



Bankability of Urban Waste Heat Recovery Investments

“Roadmaps are ready: now what??

Exploring the realities of the heat transition”

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Bankability

“Bankable: project or proposal that has sufficient collateral, future cash flow, and high probability of success, to be acceptable to institutional lenders for financing” (BusinessDictionary.com)

“Where the project is to be financed through limited or non-recourse project financing, Lenders will demand a great deal of outcome certainty in terms of time and cost because their security is heavily reliant on sufficient and timely revenue from the operation phase” (PWC)

“Some of the key technical risks that need to be allocated and managed to ensure the successful financing of the project are: Construction and Completion Risk (CAPEX, delays, ...), Operating Risks (performance, ...), Demand Risk (competitors, ...)” (World Bank)

Financial and legal aspects are excluded from the analysis

Urban Waste Heat Recovery Investments

- sources available within cities, such as:
 - datacenters
 - underground stations
 - sewage system
 - tertiary buildings
- integration in existing or new DH systems
- mature technologies
 - heat pumps
 - heat exchangers
- main actors involved:
 - WH owners
 - DH utility
 - local authorities

Presentation Outline

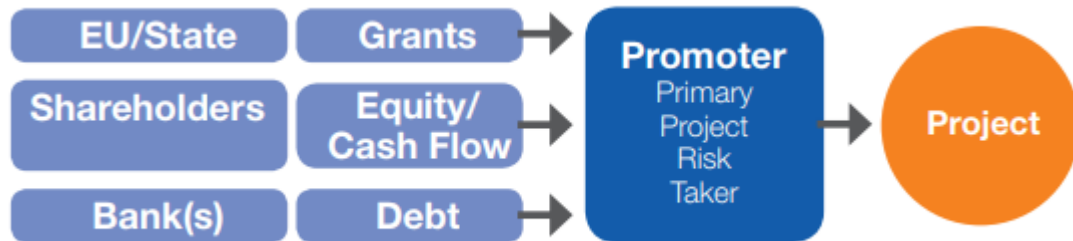
- Data Collection
- Corporate Vs. Project Finance
- Bankability Perspectives
- Main Bankability Criteria
- Bankability Key Performance Indicators
- Barriers and Needs
- Proposal for a UWHR Credit Facility
- Conclusions

Data Collection

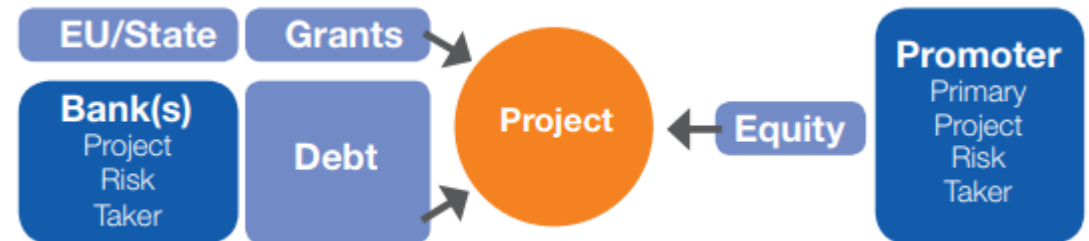
- Interviews with stakeholders in 8 countries (SE, DK, IT, BE, GE, RO, FR, ES):
 - DH operators
 - Policy makers
 - Investors
 - Customers
 - Owners of UWH
- Analysis, among others, of criteria by:
 - Equator Principles
 - EIB Private Finance for Energy Efficiency (PF4EE) criteria
 - EBRD Green Economy Financing Facilities (GEFF) criteria
 - Technical Due Diligence Reports for Various Banks/Funds/Investors and Types of Projects

Corporate vs. Project Finance

Corporate Finance



Project Finance



Source: EIB

Corporate vs. Project Finance

Bankability Assessment

What is the borrower's ability to repay the loan and pay interest?

Corporate Finance Model

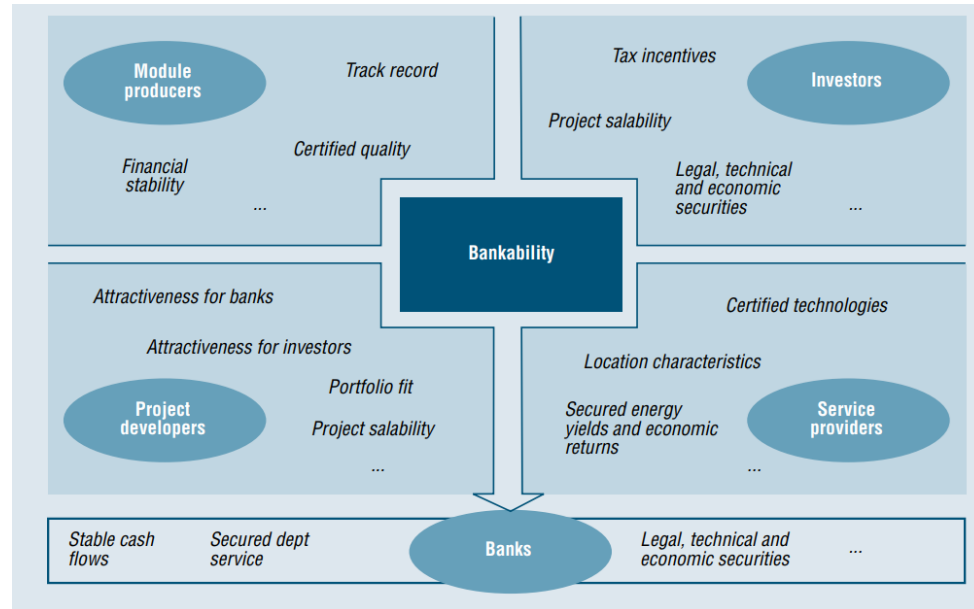
- Bankability of transactions in the Corporate Finance Model primarily depends on the creditworthiness of the promoter, typically also being the borrower.
- The creditworthiness is primarily driven by the firm's ability to service the debt (repayments and interest payments).
- The assessment of a company's ability to service debt mainly focuses on its profitability, the soundness of its balance sheet and its ability to generate sustainable cash flows.
- Subject to the acceptable creditworthiness of the borrower, the Corporate Finance Model can be applied to basically all kinds of ETP projects - even relatively risky basic R&D projects as the debt service is dissociated from the project risk.

