Demystifying the Language of Climate Resilience Financing

Financial terms and industry jargon can cause confusion and create barriers for small municipalities, tribes, nonprofits, and other community groups seeking financing. This guide clarifies key financial terms and industry jargon with simple definitions and real-life examples to address information gaps and share innovative options to pay for climate resilience needs.

Grant Funding vs. Financing

Grant funding from government, foundation, and nonprofit sources is abundant. Grant programs exist for many local needs including community outreach, planning, design, and project implementation. **Grant funding** does not need to be paid back but may require a "match" amount from the grantee and a promise to comply with the terms of the grant. Grants are often necessary and can effectively carry out important community actions. However, the grant process itself can be an imposing and challenging departure from the organization's day-to-day responsibilities. Competing in grant programs requires staff capacity to apply, carry out the implementation according to the timeline and budget, and complete the project reporting requirements to the sponsor. Restrictions on how grant money may be used can be rigid, thus excluding broader community needs and limiting integration into the community's long-term goals. Also, the timing of available grant funding can challenge the ability of staff to retain operational knowledge from past experiences. Collectively, while grant-based funding is often essential, it can also pose challenges for a holistic and unified community climate adaptation approach.

For resources on specific funding opportunities, please reference the following:

- Navigating the Federal Funding Landscape: A Guide for Communities developed by the New England Environmental Finance Center
- Maine Government Funding Sources for Resiliency developed by the Maine Department of Environmental Protection

When grants are not appropriate for a community initiative, or when efforts require ongoing and long-term support, there are a variety of financing mechanisms that have evolved to meet the fiscal needs of community climate change adaptation. **Financing** is a sustainable way to support certain projects or programs that need long-term sources of capital. Financing reduces community reliance on one-off grants or using general funds to pay for projects. This guide provides high-level descriptions of various mechanisms used to finance environmental and climate priorities, ranging from conventional tax proceeds and bonds to innovative measures such as green banks and credit trading systems.

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***Grant Funding**:* Money given for a particular purpose with no payback required. To secure a grant, a municipality, tribe, nonprofit, or community group may be required to write a proposal and, if awarded, implement the project according to the proposed scope of work and budget.

***Financing**:* The process of borrowing money for a particular purpose, with the expectation of repayment. Financial institutions, such as banks, are in the business of providing financing to businesses, investors, and other community customers with the ability to repay.

Climate Finance: Local, national, or transnational financing from public, private and alternative sources that seeks to support mitigation and adaptation actions that will address climate change.

Bond: A bond is a financial instrument representing the debt of the company (i.e. corporate bond) or government (i.e. government bond) that issued it. Along with cash and stocks, bonds are one of the basic types of assets. When a company or a government (including a municipality) issues a bond, it borrows money from the bondholders; it then uses the money to invest in its operations. Bonds are inherently a safe investment because the bondholder receives the principal amount back on the bond's maturity date. However, the higher the interest rate on the bond, the greater the risk.

Municipal "muni" Bond: Bonds issued by a local, state, or county government, often used to finance infrastructure improvements like schools, roads, sewer systems, and day-to-day obligations. *General bonds* are backed by the "full faith and credit" of the issuer through dedicated property taxes or by general funds while a *revenue bond* secures principal and interest payments from a specific project or source such as fuel, hotel occupancy, tolls, or other taxes.

> ***Municipal Bond in Action:*** *In 2018, Mainers approved a bond initiative directing $30 million over the next decade to municipalities and homeowners to address subpar septic systems leaking untreated stormwater and sewage into local waterbodies.*

Green Bond: Green bonds are no different than corporate or muni bonds, except that they finance "green" projects and the issuer chooses to conform to standards such as those set by the International Capital Markets Association or the Climate Bonds Initiative. Municipalities that already pay low-interest rates for tax-exempt bonds may be reluctant to add administrative costs to certify bonds as "green."

