

Model 12

Community based Renewables - Climate Community Saerbeck

Saerbeck – Germany

OWNERSHIP	PUBLIC
Program authority	Municipality of Saerbeck
Program Delivery unit	<i>Energiemanagement</i> Saerbeck (Project Management Office)
Implementation Model	Production of Renewable Energy (Separate Contractor Based)
Operating Services	Marketer Assessor Project Manager
Projects Financed	Renewable Energy Energy Efficiency
Ambition/targets	To achieve climate neutrality and be energy autonomous by 2030
Beneficiaries	Multiple societal stakeholders: citizens, associations, local authorities, businesses, farmers, regional authorities
Funding Vehicle	Property Owners/Own funds (Local Authorities, Businesses) Citizens Public Private Partnerships Financial institutions
Financial Instruments	Equity Loans Grants

Summary

“*Klimakommune Saerbeck*” (Climate Community Saerbeck), a local energy initiative of the community of Saerbeck, is a success story on how to organise energy transitions at local level.

It actually started in 2008 when the municipality, after very positive experiences with results of a citizens driven initiative to install photovoltaic (PV) panels on the roofs of municipal buildings, adopted a resolution to switch the energy supply of the whole municipality to renewable energy sources. Its objective was to become independent from the incumbent energy supplier and assure that the whole energy power supply in Saerbeck (for families, businesses and public lighting) be based on own produced renewable energies by 2030.

One year later, in 2009, the municipality won a regional competition organised by the federal state of North Rhine-Westphalia and was allowed to call itself “Nordrhein-Westfalen Climate Community of

the future” opening the door for funding and marking the beginning of the path towards execution of their ambition to achieve climate neutrality and be energy autonomous by 2030.

In the context of the regional competition the Saerbeck roadmap to achieving the ambition had been set forth in the municipality's Integrated Climate Protection and Climate Adaptation Concept (in German IKKK, *Integriertes Klimaschutz- und Klimaanpassungskonzept*), describing seven areas of action, out of which three are lead projects, and 150 single measures.

Cornerstone of the local energy initiative was the successful association of and cooperation between the municipality of Saerbeck and multiple societal stakeholders (citizens, associations, the planning office, local government, businesses and farmers,...). The driving force was its steering committee, composed of 12 to 14 individuals (residents, scientists, economists, engineers, ...), including a Project Manager, a Communications Manager and the municipality's Mayor.

Today the community has installed over 438 PV installations on the roofs of the private houses and schools, it is running its own local electricity grid, it has built a central heating plant conveying the concept of renewables in an educative manner and has transformed a former ammunition park in a bio-energy park including 7 wind turbines, a biogas plant, a bio waste treatment plant with a digestion stage and a PV park. The community produces about 3,5 times more renewable energy than the local consumption and the annual per capita CO2 emissions have decreased from 9 tons to 5,5 tons

How does it work?

Basis of the implementation of the Climate Community's energy transition is the execution of the Climate Protection and Climate Adaptation Concept (described in the Saerbecker Roadmap consisting of 7 areas of action and 150 single measures), and specifically three key projects :

1. The sunny side of Saerbeck (*Saerbecker Sonnenseite*)
2. Saerbeck Insights (*Saerbecker Einsichten*)
3. Steinfurt Material Flows (*Steinfurter Stoffströme*) or the Bioenergy Park

The project “The Sunny Side of Saerbeck”) focuses on investigating the potentials of energy efficiency improvements and renewables applications in private and industrial buildings. The aim was to make citizens of Saerbeck part of the project of the Climate Community by encouraging them to install PV panels on the roof of their houses, farms and schools and to invest into making their houses and buildings more energy efficient (e.g. building insulation and the conversion of the primary energy supply to renewable resources)

An example is the collaboration with the local secondary school to determine the PV potential for the village's private buildings and to determine suitable roof areas for the capture of solar energy. Citizens who wanted to join the initiative could get specific funding from local banks (e.g. Kreissparkasse Steinfurt and Volksbank Saerbeck) and incentives and obtain energy consultancy.

The project “Saerbeck Insights-future energies made transparent” focuses on making topics such as energy savings, energy generation and climate protection transparent and comprehensible to everyone.

The core of this project is the transparent heating plant in the town centre, a system of two large wood-pellet-fired heating boilers operating behind a glass façade to supply heat through a local heat-network to 2 schools, 2 sports facilities, a kindergarten and 4 other community buildings. The project also includes an “Energy Experience Path” representing Saerbeck’s climate education concept and specifically calling for the involvement of the community.

This central heating plant is also the community’s information platform and communication hub for all questions concerning climate protection, climate adaptation and the use of renewable energies, it is the place where the monthly “Energiestammtisch” or energy round table meeting is being held and it serves as the Climate Community’s administrative office.

