



MLGP4
CLIMATE

Financing Mix Beyond Grants: Finance Mapping

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Belgium



Italy



Denmark



United States

Part 1. Presentation.

Finance mapping: instruments and donors



LAB3 Finance mapping and financial indicators and a credible funding request

1 Finance mapping

Match the project's needs to a funding instrument and an access route.

2 Financial assessment

Calculate costs, returns, repayment capacity and climate impact.

3 Funding proposition

Present the evidence, confirm eligibility and prepare the required application.

Funding instruments and project needs

Instrument selection starts with the financing problem

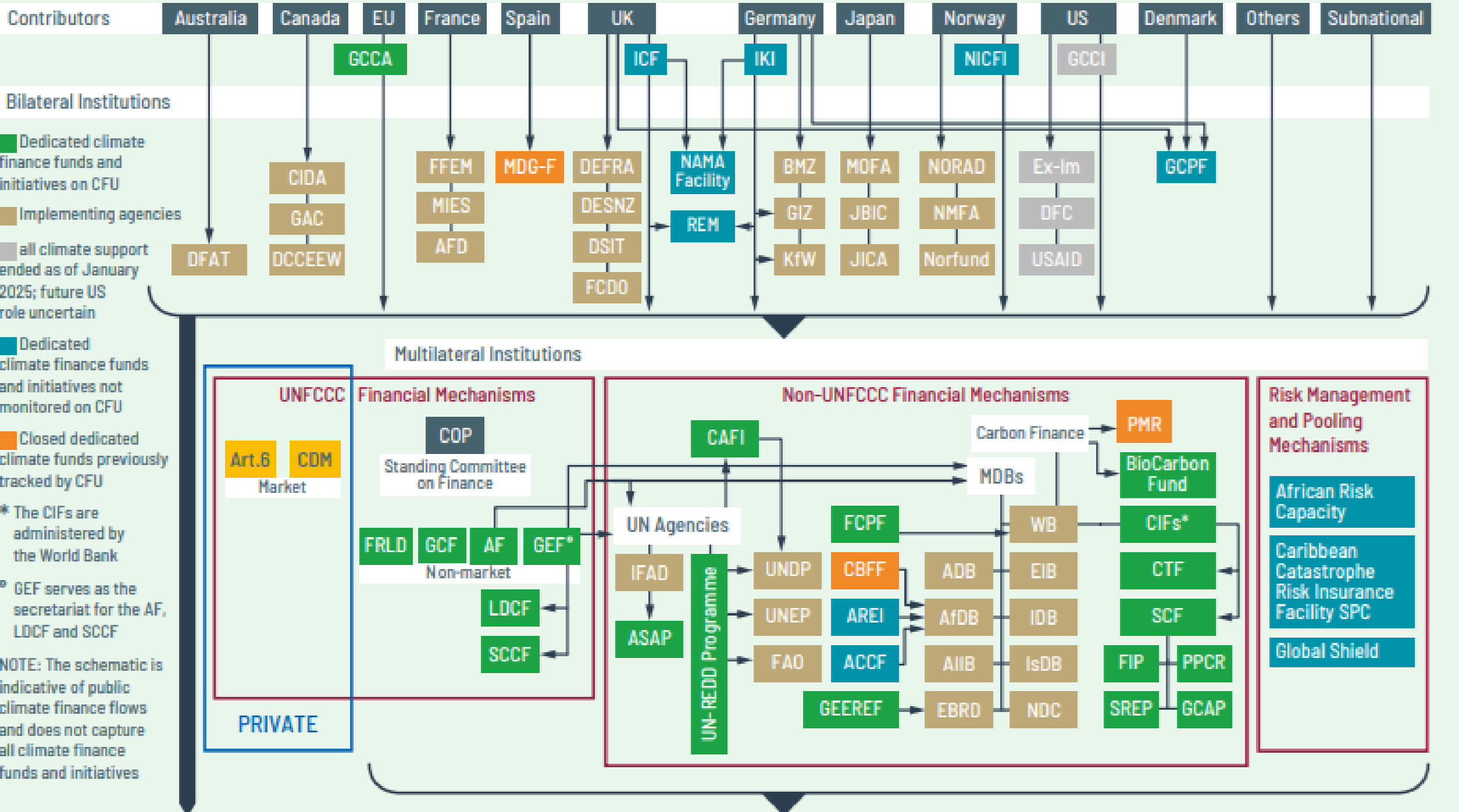
Instrument	Suitable purpose	Main condition
Grant	Preparation or eligible investment costs	Programme eligibility and cofinancing
Loan	Investment with a repayment source	Borrower capacity and debt service
Guarantee	Reduce a specified lender risk	Underlying finance and guarantee terms
Equity or PPP	Private participation in delivery	Commercial structure and risk allocation
Technical assistance	Develop studies and a credible pipeline	Scope, readiness and access rules

Blended finance combines instruments. Each component needs a clear role, cost and approval route.