> ***Green Bond in Action:*** *In 2017, the Massachusetts Bay Transportation Authority issued $99 million worth of tax-exempt sustainability bond notes and issued additional sustainability bonds since then. The Sustainable Bond Framework requires projects funded by the bond revenue to be evaluated by their social and environmental impact. Key projects funded by bond revenue include Commuter Rail Positive Train Control, Fenway Portal Flood Protection Project, Silver Line Phase II Gateway, and Wollaston Station Improvements.*

Catastrophe "cat" Bond: A hybrid bond and insurance instrument (also known as insurance-linked security) to provide coverage against large losses from major disaster events. They are short-term (usually 3-5 year) bonds issued by reinsurance companies (who insure the insurance companies for high risk/high payout scenarios). Cat bonds are unique as they are only "triggered" in the event of a disaster. This means that when a disaster reaches a predetermined threshold (e.g. $1 billion in losses or a 10-foot surge height) during the bond term, the cat bond policyholder keeps the full value of the bond to pay off losses and investors lose part or all of their principal invested. Cat bonds can cover a wide range of potential disasters, including hurricanes, floods, earthquakes, and multiple catastrophe scenarios. Because of the risk of loss, if a triggering event occurs,

these bonds provide attractive rates of return to investors. Cat bonds are also appealing because disaster risks are uncorrelated with other investment risks..

> ***Catastrophe Bond in Action:*** *The Los Angeles Department of Water and Power in October 2021 raised $30 million in catastrophe bond issuance via the issuer Power Protective Re Ltd. for wildfire insurance protection. The catastrophe insurance covers events that are either wildfire-related losses to the department's infrastructure or equipment, or losses where the department's utility is deemed liable for a wildfire.*

Resilience Bond: A variation of cat bonds that link insurance and resilience projects to monetize avoided losses (e.g. a reduction of hurricane insurance costs and claims) through a rebate structure. The resulting "resilience rebate" can serve as a source of predictable funding which the government can proactively invest in projects that reduce risk. If catastrophe bonds are like life insurance policies that only payout when the worst disasters strike, then resilience bonds are akin to progressive health insurance programs that provide incentives to make healthy choices that reduce long-term risks.

Resilience bonds monetize avoided losses to help governments invest in *proactive* risk reduction, rather than making major budget decisions on a disaster-by-disaster basis. In the case of infrastructure, this may include cities upgrading coastal protection systems or reinforcing entire neighborhoods to reduce physical and financial damage from storms and floods, which in turn lowers potential losses passed up the chain to state and federal disaster budgets. To date, there are few examples of issued resilience bonds (see Re:focus Partners). Key challenges include identifying projects where risk reductions are readily measurable and aligning the timing of bond issuance with the timing of major infrastructure projects.

> ***Resilience Bonds in Action:*** *Forest Services, the Yuba Water Agency, and the State of California participated in a pilot Forest Resilience Bond project developed by Blue Forest Conservation to finance the upfront costs of forest restoration. The restoration project protects 15,000 acres of forestland in the North Yuba River watershed using e*cologically-based *methods designed to reduce the risk of severe fire, improve watershed health, and protect water resources. The State of California and Yuba Water Agency will repay investors over time.*

Enterprise Fund: Enterprise funds are self-supporting government funds that provide public goods and services for a fee, which is then used to continue supporting that good or service. Enterprise funds are commonly used to finance stormwater utilities, of which there are now nearly 2,000 nationwide, and government-owned power generation. Enterprises cannot levy taxes or take out debt based on projected revenue, thus most of the revenue must come from user fees. Fees should be determined based on estimated expenditures, with any surplus revenue useful for long-term management.

Enterprise Fund in Action: *Portland, Maine's stormwater service charge, based on impervious surface area, is paid by property owners to fund stormwater operations and maintenance. The fee was enacted in 2016 with the goal of raising $170 over 15 years to fund stormwater pollution problems from combined sewer overflows (CSO) and untreated stormwater as federally mandated by the Clean Water Act. The stormwater service charge was recommended by the Sustainable Stormwater Funding Task Force created by the City Council in 2011. Read more about Portland's stormwater service charge in Casco Bay Estuary Partnership's Review of Stormwater Fee Implementation in Portland.*

Value Capture: Value capture is the process of recovering project costs by capitalizing on the value that the project creates. In public financing, value capture recovers value created through public infrastructure projects using taxation, fees, and other creative methods. Public sector investment in roads, parks, schools, or even climate adaptation can create financial value in the form of higher assessed property values or increased economic activity. Capturing this increased value helps governments pay off the cost of the project or reinvest in additional projects. Value capture is appropriate for generating sustainable, long-term revenue for the public sector, particularly for repaying debt from infrastructure projects.

