital markets to finance green projects, aligned with EU Taxonomy and ICMA GBP.	Institutional or retail investors in capital markets	Bond coupon payments from issuer budget	Issuer bears financial and sustainability compliance risk	Access to large capital base, enhances credibility and visibility	EU Green Bond Standard (EU GBS), ICMA GBP, EU Taxonomy
Crowdfunding	Digital platform-based funding from citizens or small investors to co-finance specific green projects.	Retail investors (citizens), impact investors, platforms	Revenue sharing, interest, or donations (depends on platform)	Platform operator and project promoter share risk	Community engagement, small-scale funding for innovative projects	Platform licensing, investor protection, project transparency

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