Finance actors and access routes

Actor	Potential role	Municipal access question
Development banks	Loans, guarantees and preparation support	Direct borrower or intermediary?
National institutions	Public investment and municipal lending	Which national programme and mandate?
Climate funds	Targeted climate programmes	Which eligible or accredited entity?
Bilateral and EU programmes	Grants and technical cooperation	Which current action and applicant rules?
Private investors and banks	Debt, equity and service contracts	Who earns or allocates repayment cash?

The global map identifies actors. It does not establish a municipality's eligibility or an open funding window.



Regional and National Accredited and Implementing Entities
National, Regional and Country-Collaborative Funds

Amazon Fund	Benin National Fund for the Environment and Climate	Cambodia Climate Change Alliance Trust Fund	CVF and V20 Multi Donor Fund	JETPs (Indonesia, Senegal, South Africa and Vietnam thus far)	Mexico Climate Change Fund	South Africa Green Fund
Bangladesh Climate Change Resilience Fund	Brazilian National Fund on Climate Change	Climate Resilient Green Economy - Ethiopia	Guyana REDD+ Investment Fund	Maldives Climate Change Trust Fund	Philippines People's Survival Fund	
Bangladesh Climate Change Trust Fund			Indonesia Climate Change Trust Fund	Mali Climate Fund	Rwanda's Green Fund	

Implementing Agencies and Institutions		DSIT	Department for Science, Innovation and Technology (UK)	JICA	Japan International Cooperation Agency
AfDB	African Development Bank	EBRD	European Bank for Reconstruction and Development	KfW	Kreditanstalt für Wiederaufbau (German development bank)
AFD	Agence Française de Développement (French development agency)	EIB	European Investment Bank	MIES	Mission Interministérielle de l'Effet de Serre (inter-ministerial taskforce on climate change, France)
ADB	Asian Development Bank	Ex-Im	Export-Import Bank of the United States (all climate support ended in January 2025)	MOFA	Ministry of Foreign Affairs (Japan)
AIIB	Asian Infrastructure Investment Bank	FAO	Food and Agriculture Organization of the United Nations	NDB	New Development Bank
BMZ	Bundesministerium für Wirtschaftliche Zusammenarbeit und Entwicklung (federal ministry of economic cooperation and development, Germany)	FCDO	Foreign, Commonwealth and Development Office (UK)	NMFA	Norwegian Ministry of Foreign Affairs
CIDA	Canadian International Development Agency	FFEM	Fonds Français pour l'Environnement Mondial (French global environment facility)	Norfund	Norwegian Investment Fund for developing countries
DCCEEW	Department of Climate Change, Energy, the Environment and Water (Canada)	GAC	Global Affairs Canada	NORAD	Norwegian Agency for Development Cooperation
DESNZ	Department for Energy Security and Net Zero (UK)	GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH (German technical cooperation)	UNDP	United Nations Development Programme
DEFRA	Department for Environment, Food and Rural Affairs (UK)	IDB	Inter-American Development Bank	UNEP	United Nations Environment Programme
DFAT	Department of Foreign Affairs and Trade (Australia)	IFAD	International Fund for Agricultural Development	USAID	United States Agency for International Development (dissolved, remaining operations merged into United States State Department; all climate support ended in January 2025)
DFC	United States International Development Finance Corporation (all climate support ended in January 2025)	IsDB	Islamic Development Bank	WB	World Bank
		JBIC	Japan Bank of International Cooperation		

Multilateral Funds and Initiatives		CIF	Climate Investment Funds (implemented through WB, ADB, AfDB, EBRD and IDB)	LDCF	Least Developed Countries Fund (hosted by the GEF)
AAAF	Africa Adaptation Acceleration Program	CTF	Clean Technology Fund (implemented through WB, ADB, AfDB, EBRD and IDB)	PMR	Partnership for Market Readiness
ACT	Accelerating Coal Transition program (implemented through WB, ADB, AfDB, EBRD and IDB)	FCPF	Forest Carbon Partnership Facility	PPCR	Pilot Program for Climate Resilience (implemented through WB, ADB, AfDB, EBRD and IDB)
AF	Adaptation Fund (GEF acts as secretariat and WB as trustee)	FIP	Forest Investment Program (implemented through WB, ADB, AfDB, EBRD and IDB)	SCCF	Special Climate Change Fund (hosted by the GEF)
ACCF	Africa Climate Change Fund	FRLD	Fund for responding to Loss and Damage	SCF	Strategic Climate Fund (implemented through WB, ADB, AfDB, EBRD and IDB)
AREI	African Renewable Energy Initiative	GCAP	Global Climate Action Programs (implemented through WB, ADB, AfDB, EBRD and IDB)	SREP	Scaling Up Renewable Energy Program in Low Income Countries (implemented through WB, ADB, AfDB, EBRD and IDB)
Art.6	Article 6 market and non-market approaches (implemented under the Paris Agreement)	GCCA	Global Climate Change Alliance	UN-REDD Programme	United Nations Collaborative Programme on Reducing Emissions from Deforestation and Forest Degradation
ASAP	Adaptation for Smallholder Agriculture Programme	GCF	Green Climate Fund		
CAFI	Central African Forest Initiative	GEF	Global Environment Facility		
CBFF	Congo Basin Forest Fund (hosted by AfDB)	GEEREF	Global Energy Efficiency and Renewable Energy Fund (hosted by EIB)		
CDM	Clean Development Mechanism (implemented under the Kyoto Protocol)				

