Analytical report for market and stakeholder analysis

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Output 4.1.3 - Germany

Based on expert interviews with financial stakeholders

Fraunhofer MOEZ

Content

1. Organizations

Organization	Type	Interviewee	Field of activity of organization
Deutsche Bundesstiftung Umwelt	Public	Dr. Jörg Lefèvre, Consultant for innovative techniques and products beneficial to the environment and health	Foundation that promotes innovative projects in favor of environmental protection
Erzgebirgssparkasse	Public	Mr. Roberto Müller, Corporate client consultant	Public savings bank
Greentec Awards	Public	Mr. Sven Krüger, Managing director	Europe's biggest environment and business award for environmental management and greentech
IHK Erfurt	Public	Dr. Ulrike Bohnhorst, Project manager climate protection, energy efficiency and innovations	Chamber of Industry and Commerce providing information and consultancy about relevant environmental and innovative topics
Innovations- und Technologiezentrum Bayern (ITZB)	Public	Mr. Rainer Lorenz, Director	Project management agency of the Bavarian State Ministry of Economy, Infrastructure, Transport and Technologies providing information on funding programs to technology-oriented start-up enterprises and SMEs
Investitionsbank Sachsen-Anhalt	Public	Ms. Doris Knöfel, Regional promotion advisor	Development bank of the federal state of Saxony-Anhalt
KfW Bankengruppe	Public	Ms. Anke Brüggemann, Authorized signatory and Dr. Volker Zimmermann, Industrial Economy/SMEs Innovation	German federal development and financing bank with special environmental and innovation promoting programs
Nbank	Public	Mr. Michael Krause, Promotion advisor	Development bank of the federal state of Lower Saxony

Sachsenbank	Public	Mr. Christian Adolf, Consultant of enterprise clients	Sachsenbank belongs to the regional bank of Baden-Wuerttemberg (LBBW) and is responsible for SME clients in Central Germany
Thüringer Aufbaubank	Public	Mr. Ronald Jost, Head of the customer center Central Thuringia	Development bank of the federal state of Thuringia
EuroNorm GmbH	Private, but manages public promotional program	Mr. Marcus Netzel, Public relations	Private Company working on behalf of the Federal Ministry of Economics and Technology within the framework of the central innovation program for SMEs (ZIM)
Bamboo Ventures GmbH	Private	Mr. Michael Streich, Founder	Venture Capital Company investing in clean and smart technologies; deal-by-deal engagement
Commerzbank Jena	Private	Mr. Thomas Keller and Mr. Markus Lubin, Business customer consultants	Commercial bank
Deutsche Zentral-Genossenschaftsbank (DZ-Bank) AG	Private	Ms. Alexandra Pohl, SME clients (agriculture, nature, renewable energies)	Central bank of the cooperative banks (the so-called Volks- und Raiffeisenbanken)
Energiegenossenschaft Chemnitz-Zwickau eG c/o Volksbank Chemnitz eG	Private	Mr. Ulrich von Brunn, Management board	Regional cooperative investing in solar and wind power
Gimv Venture Capital Germany	Private	Mr. Robert Gallenberger, Principal	European investment company in private equity and venture capital with relevant funds for cleantech
Intelligent Venture Capital	Private	Mr. Wilfried Frohnhofen, Managing director	Venture Capital Company investing i. a. in technology oriented start-ups
IQ2b GmbH	Private	Mr. Frank Siegmund, Managing director	Platform for Business Angels and innovative Start-ups in Thuringia
Munich Venture Partners	Private	Dr. Rolf Nagel, Partner	Cleantech Venture Capital Organization concentrated i. a. in the fields of sustainable environmental and energy technologies, green ICT (information and