Tax Proceeds: Revenue from taxes levied on individuals or corporations by a government entity, or tax proceeds, are often used to pay for general operations, school budgets, police and fire services, road maintenance, libraries, health services, and other public projects. Depending on the level of government, revenue may be used for public works and services that contribute to climate adaptation and mitigation. There are a variety of types of taxes including payroll taxes, federal and state income taxes, sales taxes, property taxes, tariffs, estate taxes, and excise taxes.

Excise taxes, or taxes on specific goods or services, have the potential to generate revenue while incentivizing climate action. For example, a fossil fuel excise tax raises the price of fossil fuels to disincentivize use, while financing clean energy with the proceeds. Similarly, a carbon tax generates revenue from payment by the industry for carbon dioxide emissions. These taxes also provide a financial incentive for businesses and consumers to limit their consumption or innovate to find alternatives.

Tax Proceeds in Action: *Boulder, Colorado's Community, Culture, Resilience, and Safety Tax finances important city facilities and infrastructure projects in addition to providing matching funds for a number of community nonprofits. The 0.3% temporary sales tax was originally approved by voters in 2014 and was extended in 2017. Focus areas for the extended funding include modernizing Boulder's transportation system and advancing climate goals.*

Special Assessment District: A special assessment district is a value capture strategy that identifies property owners in a neighborhood or district that will directly benefit from a specific public infrastructure project. A surtax or fee is levied on property owners in

order to pay for the project and capture the benefit they will receive. Property within a special assessment district must receive a "direct and special" benefit from the project and revenue must not exceed the benefits created or the costs incurred. Special assessment districts have been used to extend public water, sewer, and roads to previously unserved places, for municipal parking structures, flood control projects, curb cuts, highway interchanges, or facility improvements. Special assessment districts are formed by enacting a local ordinance and fees may either be a flat rate or apportioned among the benefiting properties.

Special Assessment District in Action: *Biddeford, Maine proposed a special assessment district to help finance* the *Lincoln Garage and RiverWalk project as a backstop in the event of a revenue shortfall from parking fees.*

Tax Increment Financing (TIF): TIF is used by municipal governments to create revenue for development in a defined geographical area. TIF is based on anticipated increased property tax revenue within a district from a rise in property values once an improvement project is implemented (i.e. project improvements contribute to a rise in property value). The anticipated value of this estimated increased tax revenue increment is made available upfront to developers (from the sale of bonds or other investments) to help finance or jump-start the improvements. Bondholders are reimbursed when the increased tax revenue becomes available. The base tax revenue (i.e. the portion of tax proceeds occurring before project implementation) continues to flow to municipalities. TIF should only be used for projects that would not otherwise be financed. TIF may be appropriate for redevelopment or adaptation projects benefiting local property owners. However, TIF projects can be controversial due to potential unintended consequences like gentrification.

Tax Increment Financing in Action: *Cape Elizabeth, Maine established its town center as a TIF district in 2015, diverting tax revenue collected on increased property value within the district to fund sidewalk and stormwater improvements.*

Revenue from Chicago, Illinois' Central Loop TIF, active from 1997 to 2008, supported commercial green roofs to meet EPA Energy Star Cool Roof Standards. Chicago's TIFs currently fund adaptation and climate-related projects, such as green alleys and wastewater infrastructure. Learn more on Adaptation Clearinghouse.

Joint Development: Joint development is when two or more municipalities, agencies, and/or developers enter into a binding legal agreement to share the cost, risks, and benefits of a project. In the private sector, similar agreements are known as joint ventures. Joint developments are beneficial when the various parties complement each other and contribute to costs that each individually may not have been able to take on. This pooling of resources gives the parties greater development power, creating more value to capture.