The project required an investment of 1,5M € and over 80% of the amount was covered by government grants.

The project “Steinfurt Material Flows” (*Steinfurter Stoffströme*) focuses on maximising synergy effects in the area of regional materials flow. It crystallised in the Bio Energy Park, which the community developed on the 90 ha site of a former munitions depot of the German Army acquired by the municipality in 2011. The Bioenergy park is host to a wind farm, a solar power park, a biogas plant and a biomass composting plant and is able to generate 29MW renewable energy power.

- The wind farm totals 7 wind turbines of 3-megawatt each.
- The solar power park features 24,000 PV panels installed in 2012 on the bunker walls. The park has a capacity of 5,7 MWpeak (can supply 1700 households)
- The biogas plant receives input of 300 ha of corn fields of 17 local farmers and the technical support is provided by local biogas firm Envitec.
- The composting plant takes care of the fermentation of all biological waste of Region Steinfurt (45K tonnes/year), it has a cogeneration capacity of 1MW electric power and 1MW heat, and has its own wind turbine (one of the seven).

Currently an investment amount of 70M € has been spent on the Bioenergy Park, completely financed by local and regional investors and citizens.

With the financial help of the federal state of Nordrhein-Westfalen and the EU the community is currently running a feasibility study on transformation and storage of renewable energy on the Bioenergy park site. It is testing storage capacity techniques based on Lithium-ion technology, power-to-gas, Redox-flow technology and on natrium-sulfur batteries.

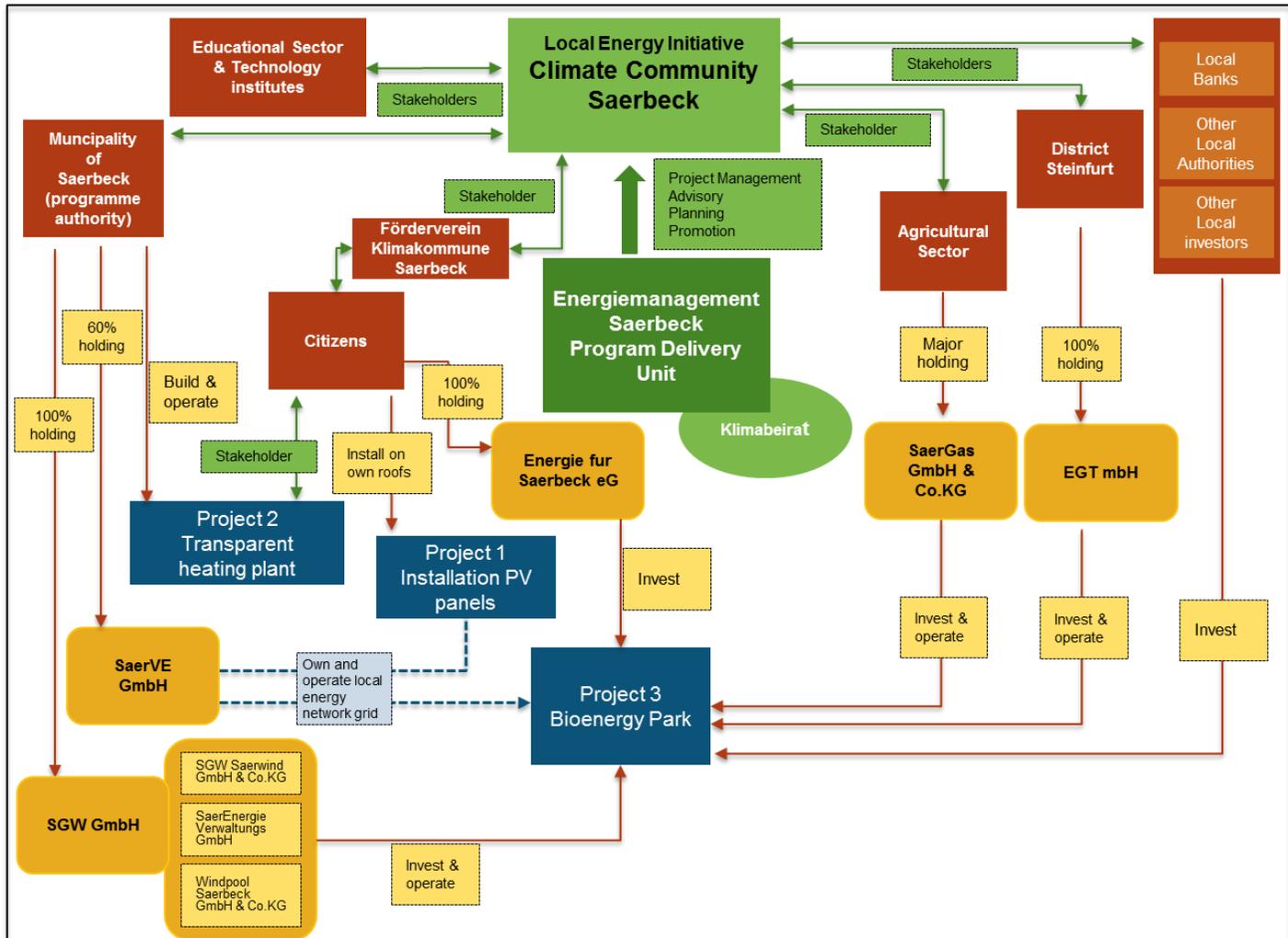
It should also be noticed that the municipality is also operating its own (and only) local electricity grid through SaerVE mbH, participated for 60% by the municipality of Saerbeck and 40% by Stadtwerke Lengerich, a local (inter-municipal) energy provider.