			communications technology), energy efficiency
Netzwerk Nordbayern	Private	Dr. Benedikte Hatz, Managing director	Corporate network providing information and assistance to innovative technology companies
Pinova Capital GmbH	Private	Mr. Jörn Pelzer, Partner	Independent investment company providing equity financing focused on engineering and services
Sirius Venture Partners	Private	Mr. Johannes Peschko, Managing director	Venture Capital Company focused on investments in early phases, especially innovative technology
Ventegis Capital AG	Private	Dr. Stephan Beyer, Investment director	Private Equity/ Venture Capital i. a. within the sectors environmental technologies and energy
Volksbank Braunschweig Wolfsburg	Private	Mr. Dennis Busch, Head of corporate clients business and Mr. Dirk Seikowsky, Head of enterprise clients business	Commercial bank
ZFHN Zukunftsfonds Heilbronn GmbH & Co. KG	Private	Dr. Harald A. Wieland, Managing director	Venture capital company investing i. a. in the fields of energy and environment throughout all phases
B.A.U.M. ZUKUNFTS-FONDS eG	Innovative	Mr. Volker Schwikowski, Managing board	Fond realizing energy-efficient projects in SMEs or public institutions
BayBG Bayerische Beteiligungsgesellschaft mbH	Innovative	Mr. Andreas Heubl, Investmentmanager and Dr. Barbara Karch, Consultant for start-ups, for craft industries, trade business and for micro-mezzanine fond	Associated company of the Free State of Bavaria
Bayern Kapital	Innovative	Mr. Roman Huber, Managing director	Venture capital company financing young and innovative technology enterprises
BBB Bürgschaftsbank zu Berlin-Brandenburg GmbH	Innovative	Ms. Waltraud Wolf, Managing director	Guarantee bank of the federal states of Berlin and Brandenburg
BC Brandenburg Capital GmbH/ILB	Innovative	Mr. Michael Tönes, Head of division investment management	Affiliated company of the investment bank of the federal state of Brandenburg investing in

			growth and innovation oriented SMEs
BM H Beteiligungs-Managementgesellschaft Hessen mbH	Innovative	Mr. Jürgen Zabel, Managing director	Associated Company of the federal state of Hessen
Clean Invest GmbH	Innovative	Mr. Werner Philipp, Managing director	Citizen participation in solar and wind power
Georgieff Capital	Innovative	Mr. Dennis Born, Analyst	Cleantech investment focus in early and growth stage companies
Innovestment GmbH	Innovative	Mr. Thomas Herzog, Public Relations	Crowd funding platform with an auction-based investment model
Landesbank Baden-Württemberg (LBBW) Venture Capital GmbH	Innovative	Dr. Harald Poth, Head of division life science	Capital Venture Company investing i. a. in industrial technology and innovative services
MAMA Sustainable Incubation AG	Innovative	Mr. Volker Weber, Management board	Providing participations for companies in early stages in the fields of renewable energies, natural resources and non-fossil mobility
MBG Mittelständische Beteiligungsgesellschaft Schleswig-Holstein mbH	Innovative	Dr. Gerd-Rüdiger Steffen, Managing director and Mr. Georg Banner, Customer advisor	Associated Company of the federal state of Schleswig-Holstein with a special financing program for sustainable economics
Mikrofinanzagentur Thüringen	Innovative	Mr. Oliver Krahl, Head of Agency	Micro-financing credits for micro or small enterprises
Mittelständische Beteiligungsgesellschaft Sachsen mbH	Innovative	Mr. Markus H. Michalow, Managing director	Associated Company of the Free State of Saxony
Mittelständische Beteiligungsgesellschaft Sachsen-Anhalt mbH, Bürgschaftsbank Sachsen-Anhalt GmbH	Innovative	Mr. Heiko Paelecke, Managing director	Associated Company and guarantee bank of the federal state of Saxony-Anhalt
Seedmatch Dresden	Innovative	Mr. Jakob Carstens, Head of marketing	Crowd funding platform with the investment model "first come, first served"
Technologie Gründerfonds Sachsen TGFS	Innovative	Mr. Sören Schuster, Head of seed financing	Fond investing i. a. in environmental and energy technology (start-ups/seed phase/early stages)

2. Market and Stakeholder Analysis

2.1. General Overview of Relevant Public Organizations

Within the framework of the German National Sustainability Strategy "Prospects for Germany" of 2002 and the European Strategy on the Sustainable Use of Natural Resources of 2005 the German Resource Efficiency Programme (ProgRess) shall contribute to double raw materials productivity in Germany from 1994 to 2020.[1] Furthermore, the Appendix of ProgRess gives an excellent overview of the responsible organizations for policy formulation and their activities (the federal government, the Länder and the relevant associations and institutions.

In the course of this setting, a lot of public instruments have been implemented at the national as well as the federal state level to promote financing of resource efficiency and eco-innovation. The overall goal is a framework wherein innovations with sustainable features get a positive market value. In practice, public financing is mainly based on governmental grants and promotional loan programs.