Joint Development in Action: *The Sacramento Regional Transit District (SacRT), Sacramento Municipal Utility District (SMUD), and GiddyUp EV jointly developed a high-speed electric vehicle charging hub at the Power Inn light rail station. GiddyUp EV paid for the parking spaces and owns and maintains the charging equipment. SMUD supplies power for the high-speed charging network. Revenue from charging station usage is shared between SacRT and GiddyUp. Read the U.S. Department of Transportation's Project Profile on the Sacramento High-Speed Electric Vehicle Charging Hub Project.*

Impact Investing: Impact investing connects investors' capital and business skills to social or environmental enterprises. Impact investors invest capital in enterprises that generate social or environmental goods, services, or ancillary benefits such as job creation, with expected financial returns. The goals are twofold in that investors aim to achieve positive environmental or social impact and financial gain. Thus, defining the impact goal and measures of success is critical. Generally, had the investor not stepped in to provide the enterprise the opportunity to experiment, scale up, or pursue impact objectives, the social or environmental benefits would not exist. In impact investing capital may be provided at a lower cost, greater amount, with longer terms, or greater flexibility than through conventional financing.

Impact Investing in Action: *In 2020, impact investment company* Arctaris*, whose investments aim to effect positive social, economic, and environmental change in underserved communities, purchased Saddleback Mountain in Rangeley, Maine. The investment enabled* Maine's third-largest ski area to reopen, *driving economic development and job creation in the region. Arctaris has also invested in facility improvements and plans are underway to develop a 5-megawatt solar farm that will power snowmaking equipment.*

Public-Private Partnership (P3): A public-private partnership is a cooperative arrangement between a public sector entity and a private sector company to finance and implement a project. P3s benefit from private sector technology and innovation, alongside public sector oversight and incentives. Compared to traditional public procurement processes, P3s can allow a project to be completed sooner. Beyond financial contributions, the private sector's role may include designing, completing, or implementing the project. Partner roles are responsibilities formalized in a contract, which is typically long-term (25-30 years). As with joint development, risks are shared in P3 arrangements. P3s are often used to finance and implement transportation, municipal, and environmental infrastructure projects.

Public-Private Partnership in Action: *Sebago Clean Waters created a P3 to fund* the *conservation of Maine's Sebago Lake watershed. Investment by private sector businesses* that *rely on a supply of clean water to operate (e.g. food and beverage industry) is repaid in the form of continued reliability, as funds are used to ensure a healthy watershed.*

Performance-Based Financing: Performance-based financing (also referred to as results-based financing and pay-for-performance) is a contractual agreement between a funder and an implementer that establishes specific outputs or outcomes an implementer must achieve in order to receive payment by the funder. Performance-based financing incentivizes cost-efficiency and high performance in order to achieve the desired goals. This approach minimizes the risk a funder takes on, as the implementer assumes the risk. However, the parties may need to pay start-up costs or have financial resources available in case results take time to yield a profit to pay for further development. There must also be reasonable assurance that the funder will be around to pay when performance standards are reached. Performance-based financing projects tend to be long-term and within the transportation, water, and sanitization, solid waste management, tourism, land use, energy, or industrial sectors.

Performance-Based Financing in Action: *In 2016, DC Water, the drinking water and wastewater treatment provider for the greater District of Columbia area, issued an environmental impact bond incorporating performance-based financing. DC Water used revenue from bond sales to pay for green infrastructure investments to manage stormwater runoff and reduce combined sewer overflows. In this model, DC Water shares performance risk with investors by reducing the bond interest payout to investors in the event of underperformance in reducing stormwater flow. If green infrastructure investments perform better than anticipated, DC Water will increase the payout to investors. Read more about DC Water's Environmental Impact Bond in the EPA's write-up.*

Insurance: Insurance is the guarantee of financial reimbursement in the event of a specified event in exchange for payments (i.e. premiums). Insurance companies pool premiums from a large customer base in order to stay ahead of their collective risk of reimbursement and to make insurance affordable. Insurance can help communities, businesses, and individuals financially manage climate risks and adapt when disasters occur. Examples of climate risks that can be insured against include flooding, sea-level rise, coastal ecosystem destruction, crop yield loss, and other natural disasters. Insurance can and should be used as one financial tool in a comprehensive climate adaptation strategy.