Overview of investment amounts and funding of projects:

Projects	Investors/funding	Capacity electrical	Capacity thermal	Investment in M€	Subsidies /grants

480 PV installations on roofs	Citizens	9,9MW peak		unknown	specific grants and incentives
Transparent heating plant	Municipality of Saerbeck			1,5	80% subsidy from government
<i>Bio-energy parc :</i>					
PV power Parc	63% citizens coop. "Energie for Saerbeck", 37% local Saerbeck investors	5,7MW peak		9,5	
1 wind turbine	Citizens cooperative "Energie for Saerbeck"	3,0 MW		5	
1 wind turbine	SGW (100% municipality of Saerbeck)	3,0 MW		5	
1 wind turbine	EGST (District of Steinfurt)	3,0 MW		5	
1 wind turbine	Sparkasse (savingsbank) Steinfurt (regional investors)	3,0 MW		5	
3 wind turbines	Local Saerbeck investors	9,0 MW		15	
Biogas plant	Saergas GmbH & Co. KG	1,0 MW	1,0 MW	10 (?)	
Composting plant	EGST (District of Steinfurt)	1,0 MW	1,0 MW	15	
		38,6MW		71,5M €	

Fig 1. Major operational and investment flows



The programme delivery unit

The programme delivery structure behind the Climate Community Saerbeck is actually a tight cooperation between *Energiemanagement Saerbeck*, which is the Project Management structure of the municipality and the *Klimabeirat* or the climate advisory/steering committee established by the Mayor of Saerbeck. This committee consists of 12-14 individuals from the local community (residents, scientists, economists, engineers,...), including the project manager, a communications manager and the Mayor.

Energiemanagement Saerbeck plays a crucial role when addressing energy issues and the implementation of the Climate Concept. It has the expert knowledge, acts as translator and communicator in the outside society and towards energy institutions such as the *Deutsche Energie-Agentur* (German Energy Agency) or the *Bundesverband WindEnergie* (German Wind Energy Association).

It acts as marketer, promotor, coordinator and project manager of the Climate Community's energy transition strategy. This is all the more true for the role of the project manager who liaises people and individual projects with the overall Climate concept of Saerbeck.

The *Klimabeirat* represents a broad range of stakeholders and actors such as the educational sector, citizens associations, the Municipality of Saerbeck, the agricultural sector, schools & kindergarten, external experts, regional authorities, industry and businesses, financial institutions and other local partners. The steering group was called to develop the climate change adaptation and mitigation concept, to work out the strategy, the goals and the planning process with key roles for the Mayor, with whom final decisions lay, and the planner.

The working of the Climate Community is also supported by the *Förderverein*, a booster club of the citizens of Saerbeck.

Financial support came from different sources and parties such as the 1,1 M€ grant from the federal state of North Rhine Westphalia thanks to winning the Energy competition of 2008, the staff cost of a project manager financed by the Federal Environmental Ministry or the work and effort put in by the staff of the municipality and especially the Mayor and some other grants from NRW and from European Union level.

Legal structure	None
Shareholder description	N/A
Equity	N/A
Shareholders	N/A
Program dedicated staff	Unknown
Program operational costs	Unknown

Organization and partnerships

Climate Community Saerbeck (*Klimakommune Saerbeck*): local energy initiative of the community of Saerbeck, a cooperation of multiple societal stakeholders (municipality Saerbeck, district Steinfurt, civil associations, private and public education sector, agricultural sector, businesses and industry, local and regional organisations, financial institutions, other local and regional authorities,...)

Municipality of Saerbeck (Mayor's office): program and political initiator, drives the programme delivery unit and supports part of the operating costs of the delivery unit, invests in the RES projects through SaerVE and SGW GmbH (and its subsidiaries and limited partnerships)

Advisory/Steering Committee: developed the Climate Protection and Climate Adaptation Concept and the strategy.