Contractual typology	Source of financing		
	Public	Private	Mixed
Non-repayable	Grants		
	Carbon pricing (ETS, taxes)		
Debt	Soft loans	Soft loans Leasing Vendor financing	Revolving funds Traditional bonds
		Crowdfunding	Project financing Mini-bonds
		Forfaiting On-bill financing Third-party financing models	Green bonds Social bonds
		Risk sharing tools and guarantees Energy efficient mortgages	Sustainability bonds Green loans
Equity		Vendor financing	
		Crowdfunding Energy cooperatives	
Hybrid			Public-private partnerships (PPPs)
			Blended finance
Other*	Tax increment financing (TIF)	Energy services companies (ESCOs) Carbon finance	Pay-for-performance (P4P)
	Tax incentives	Energy performance contracts (EPCs)	Insurance companies
	ESCO Intracting model		Land value capture (LVC)
			Pooled procurement

*This category can be used for instruments that don't fit strictly into the repayment or ownership structure.

Level of innovation
Traditional
Alternative
Innovative

Traditional financial instruments

Scheme	Source of funding	Contractual typology	Description
Grant programmes	Public	Non-repayable	Organised programmes that allocate grant funding to various eligible projects or sectors.
Leasing	Private	Debt	Financing for equipment or infrastructure where the lessor retains ownership.
Project financing	Mixed	Debt	Financing for a project based on its future cash flows, often used for large infrastructure projects.
Public grants	Public	Non-repayable	Specific grants provided by public institutions to support targeted initiatives that benefit the public.
Revolving funds	Mixed	Debt	Funds that are replenished as loans are repaid, allowing for continued lending.
Soft loans	Mixed	Debt	Loans provided at below-market interest rates to support sustainable projects.
Tax incentives	Public	Incentive-based	Fiscal measures, such as credits or allowances, designed to encourage investments in specific sectors or technologies.
Tax increment financing (TIF)	Public	Incentive-based	A public financing method that uses future tax revenue from a specific area to finance infrastructure.
Traditional bonds	Mixed	Debt	Fixed-income securities issued by governments or corporations to raise capital.
Vendor financing	Private	Equity/Debt	Financing offered by the supplier for the purchase of goods or services.



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Collaborate for Sustainable Future

Examples: Soft loans for sustainable cities

Belgium: EIB–Belfius Smart Cities & Sustainable Development



Gembloux Town Hall

Photo © Ville de Gembloux. Sources: EIB and Willemen.

Preferential financing

EIB and Belfius offered preferential loans through a €400 million programme.

Energy-efficient public building

Efficient insulation and ventilation, LED lighting, solar panels and rainwater collection.

Lesson for municipalities

Lower borrowing costs help municipalities invest in sustainable public infrastructure.

Results, Challenges & Lessons Learned

Belgium example: Soft loans for sustainable urban transformation

120

projects analysed

Pipeline screened for investment potential

20

projects financed

Urban sustainability investments supported

1.4M+

people benefiting

Reach of supported projects

ADDITIONAL IMPACT

Lower GHG emissions • Stronger municipal financial & technical capacity

CHALLENGES ADDRESSED

Municipal risk aversion and limited technical capacity to deliver energy-efficiency projects.

KEY LESSON

Low-interest loans + guarantees + technical assistance = a stronger model for sustainable urban investment.



Udine, Italy

Example: Udine's SEAP Revolving Fund

Udine, Italy, Revolving fund

Objective

Finance energy efficiency measures in public buildings and support Udine's Sustainable Energy Action Plan (SEAP).

€32,000 initial capital

Municipal income from energy efficiency credits (EECs) earned on the national energy market in 2007–2014 provided the starting capital.

How the fund operates

Municipal departments propose measures. The Municipal Agency for Environmental Policies, acting like an ESCO, selects projects using cost-benefit analysis and defined criteria.

Financial savings return to the fund to finance further measures.



Parco della Rimembranza, Udine
One of the fund's lighting renewal sites

Results, challenges and lessons learned

Udine's SEAP Revolving Fund

Results

Four pilot projects financed

Parco della Rimembranza
Lighting system renewal

Viale Palmanova overpass
Lighting system renewal

Forte infant school
New window frames

Fruch primary school
Roof insulation

Lower energy consumption and CO₂ emissions support the city's sustainability goals.

Challenges addressed

A tight municipal budget limited initial funding.

Income from EEC investments provided the capital to establish the fund.

Lessons learned

Small initial investments can generate lasting financial and environmental benefits.

A revolving fund within the municipal budget keeps savings available for new measures and reduces reliance on external funding.

Innovative instruments

In a context of limited financial resources, innovative financing models offer creative and flexible solutions for municipalities seeking to implement EE, sustainability and energy poverty projects.