National Flood Insurance Program (NFIP): The Federal Emergency Management Agency's (FEMA) National Flood Insurance Program (NFIP) provides insurance to property owners, renters, and businesses through a public network of insurance companies. The NFIP requires homes and businesses with government-backed lender mortgages in high-risk areas to have flood insurance. FEMA's Community Rating System (CRS) incentivizes floodplain management and risk reduction through discounts (of 5-45%) on NFIP premiums. Savings can be used to finance both upfront and long-term flood risk reduction measures.

National Flood Insurance Program in Action: *The Maine Flood Resilience Checklist, "a self-assessment tool for Maine's coastal communities to evaluate vulnerability to flood hazards and increase resilience", was designed to incorporate FEMA Community*

Rating System creditable activities. Communities may choose to use the checklist as a starting point to participate in the CRS program.

Parametric Insurance: Parametric insurance reimburses the purchaser for a set amount when a trigger event occurs. The payout is predetermined, rather than based on physical damage such as property value lost. Thus, the payout can cover a wider range of losses beyond just physical damage. This flexibility is a key benefit, however, there is a risk that the payout may not cover all financial losses. Often trigger events and payouts are defined along a set of pre-identified parameters – if a trigger event reaches the more extreme parameters, a greater payout occurs (e.g. a 500-year flood corresponds to a higher payout). Because damage assessments are not required, overhead costs are lower and payouts occur faster, making recovery funds available more quickly. Parametric insurance is a useful tool as communities, businesses, and individuals face new and emerging risks that they may not be able to insure otherwise.

Parametric Insurance in Action: *Commercial insurance company Swiss Re provides custom-made parametric insurance coverage for immediate financial protection from parametrically measurable events ranging from mild winters to earthquakes to pandemics. One parametric insurance option offered by Swiss Re, QUAKE, is a rapid payout earthquake insurance product that pays based on the intensity of the event. A Japanese customer received a QUAKE payout just 3 days after the confirmation of the intensity level of a February 2021 earthquake in Fukushima, Japan. Swiss Re offers similar solutions of FLOW, HAIL, and STORM.*

Reinsurance: At its most basic, reinsurance is insurance for insurers. Insurers pay a premium to reinsurers, thereby transferring a portion of the risk they cover to the reinsurer. Reinsurance is relevant for risks with low probabilities of occurrence, but high potential losses. Reinsurance provides financial protection to insurance companies and the insured when a natural disaster or catastrophe occurs, allowing for economic resilience and adaptation.

Reinsurance in Action: *Gen Re is a direct reinsurance operator selling only to insurers since 1929. Gen Re delivers reinsurance to the Life/Health and Property/Casualty insurance industry through a range of products, tools, and resources. Under the Property/Casualty sector, Gen Re offers Property, Energy, and Marine reinsurance that provides solutions to coverages and exposures such as farm and ranch owners; inland and ocean marine; homeowners and householders, and individual perils of flood wildfire, wind, hail, and earthquakes. As a reinsurer, Gen Re underwrites and assesses each risk alongside the insurer.*

Local Government Funding Agency (LGFA): A local government funding agency is a financial institution owned by a cooperative of local governments. An LGFA enables the cooperative to

access financial markets that would be otherwise closed to small borrowers such as small municipalities. Acting as a cooperative can provide governments with creditworthiness and access to loans otherwise off-limits at improved interest rates. Other benefits include shared processing costs, marketing ability, and access to financial expertise. As government-owned entities, LGFAs reinvest any surplus funds into public activities.

> ***Bond Bank:*** A bond bank is an LGFA that consolidates multiple bond issues from participating local governments to increase their financial power. Bond banks typically issue large-scale bonds twice a year, as compared to the smaller and more frequent issuances of individual municipalities or states. This consolidation lowers the cost of issuing bonds and decreases the risk to the investor.