Energiemanagement Saerbeck: Project Management and Planning Office. Offers the program delivery unit services: marketer and promotor, project manager, advice and planning.

Förderverein Klimakommune Saerbeck: A platform of citizen engagement and participation. Non-profit association or booster club created to support the work of the Climate Community.

Citizens Cooperative "Energie für Saerbeck" eG (eingetragene Genossenschaft): about 400 inhabitants with 4 Mio €, minimum investment: 1.000 €, maximum investment: 20.000€. Is an important investor in the RES projects. Has invested in the solar park and in 1 wind turbine at the bioenergy park site.

SaerVE or Saerbecker Ver- und Entsorgungsbetriebe GmbH: Owns the electricity concessions from Saerbeck. Shareholders: Municipality of Saerbeck (60%), Stadtwerke Lengerich GmbH (inter municipal, local energy supplier), 40%

Saergas GmbH & Co. KG: private company, ownership of 17 farmers, Envitec and Maschinenring Steinfurt-Bentheim. Operates and owns the biogas plant.

EGT mbH (Entsorgungsgesellschaft des Kreises Steinfurt): Waste management company of District Steinfurt. Operator and owner of the bio composting plant.

SGW GmbH (Saerbecker Grundstücks- und Entwicklungsgesellschaft) and subsidiaries: Saerbeck's real estate and development company. The municipality's investment vehicle. Owner of 1 wind turbine.

Beneficiaries

Beneficiaries	Multiple societal stakeholders: citizens, associations, local authorities, businesses, farmers, regional authorities
Type of projects	Renewable Energy Energy Efficiency
Operational support	Project Management and planning through the project delivery unit
Financial support	Unknown

Funding mechanism

Program delivery unit funding	Energiemanagement Saerbeck (Project Management Office)
Projects Funding	Projects are being funded on own funds by the Municipality of Saerbeck, directly by its citizens or through their Citizens Cooperative, by farmers and their organisations, by businesses, specific local investors and local banks. Projects are also being funded by loans from banks.
Funding Vehicle	Property Owners/Own funds (Local Authorities, Businesses) Citizens Public Private Partnerships Financial institutions
Fund size	Not applicable
Fund type	Not applicable
Fund sources	Not applicable
Financial Instruments	Equity Loans Grants

Results

The community (citizens, farmers, municipality, businesses, local banks, regional partners,...) has invested over 70M € in different RES projects. These projects have been fully funded locally and regionally. .

It achieved the:

- Installation of 438 PV units on the roofs of the private houses and schools
- Building of a transparent central heating plant
- Construction of a bioenergy park hosting:
 - 7 wind turbines
 - 1 PV park with 24,000 panels
 - 1 biogas plant
 - 1 composting plant

The community runs its own local energy grid.

The community has electricity generation capacity of near 40MW and produces 3,5 times more renewable energy than its local consumption and the annual per capita CO2 emissions have decreased from 9 tons to 5,5 tons.

Contact details

Gemeinde Saerbeck

Ferrières-Str. 11
48369 Saerbeck

Phone: 02574-89 0

Fax: 02574-89 291

klimakommune@saerbeck.de

<http://www.klimakommune-saerbeck.de/>

Factsheet

General Info

Country	Germany
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Model Name	Community based Renewables - Climate Community Saerbeck
Date of creation	2008

Model Description

Ownership	Public Citizen Public/Citizen Private Public/Private
Program authority	Municipality of Saerbeck
Program delivery unit	<i>Energiemanagement</i> Saerbeck (Project Management Office)
Operating services	Marketer Assessor Project Manager
Implementation model	Production of Renewable Energy (Energy Supply Contracting)
Types of projects financed	Renewable Energy Energy Efficiency
Beneficiaries	Multiple societal stakeholders: citizens, associations, local authorities, businesses, farmers, regional authorities
Geographical coverage	Local (7,2 thousand inhabitants)

Financial Mode Description

Project funding	Public Citizen Private Public/Citizen
Project funding vehicle	Property Owners/Own funds (Local Authorities, Businesses) Citizens Public Private Partnerships Financial institutions
Financial instruments	Equity Loans Grants
Repayment model	Service Charge

Project risk Profile

Performance risk	Property owner
Recourse	Unknown
Financial risk	Property owner (own funds) Citizens Financial institutions

Model Requirements

Staff Requirements	Unknown
Equity Requirements	No equity required
Funding Requirements	Moderate Less than 5 million €

Model Key indicators

Investment volume since creation	70 million €
Size of project (or project portfolio)	
Level of average energy savings	

Development maturity

Development/implementation stage	Mature
Operational development maturity	Mature
Financial development maturity	Mature

Model Qualification

Level of establishment	Well established
Growth of potential	Large
Scalability of the model	High
Replicability of the model	Medium
Impact on public balance sheet	Medium

Sources

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