These models draw on private capital, stakeholder engagement, and performance-based returns to overcome financial barriers, reduce risks, and accelerate the implementation of projects that might otherwise be hindered by budget constraints.



Innovative financial instruments

Scheme	Source of funding	Contractual typology	Description
Blended finance	Mixed	Hybrid	Combining public and private-sector funding to achieve greater impact in financing sustainability projects.
Blue bonds	Mixed	Debt	Bonds issued to support ocean and waterway conservation and sustainable maritime activities.
Carbon pricing (ETS, green and white certificates, taxes)	Public	Market-based	Systems where carbon emissions are taxed or traded, providing incentives for reducing emissions.
Climate bonds	Mixed	Debt	Bonds aligned with climate goals, financing projects like renewable energy, mitigation and adaptation.
Climate resilience bonds	Mixed	Debt	Bonds dedicated to financing projects aimed at increasing climate resilience in vulnerable areas.
Energy-efficient mortgages	Private	Debt	Mortgages that offer better terms for purchasing energy-efficient homes or making energy upgrades.
Energy performance contracts	Private	Performance-based contracts	Agreements where energy efficiency upgrades are paid for through future energy savings.
Energy services companies (ESCOs)	Private	Performance-based contracts	Companies that finance energy efficiency projects and receive payments based on energy savings.
ESCO 'intracting' model	Public	Performance-based contracts	Internal financing model for energy efficiency projects within public entities.
Forfeiting	Private	Debt	A financial transaction where a business sells its receivables at a discount to raise immediate cash.
Green bonds	Mixed	Debt	Bonds issued to fund projects with environmental benefits, such as renewable-energy infrastructure.
Green loans	Private	Debt	Loans with favourable terms to support environmental projects, such as renewable-energy installations.
Insurance mechanisms for climate adaptation	Mixed	Risk transfer tools	Insurance products that mitigate financial risks from climate disasters, such as parametric insurance or catastrophe bonds.

Scheme	Source of funding	Contractual typology	Description
Land value capture (LVC)	Public	Revenue-based	A method where increases in land value due to public investment (e.g. infrastructure) are captured and reinvested in additional sustainable projects.
Mini-bonds	Mixed	Debt	Small-scale bonds issued by SMEs or municipalities to raise capital for infrastructure, energy efficiency or sustainability projects.
On-bill financing	Private	Debt	Financing where the cost of energy efficiency upgrades is paid back through utility bills.
Pay-for-performance (P4P)	Mixed	Outcome-based	Payment models where compensation is based on the achievement of specific energy or environmental outcomes.
Public-private partnerships (PPPs)	Mixed	Hybrid	Collaborative arrangements between the public and private sectors to finance and manage public infrastructure projects.
Risk-sharing tools and guarantees	Private	Debt	Instruments designed to mitigate risk for investors, often through partial guarantees or insurance.
Social bonds	Mixed	Debt	Bonds used to fund projects with social outcomes, such as affordable housing or healthcare.
Sustainability bonds	Mixed	Debt	Bonds that combine funding for both environmental and social projects, aligning with the Sustainable Development Goals (SDGs).
Third party financing models	Private	Debt	Financing arrangements where a third party provides upfront capital for projects, typically in energy efficiency.

Joint reaseach center, 2025



New York, US

Example: New York

Local carbon-pricing mechanism (carbon tax equivalent)

Objective

Reduce building GHG emissions through energy efficiency, electrification and renewable-energy investments.

Emissions caps with financial penalties

Part of the Climate Mobilization Act, LL97 covers around 50,000 buildings. Most buildings over 25,000 ft² (about 2,300 m²) face annual emissions limits, with stricter caps from 2030.

US\$268 per excess tonne of CO₂e

The annual penalty gives owners a financial incentive to cut emissions and invest in building upgrades.

Carbon-pricing effect through penalties, rather than a formal carbon tax.



Stuyvesant Town–Peter Cooper Village
New York City's residential building stock

Results, challenges and lessons learned

Local Law 97, First compliance year: 2024, reporting in 2025

Results

95% reporting rate

Of 19,963 properties required to report, 18,938 filed compliance reports.

95% met their emissions limits

Among Article 320 properties that filed reports for the 2024 compliance year.

The law encourages retrofits and decarbonization planning. BEAM reporting and emissions tools support implementation.

Challenges addressed

Owner resistance and high retrofit costs.

Complex emissions calculations.

Need for technical advice and financing support.

Lessons learned

Clear rules and reliable monitoring support consistent enforcement.

Technical advice and accessible finance help owners comply while protecting affordability and equity.



Copenhagen, Denmark

Copenhagen example

PPPs & citizen-driven financing

Public–private partnerships



Contract allocates risks and responsibilities

Citizen-driven financing



Residents fund local projects

CITY CLIMATE PROJECTS

Solar & wind energy District heating Sustainable infrastructure

Lower emissions and better public services, with stronger community participation

Copenhagen: Climate finance in practice

PPPs and citizen-driven financing schemes, including crowdfunding



Middelgrunden offshore wind farm

Photo: Kim Hansen / Wikimedia Commons, CC BY-SA 3.0
Postprocessing: Richard Bartz and Kim Hansen. Uncropped.