Project Finance Model

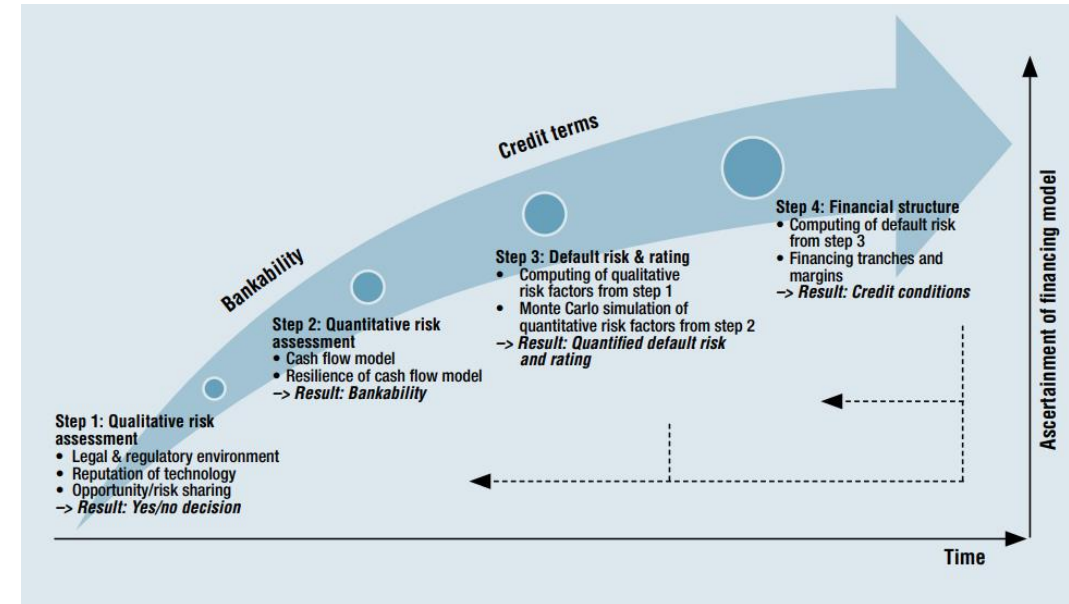
- The assessment of bankability is based on the project itself, which is typically financially and legally isolated in an SPV (i.e. ring-fenced with no or limited recourse to the promoter).
- Project bankability primarily depends on the acceptable performance of the following four key parameters:
 - the SPV's ability to generate sufficient stable stand-alone cash flows/resources to service the debt,
 - the proportion of equity in the SPV,
 - the sustainable value of project assets and/or other security,
 - other structural elements/risks of the financing operation, such as the tenor, financial covenants, political risks.

Source: EIB

Bankability Perspectives



Source: Lüdeke-Freund & Olbert (2011)



Source: Lüdeke-Freund et al. (2011)

Main Bankability Criteria

Technical:

- stable availability of waste heat source
- maturity of technical solution → availability of success cases / importance of pilot projects
- existence of infrastructure → e.g. integration of UWHR in existing DHC systems
- clearly defined investment cost structure → link with business model criteria
- consistency of project implementation time schedule

Importance of Technical Due Diligence

Main Bankability Criteria

Business plan:

- profitable ownership model → interactions among public/private sector
- low uncertainty on CAPEX → link with technical criteria
- low uncertainty on OPEX and revenues → link with contracts criteria
- clear legal and permitting framework → avoid project implementation delays

«Nice to have»:

- availability of public incentives → rarely considered in decision on bankability
- environmental and social benefits → only for specific banks and credit facilities

Importance of BP Sensitivity Analysis

Bankability Key Performance Indicators

- Return on Equity (ROE)
- Annual Debt Service Coverage Ratio (ADSCR)
- Project Life Coverage Ratio
- Payback period
- Financial Internal Rate of Return (FIRR)
- Net Present Value (NPV)
- NPV to Investment Ratio

- CAPEX/OPEX per unit of avoided GHG emission
- reduction of GHG emissions

Conclusions

- need of pilot projects to:
 - demonstrate technical feasibility
 - prove economic profitability
 - collect monitored performance data on all project phases
 - generate technical and non-technical knowledge
- need of including UWHR in national and local regulations and strategies:
 - easier, faster, standard permitting process
- need of dedicated incentives or public funding schemes:
 - e.g.: UWHR Credit Facility

Proposal for a UWHR Credit Facility

- funds from National/Supranational Entities or Institutional Banks (long-term financing)
- credit guarantee fund by same Entities to cover technology/source-related risks
- implementation through one or more Commercial Banks in the EU (primary loans between funding entity and commercial banks, secondary loans between bank and project promoters)
- support of a Project Consultant to funding body and Commercial Banks
- proposed project cycle:
 - application by project proponent to commercial bank
 - preliminary creditworthiness decided by commercial bank
 - technical assessment by project consultant
 - loan signature between commercial bank and project proponents
 - project implementation by proponent
 - verification of results by project consultant
 - periodic reporting to funding bodies

Thanks for your attention

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