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Increasing the Market Uptake of Sustainable Bioenergy

Bioenergy Villages (BioVill) -From the idea to the business model of bioenergy villages



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Content: From Idea to Implementation





Find the right Partners

- Selecting the target villages
- Memorandum of Understanding
- Create a local working group
- Start to involve the citizens









Concepts and Information

- Strategic goals for the village
- Create concepts
- Involve local decision makers
- Provide information & knowledge
 - Initiating a help desk
 - Citizens information days
 - Provide best-practice examples
 - Information material
 - Expert exchange
 - Study tours
 - Tools







Framework Conditions

- National policy framework conditions
- Regional and local framework conditions
- Building structure and heat demand survey
- Biomass potentials local & regional
- Available infrastructure
- Survey on citizens suggestions & ideas





Techno-economic Prefeasibility

- Project configuration
 - Type of biomass & supply
 - Logistics
 - Type of energy production
 - Energy consumers
- Plant design
 - Plant location
 - Boiler(s) capacity
 - Back-up/peak load boiler
 - Operational mode
- District Heating
 - Heating network design
 - Length, heat load, seasonal variation...







Techno-economic Prefeasibility (2)

- Economic assessment
- Heat and power production
 Individual heating systems
 Social & environmental impact
 - GHG emission reduction,
 - Energy & cost savings, jobs etc.
- Capacity building
- Stakeholder involvement
- Reconfiguration
- New assessment

50.000 45.000 40.000 35.000 30.000 25.000 20.000 15.000 10.000 5.000 2018 2020 2022 2024 2026 2028 2042

Figure(s): Development of outgoing payments (operating and capital expenditures



2036 2030 2032 2034 2038 2040



Business Model





Bioenergy Sources





Energy Demand

Top-down approach:

- National energy balance data
- Sector energy data



Bottom-up approach:

 Accurate figures on the actual and future remaining heat demand of each building

Please consider: Energy conservation measures



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Technology

- Biomass supply technology
- Biomass logistic chain
- Biomass heating plant (small and medium scale)
- Bioenergy distribution technologies
- Planning: technological, economic, environmental and social criteria



Source: Fernwärme GmbH Neumarkt



Source: KEA



Economic Concept and Financing

Economic calculation:

- Life-cycle calculation of the project (NPV, IRR, calculatory heat generation price)
- Cash-flow calculation

Financing:

- National funds (ministries, ...)
- European and other funds (World bank..)



Subsidies are necessary preconditions for economic bioenergy projects

- Checking the conditions of the current credit lines
- → Availability of funds
- → Start of the programmes



Operating and Ownership Model

Used in BioVill Project:

- Municipal investment
- ESCO-model
- Cooperative model





Risks

	Risks	De-risking-instruments
Initial phase	Long clarification process	Good project management , visiting best practices
Planning phase	Inadequate current technical information , economic calculation and cost data, subsidy programmes, number of heat consumers, energy prices, ECM performance risks	Involving experienced planners + heat consumers, detailed planning, modelling technical measures, tight schedule, price adjustment clauses in the contracts
Implementa- tion phase	Pre-financing costs , bankruptcies, longer delivery times , availability of the technical equipment, problems such as a rocky ground, pollutants spread in soil, uncoordinated planning process	Detailed planning, bank guarantees
Operation phase	Default risk of the technical devices, quality of the biomass Energy savings	Guarantees/warranties from manufac- turers, building automation + emergency management systems, M&V, qualified staff, building or hazard insurances, quality criteria of the biomass material



Contractual Issues



Source: Dominik Rutz, WIP



Initiating Bioenergy Villages Means

- Communicating and networking with stakeholders very actively
- Cooperating with proficient planners
- Clarifying the biomass delivery and the technical concept
- Reducing the energy demand in the buildings
- Defining implementation phases
- Checking financial opportunities and subsidy programmes
- Determining investments and developing ownership models
- Involving experienced investors and operators
- Capacity building

 \rightarrow Creating a suitable business model for the individual project



Thank you for your attention



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