Objective

Accelerate renewable energy and sustainable infrastructure through private investment and community participation.

Financing approach

Public–private cooperation combines utility investment with citizen capital. Residents buy cooperative shares and participate in local energy ownership.

Concrete example: Middelgrunden

Built 20 turbines, 40 MW. The original ownership split was 50% Copenhagen Energy and 50% a citizen cooperative.

The original 2025 climate target is historical. Copenhagen adopted Climate Strategy 2035 in 2025.



Copenhagen: Results and lessons learnt

Utility investment and citizen ownership in renewable energy

Results

Citizen investment creates local ownership and strengthens support for renewable energy.

The utility and cooperative combine technical capacity with community capital.

Challenges

Engaging diverse stakeholders and resolving concerns about location and visual impact.

Maintaining financial viability as revenues, maintenance needs and asset age change.

Protecting public trust through clear governance and transparent risk information.

Lessons learnt

Combining institutional investment with citizen finance can support climate infrastructure.

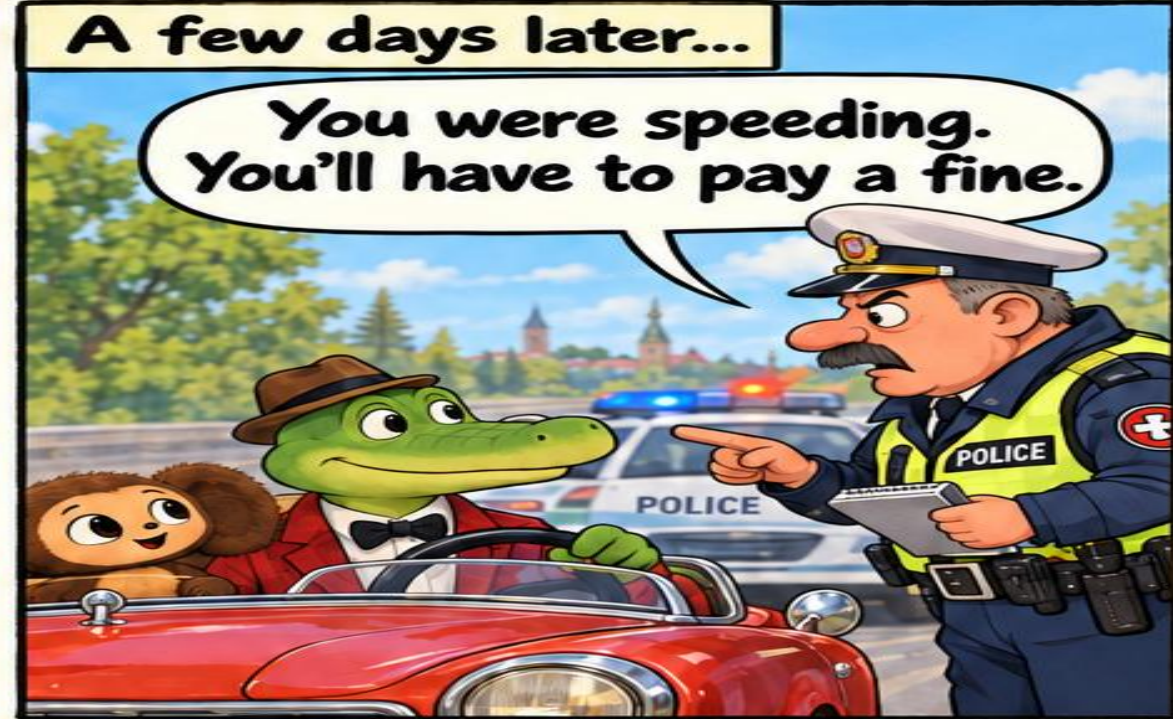
Early dialogue and shared ownership help align projects with community interests.

Replication needs suitable regulation, realistic cash flows and clear responsibilities.

Part 2. Financial indicators

Costs, returns, debt repayment and climate impact





What language do you need to **attract financing?**



Key indicators for financing a climate project

KEY INDICATOR	WHAT A BANK OR INVESTOR NEEDS TO SEE
Total investment and funding plan	CAPEX , contingency, grant/equity/debt mix and the remaining financing gap.
Annual net cash flow	Verified annual revenue or savings after operating and maintenance costs.
Debt service coverage (DSCR)	Cash available for debt service ÷ principal and interest. Show the weakest year.
Financial return	Project NPV and IRR . Equity IRR for private capital. Payback is supplementary.
Borrower creditworthiness	Financial statements, operating surplus, existing debt and legal borrowing capacity.
Climate impact	Baseline and method; MWh and tCO ₂ e per year, or quantified adaptation benefits.
Sensitivity to risk	Effect of higher CAPEX or interest and lower output or tariffs on returns and DSCR .
Implementation readiness	Site rights, permits, grid access, procurement, timetable and O&M responsibility.

