



FINANCIAL MARKETS SUSTAINABILITY ENERGY EFFICIENCY FINANCE

District Heating Finance

What Is District Heating?

District heating distributes heat and hot water to residential, commercial and public buildings over a large area, often a town or city. This system of heating has been used for many years in Europe, especially Scandinavia, as well as in North America, China, and the countries of the Former Soviet Union. The greatest benefit of district heating is in generating economies of scale compared to the cost of individual heating systems. However, many systems today are inefficient and outdated due to obsolete equipment and lack of capital investment. This has led to high losses in heat production and distribution, and inefficiencies are compounded by the use of expensive fossil fuels. Simple efficiency upgrades can greatly enhance system performance and financial profitability, while reducing heat costs for end-users and environmental emissions.

How Do Projects Work?

- **Triggers for projects:** District heating upgrades are usually triggered by: i) unaffordable heat costs for customers, typically due to poor technical condition of the system or use of costly fossil fuels; ii) unreliable supply of heat caused by poor technical performance; and, iii) negative environmental impact caused by the fuel used, e.g. low quality brown coal.
- **Two types of sub-projects:** Upgrades usually involve: i) the replacement or retrofit of the heat source (boilers); and, ii) upgrades to the heat distribution network (pipelines and heat exchanger stations). Boiler replacements may include fuel-switching to replace use of fossil fuels (coal, heating oil and natural gas) with cleaner burning and economical alternatives, such as renewable biomass.
- **Additional revenue streams:** District heating systems may be connected to industrial facilities that generate waste heat as a by-product of production processes. This heat can be sold to generate additional income streams. In some cases, cogeneration units (combined generation of heat and electricity) can also be installed to increase overall efficiency and generate revenues from electricity sales.

What Are the Opportunities For Financial Institutions (FIs)?

- **Access to large market:** District heating systems are used in thousands of towns and cities worldwide, but many are technically obsolete or exhibit substantial over-capacity. There is high potential demand for refurbishing systems.
- **High capital expenditure needs:** System upgrades are often capital intensive, with capital costs ranging from several million dollars (US) for smaller systems to tens of

millions for larger systems. The involvement of local FIs is crucial for projects to be realized. Appropriate system upgrades can generate substantial cost-savings that contribute to financing the upfront investment.

- **Stable market with long-term perspectives:** District heating customers typically comprise households, public buildings and small businesses. Once connected to the system, these customers have little incentive to disconnect, especially since the heat they receive is generally more economical than heat generated by a smaller source. Efficiency upgrades enable operators to provide competitive services to this broadly stable and predictable market.
- **Low and positive financial impact on end-users:** District heating upgrades can have a positive financial impact on operators and customers. Use of lower cost fuels, modern equipment and improved distribution networks can reduce operating costs and lower heat prices, even when considering the high financing costs of system upgrades.
- **Positive social and environmental impact:** In addition to improving heating services to communities, efficiency upgrades can have a substantial positive environmental impact—for example, by replacing a dirty coal-fired boiler with a high-tech biomass-fired boiler. FIs can enjoy reputational benefits associated with supporting these projects with policy-makers, shareholders, and customers.

Sample District Heating Project: Fuel Switching, Slovakia

Purpose	Replacement of obsolete natural gas fired boilers with biomass-fired boilers for district heating system serving small town of 12,000 inhabitants
FI	IFC partner bank in Slovakia
Borrower	District heating system operator (SPV established to operate the system; also a JV between private company and the municipality).
End-User	Households
IFC role	Risk sharing and technical assistance
Project size	US\$ 4.8 million
Loan amount	US\$ 3.8 million (80%)
Loan maturity	12 years
Simple payback	8.6 years
Energy cost-saving	24% as a result of wood being cheaper than natural gas
Environmental impact	Reduced of carbon emissions by 12,729 tons annually



FINANCIAL MARKETS SUSTAINABILITY ENERGY EFFICIENCY FINANCE

District Heating Finance

What Are The Key Issues—Questions To Ask?

- **Regulatory environment:** District heating systems are monopolistic by nature of their business and their operations are usually regulated by independent regulatory authorities that have certain rights of oversight. Understanding the local regulatory environment, and its future development, is crucial for project success.
- **State and municipal involvement:** In many countries, district heating companies are run by state or municipal entities. Years of under investment and/or artificially low heat prices may have compounded inefficiencies, leaving district heating companies unable to bear the necessary investment cost for system upgrades.
- **Technical complexity:** Maintaining high service quality is a crucial success factor. Projects may be technically complex and require refurbishment of distribution networks as well as heat generation equipment to ensure efficiency benefits reach the end-user. An integrated approach is likely to maximize system performance and service quality, and thus ensure the financial success of the project.

How Can IFC Help?

IFC has ten years experience working with partner FIs in the area of sustainable energy finance, supported by world class experts. IFC has supported leading banks in Central Europe to finance district heating investments. IFC's offering includes:

- **Partnership:** IFC partners with selected client FIs to develop approaches to take advantage of energy efficiency and renewable energy market opportunities.
- **Product design and structuring:** IFC can provide sector expertise to FIs to assist in product design and financial structuring.
- **Financial offering:** IFC offers flexible finance options to FIs, including medium to long term credit lines and guarantees. For sustainable energy finance, IFC may also offer special financial enhancements, such as partial first loss coverage on portfolios and performance incentives
- **Technical Assistance:** IFC may provide customized technical assistance, including advisors, market analysis, feasibility studies, energy savings calculations, project preparation assistance, audits, engineering support, and capacity building programs.
- **Ongoing innovation:** IFC continuously develops its offering in the area of sustainable energy finance based on extensive experience, client needs, and market developments. New product offerings in development include enabling client FIs and their customers to access carbon credit revenue streams as an additional benefit to sustainable energy projects.



Who To Contact At IFC?

Eva Szalkai

evszalkai@ifc.org
T: + 1 202 473 0755

Russell Sturm

rsturm@ifc.org
T: + 1 202 458 9668



The mission of IFC is to promote sustainable private sector investment in developing and transition countries, helping to reduce poverty and improve people's lives. Since its founding in 1956 through FY05, IFC has committed more than \$49 billion of its own funds and arranged \$24 billion in syndications for 3,319 companies in 140 developing countries. For more information, visit www.ifc.org.