> ***Bond Bank in Action:*** *The Maine Municipal Bond Bank was established in 1971 and is administered by a board of Governor-appointed commissioners. The Bond Bank works with municipalities to provide cost effective financing programs through the sale of its highly rated tax-exempt bonds. Bond Bank programs include: TransCap and GARVEE Bond Programs to fund transportation projects; Maine PowerOptions energy purchasing consortium program; School Revolving Renovation Program; the Drinking and Clean Water State Revolving Funds; and the General Resolution Program.*

Green or Resilience Bank: Green or resilience banks are publicly sponsored, mission-oriented financing authorities. These public or quasi-public institutions combine private and public funds and expertise. Green and resilience banks typically have a broad mission to support climate change mitigation and adaptation, as well as more specific target outputs or investment areas. These banks lend capital to mission-aligned projects with low transactional costs and, when fitting, longer terms. They are launched with funds from legislative action, taxes, or other contributions of public money. They attract private funds through techniques such as credit enhancements, which provide a third-party guarantee of repayment. Green and resilience banks may lend to projects including climate-smart and resilient infrastructure, renewable energy, water projects, reforestation, or clean transportation.

> ***Green Bank in Action:*** *Established in 2011, the Connecticut Green Bank is the nation's first green bank. The Green Bank works with private-sector investors to maximize public funds to create low-cost, long term financing options. The Green Bank has increased affordability and accessibility of green energy lending across the state. In its first 10 years, the Green Bank supported the creation of more than 25,000 green energy jobs in the state, while reducing the energy cost burden on over 56,000 families, businesses, and nonprofits.*

Credit Trading System: Credit trading systems, often referred to as "cap and trade," put a limit or "cap" on the units of pollution allowed within a specified area, such as carbon emissions or nutrient pollution in watersheds. Credit trading systems are regulated by governments, which also determine the cap. Pollutant credits are distributed via permits to polluters, not to exceed the allowable total amount. Polluters that exceed their credit limit can buy credits from those

reducing pollution below their permitted limit. Violators that fail to limit their pollution or purchase adequate credits may be taxed or fined. Typically, the total number of credits issued decreases over time to contribute to overall pollution reduction. This system provides a financial incentive for polluters to implement prevention measures. Credit trading systems may also allow exchanges with non-permit holders for approved pollution reduction or capture activities, known as outsourcing.

Credit Trading System in Action: *Maryland, Pennsylvania, and Virginia established water quality credit trading programs to manage federally regulated pollutants loads in Chesapeake Bay. Under these programs, polluters, such as wastewater treatment plants, can buy credits to offset their nutrient pollution or generate and sell credits based on pollution reduction activities. Other parties, such as farms, can generate and sell credits based on pollution reduction or removal best practices. To learn more, read the EPA's overview of Trading and Offsets in the Chesapeake Bay Watershed.*

Revolving Loan Fund: Revolving loan funds are established by an initial investment that is then loaned out; as loans are repaid, the fund is replenished, and that capital can be reloaned for additional projects. Revolving funds may lend to communities, private entities, nonprofits, or citizen groups. Alternately, an entity may establish an internal revolving loan fund to be replenished by project savings or profit. State revolving funds (e.g. Clean Water and Drinking Water State Revolving Funds) are created through federal grants (i.e. from U.S. EPA) and state appropriations to provide loans and other financial assistance to state and local projects.

Revolving Loan Fund in Action: *The Long Creek Restoration Project received a $2.1 million loan from Maine's Clean Water State Revolving Fund to implement a watershed restoration plan for Casco Bay. The no-interest loan enabled the installation of green infrastructure, including vegetative bioswales and soil media filters, to manage stormwater runoff onsite and reduce pollutant loadings in Casco Bay. With almost $600,000 in principal forgiveness, the project cost to communities was substantially reduced. To repay the loan, fees will be collected from private landowners, municipalities, and state agencies based on the impervious cover on their property. Learn more in EPA's case study on the Long Creek Restoration Project.*

Harvard University launched a Green Revolving Fund in 2002 to provide capital for projects that reduce the University's environmental impact and can be repaid in 5-10 years. The fund is replenished by the savings achieved by project-related efficiency improvements. Funded projects include a combined heat and power unit in Shad Hall and the installation of LED lights at Bright Hockey Arena.

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