Financial indicators

CAPEX

Capital cost needed to build the project
Equipment + installation + design

CAPEX= 800 000 (equipment) + 150 000 (instalation) + 50 000 de = €1m

NPV

Value today after recovering the investment
$$NPV = -CAPEX + \sum CF_t / (1 + r)^t$$

$$-€1,000,000 + \sum (€200,000 / 1.08^t)$$

= +€149,328

IRR

Discount rate that makes NPV equal zero
$$0 = -CAPEX + \sum CF_t / (1 + IRR)^t$$

IRR = 11.81%

OPEX

Operating Expenditure

OPEX = 12 000 (energy) + 3 000 (maintenance) + 1 000 (monitoring) + 1 000 (insurance) = 17 000 EUR

Municipal LED streetlighting example

Input	Assumption
CAPEX at year 0	EUR 100,000
Annual gross electricity savings	EUR 35,000
Annual additional OPEX	EUR 5,000
Annual net cash benefit	EUR 30,000
Teaching horizon and real discount rate	5 years and 8%
Annual energy and CO ₂ reduction	100 MWh and 40 tCO ₂

Constant EUR. Annual cash flows occur at year-end. No grants, financing, tax, replacements or residual value in project returns.

Five years is a teaching horizon, not the LED asset life. The 8% rate and 0.40 tCO₂/MWh factor are assumptions.

CAPEX and OPEX

Investment cost and annual operating cost

CAPEX Capital expenditure

Purpose: estimate initial funding needs.

Shows: cost of creating or upgrading assets.

Equipment EUR 70,000

Installation EUR 20,000

Design EUR 5,000

Contingency EUR 5,000

Total CAPEX = EUR 100,000

OPEX Operating expenditure

Purpose: plan the operating budget.

Shows: recurring running and maintenance costs.

Maintenance EUR 3,000/year

Monitoring EUR 1,000/year

Insurance EUR 1,000/year

Additional OPEX = EUR 5,000/year

Common mistakes: missing VAT or contingency, ignoring maintenance, subtracting grants from total CAPEX, counting loan principal as OPEX.

Net operating cash benefit

The annual budget benefit before financing

Purpose and meaning

Estimate incremental cash revenue and avoided expenditure after additional operating costs.

Formula

Net benefit = savings + new cash revenue – additional OPEX

Worked example

EUR 35,000 + EUR 0 – EUR 5,000 = EUR 30,000 per year

Common mistakes

Counting savings twice, using accounting profit, or ignoring taxes, replacements and working capital when applicable.

Payback period and ROI

Simple screening metrics use undiscounted cash flows

Simple payback

Purpose: estimate time to recover CAPEX.
Payback = CAPEX / annual net benefit

$$\text{EUR 100,000} / \text{EUR 30,000} \\ = 3.33 \text{ years}$$

Recovery occurs in year 4 with year-end cash flows.
Continuous savings imply about 3 years and 4 months.

Five-year cash ROI

Purpose: show total net gain / CAPEX.
Five-year benefits = 5 × EUR 30,000

$$(\text{EUR 150,000} - \text{EUR 100,000}) \\ / \text{EUR 100,000} = 50\%$$

50% is the total five-year ROI.
It is not an annual return.

Common mistakes: using gross savings, ignoring timing, comparing different horizons, or treating payback as the full investment decision.

Discount rate and present value

Future money expressed in today's value

Purpose and meaning

The discount rate is an input reflecting the required return or opportunity cost and relevant risk.

Formula

$$PV_t = CF_t / (1 + r)^t$$

CF is cash flow, r the discount rate and t the year.

Worked example

Year 1: EUR 30,000 / 1.08 = EUR 27,777.78 today

Common mistakes

Mixing nominal cash flows and real rates, or using the loan interest rate automatically. Match currency, inflation and perspective.

NPV (Net Present Value)

NPV shows how much value a project creates, recognising that money today and money in the future have different values.

**Which would you choose:
€100 today or €100 in five years?**



NPV brings future cash flows back to today's value.

NPV Net present value calculation

Discounted future net benefits less the initial investment

Purpose: test financial value at the selected discount rate.

Year	Cash flow EUR	Present value at 8% EUR
0	-100,000	-100,000.00
1	30,000	27,777.78
2	30,000	25,720.16
3	30,000	23,814.97
4	30,000	22,050.90
5	30,000	20,417.50

$$\text{NPV} = \text{EUR } 119,781.30 - \text{EUR } 100,000 = +\text{EUR } 19,781.30$$

Positive NPV shows value above the assumed 8% return. Errors: wrong year 0 timing, inconsistent signs, missing replacements or residual value.

IRR (Internal Rate of Return)

IRR shows a project's calculated annual return as a percentage, taking into account the timing of cash flows.

If your project could talk, what annual return would it offer on your investment?



IRR is the discount rate at which NPV equals zero.

Calculated from projected cash flows — not a guaranteed return.

IRR Internal rate of return

The annual discount rate at which project NPV equals zero

Purpose and meaning

Express the return as an annual percentage for annual cash flows. Compare it with a justified required return.

Worked example

Cash flows: –100,000 at year 0, then +30,000 in each of years 1–5. IRR = 15.24%.

How to calculate

At 15%, NPV $\approx$ +EUR 565. At 16%, NPV $\approx$ –EUR 1,771. Excel =IRR(A3:F3) finds the zero between them.

Common mistakes

Confusing IRR with total ROI, excluding year 0, mixing project and equity IRR, or ranking different-sized projects only by IRR.

DSCR

Debt Service Coverage Ratio

DSCR shows how many times the cash available for debt service covers principal and interest payments.

Can your project pay its loan instalments and still have a buffer?



Can I cover my
loan payments?



DSCR = Cash available for debt service ÷ Principal and interest due

Above 1: a buffer • At 1: just enough • Below 1: a shortfall

All cash and debt service measures refer to the same period; do not use gross revenue or profit in the formula.

DSCR Debt service coverage ratio

Cash available for principal and interest payments

Purpose and meaning

Test debt repayment in each period. $DSCR = \text{cash available for debt service} / (\text{principal} + \text{interest})$.

Worked example

Principal EUR 16,000 + interest EUR 4,000 = EUR 20,000/year. EUR 30,000 / EUR 20,000 = 1.50×

Interpretation

EUR 10,000 remains after debt service. At 1.00× cash just covers debt. Below 1.00× there is a shortfall.

Common mistakes

Counting only interest, using gross revenue, testing only averages, or assuming budget savings are available to the borrower.

LCC

Life Cycle Cost

LCC measures the total cost of an asset over its life, from purchase and installation to operation, maintenance and disposal.

Cheaper to buy — or cheaper over its lifetime?



The purchase price is only the beginning.

Compare total costs over the same period and account for the timing of future costs.

LCC Life cycle cost

The cost of delivering a service over a justified period

Purpose and meaning

Compare costs of alternatives at the same service level. Include CAPEX, OPEX, replacements, disposal and residual value.

Formula

Discounted LCC = CAPEX + PV of future costs – PV of residual value

Worked example

Five-year discount-factor sum at 8% = 3.99271. EUR 100,000 + EUR 5,000 × 3.99271 = EUR 119,963.55.

Common mistakes

Comparing unequal service levels or lifetimes and omitting energy, replacements or disposal. Five years here is only a teaching horizon.

BCR (Benefit–Cost Ratio)

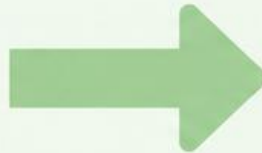


If your municipality invests €1 today, how many euros of benefits will it get back?



€1

Investment cost



€2.50

Economic benefits

$$\text{BCR} = 2.5$$

For every €1 of costs, the project creates €2.50 in benefits.

Formula

$$\text{BCR} = \frac{\text{Present Value of Benefits}}{\text{Present Value of Costs}}$$



BCR > 1:

benefits exceed costs



BCR = 1:

benefits equal costs



BCR < 1:

costs exceed benefits

BCR Benefit cost ratio

Discounted benefits per unit of discounted cost

Purpose and meaning

Compare discounted benefits and costs. $BCR = \text{present value of benefits} / \text{present value of costs}$.

Worked example

Benefits: $\text{EUR } 35,000 \times 3.99271 = \text{EUR } 139,744.85$. Costs: $\text{EUR } 119,963.55$. $BCR = 1.16\times$.

Interpretation

Benefits exceed costs in this financial example. Their difference is the same $\text{EUR } 19,781.30$ NPV.

Common mistakes

Subtracting OPEX from benefits and counting it again in costs, mixing discounting methods, or calling financial BCR economic BCR.

Net cost per tonne of CO₂ avoided

A simple financial screen for emission reduction measures

Purpose and meaning

Compare cost efficiency. State the baseline, period, cost boundary and discounting method.

Emission calculation

100 MWh/year $\times$ 0.40 tCO₂/MWh $\times$ 5 years = 200 tCO₂ avoided

Cost calculation

(EUR 100,000 + EUR 25,000 – EUR 175,000) / 200 = –EUR 250/tCO₂

Meaning and mistakes

Negative means cash savings exceed costs here. Avoid dividing lifetime costs by annual tonnes or using an unverified emission factor.

Sensitivity to cost and savings

One assumption changes at a time over five years at 8%

Scenario	Net benefit/year	Payback	NPV	DSCR
Base case	EUR 30,000	3.33 years	+EUR 19,781	1.50×
CAPEX +20%	EUR 30,000	4.00 years	–EUR 219	1.50×
Gross savings –20%	EUR 23,000	4.35 years	–EUR 8,168	1.15×
OPEX rises to EUR 10,000	EUR 25,000	4.00 years	–EUR 182	1.25×

A four-year simple payback can coexist with a negative five-year NPV.

Debt service stays EUR 20,000/year in this exercise. Extra borrowing to cover higher CAPEX could reduce DSCR.

Five minute workshop exercise

New annual gross savings: EUR 25,000
Additional OPEX: EUR 5,000/year
CAPEX: EUR 100,000
Horizon: 5 years at 8%
Annual debt service: EUR 20,000

Participants calculate

Annual net benefit
Simple payback
DSCR
NPV at 8%

Discussion: which result would concern a municipality or finance most?

Workshop exercise answer

Lower savings remove the repayment cushion

Indicator	Calculation	Result
Annual net benefit	EUR 25,000 – EUR 5,000	EUR 20,000
Simple payback	EUR 100,000 / EUR 20,000	5 years
NPV at 8%	EUR 20,000 × 3.99271 – EUR 100,000	–EUR 20,145.80
DSCR	EUR 20,000 / EUR 20,000	1.00×

Cash just covers debt service. The five-year financial NPV is negative.

Possible responses: improve the project, reduce cost, secure justified support or reconsider the funding structure.

Good project concept

PROJECT modalities

Problem, location and target group

Asset, capacity and technical alternatives

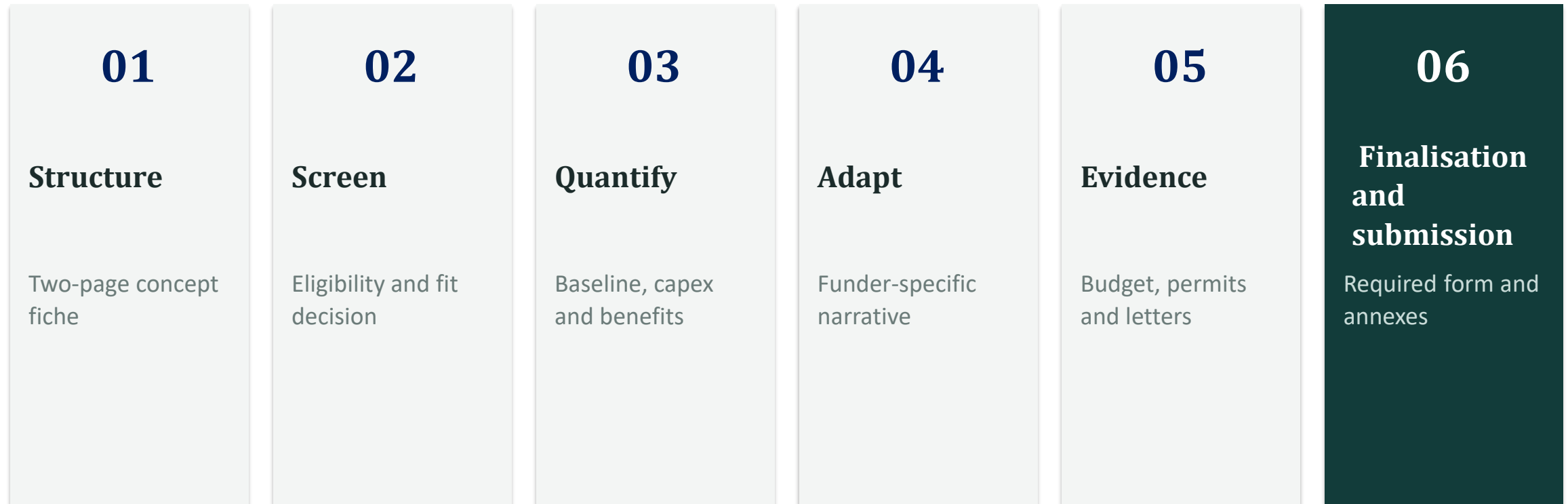
Owner, partners, approvals and procurement

Finance indicators Capital cost, operating cost and benefits

Baseline, results and measurement method



CITY- ACCEL Steps from project concept to funding



Decision rule: pause when a critical fact is missing; assign an owner and a date to close the gap.

Key findings

Creating projects investment ready projects: a bankable project is a well-documented and economically viable initiative.

Developing a bankable project begins with identifying and organising the elements that make it **economically attractive**. Initially, it is essential to examine the project's key components, ensure each aspect is thoroughly assessed, and clearly present a plan for effective management of those components. Each component carries a **risk factor**, and **each risk factor carries a price tag**.



Key findings

Nature positive project investment

Institutional capacity

Equip municipal teams to assess nature impacts and investment options.

Project opportunities

Identify investable measures within local plans and public services.

Strong Evidence

Use existing local data and state gaps or uncertainty.

Correct/adaptive Financial instruments

Adapt the funding structure to the project's benefits and risk.

Strong Partnerships

Assign roles to public institutions, finance providers and delivery partners.



A scenic landscape at sunrise or sunset. In the background, a range of rugged mountains with patches of snow is visible under a sky filled with soft, golden clouds. The sun is low on the horizon to the right, casting a bright glow and long, shimmering reflections across a calm body of water. The middle ground features rolling hills and valleys covered in dense evergreen forests, with some areas shrouded in mist. In the foreground, rocky terrain with more evergreen trees frames the bottom and left sides of the image.

Success usually comes to
those who are too busy
to be looking for it.

Henry David Thoreau



MLGP4
CLIMATE

**Bu kadar harika
olduğunuz için
teşekkür ederim.
Birlikte başarıya ulaşalım!**



SECAP



Screening



Pipeline



Finance