One of the most important public organizations behind government grants in the respective federal states is the European Commission. Through its European Regional Development Fund (ERDF) it has established the key investment tool with a planned budget of up to EUR 366.8 billion in the upcoming program period from 2014 to 2020. The fund will be beneficent to structurally weaker regions in Germany, especially the so-called new federal states in the Eastern part of Germany. The managing authorities for the investment loans from the ERDF are the ministries of the federal states that allocate the budget to selected projects in the assisted regions. One emphasis of the ERDF thereby lies on nature protection and the promotion of energy efficiency through according projects. The former ERDF period of 2007-2013 has already made investments in energy efficiency in Germany, e.g. it invested EUR 4.3 million in a new power station laboratory in Dresden researching on energy efficiency.

Moreover, national governmental organizations in Germany do not only provide consulting services on energy efficiency criteria, but also promote financials instruments for resource efficiency. The Federal Ministry of Education and Research (BMBF), the Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB), and the Ministry for Economic Affairs and Energy (BMWi) provide a vast portfolio of investment programs especially addressing energy efficiency and eco-innovation. The budget for those programs is derived both from cooperation with the European Union and from the ministries' budgets which is approved by the Federal Government. The financial investments are often times administered and distributed not by the ministries themselves but through project promoters (such as Jülich or DLR) and/or development and investment banks.

The BMBF provides financial assistance with several research programs (e.g. "FONA" or "WING") focusing on eco-innovations in SMEs as well as promoting innovative efficient technologies. The BMUB decisively contributes to the German Resource Efficiency Programme ("ProgRess"), established the "Marktanreizprogramm zur Nutzung erneuerbarer Energien im Wärmemarkt" (market incentive for heating power generated from renewable energies), promotes the "Initiative Energieeffizienz", and also invests in energy efficiency projects in cooperation with the German

[1] http://www.bmu.de/fileadmin/bmu-import/files/pdfs/allgemein/application/pdf/progress_en_bf.pdf

development bank Kreditanstalt für Wiederaufbau or the Federal Office of Economics and Export Control (BAFA).
The Federal Government has arranged an energy efficiency fond within the BMWi in the context of the economic plan of the Federal Energy and Climate Fond. The BMWi has subsequently established a program supporting investments in energy efficient technologies in SMEs which running under the name "hocheffiziente Querschnittstechnologien" (highly efficient cross-section technologies). This program is coordinated by the BAFA and supported more than 900 applications with EUR 9.4 million in 2012.

The Kreditanstalt für Wiederaufbau (KfW) is the German development bank operating nationwide. Additionally to this, every federal state has its own development and investment bank with the target to promote companies or their production sites located in the federal state.

According to several interviewees, the so called house bank principle represents an obstacle to receive public funds in Germany. The public institutions are not allowed to be in competition to private ones. That is why the German company first has to address their private bank. The private banks have then to proof if public funding instruments are suitable for the capital-seeking companies and conduct the further application process. Within the whole credit process the house banks are liable for the creditworthiness of their customers to the KfW. In return, as an interviewee further stated, the compensation for the above mentioned service for private banks in comparison to the connected work expenditures and the risk taking is very low.

As common practice, public institutions in Germany are using a standardized rating system to assess the applications of support including the main criteria valid for all industries. By today, there are no special criteria that take efforts and savings potential concerning resources and eco-innovations into account.

Usually, the company or the R&D and implementation process has to be sited in Germany. A further criterion for public financing is that new jobs have to be created within the company.

As expected by the interviewees, that public subsidies in Germany and the European Union will be significantly reduced in the next couple of years. Therefore new and innovative financing instruments - also public ones - have to be crucially extended. Therewith, market relevant organizations, like regional banks, chambers of industry and commerce should get more influence in the creation process of innovative financing instruments. A much more decentralized infrastructure of capital providers at the national, but especially at the federal state level could be preferable to provide more individualized and efficient instruments.

Public evaluations about the application of the funds and the effects of the measures to promote resource efficiency still have to be carried out, as most of the public instruments financing resource efficiency are yet in their trial periods or even have still to be implemented.

As one promising innovative financing instrument that could foster eco-innovation, the interviewee of a federal development and investment bank proposed a revolving loan or shareholdings which would constitute temporary financial support but have to be paid back after some years (maybe also with low interest rates).

Especially the KfW provides assistance to German small and medium enterprises (SMEs) including individual entrepreneurs and start-ups. In addition to their other environmental and innovation promoting programs, the KfW developed in cooperation with the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) the new program “Material Efficiency in the Production Process” starting in 2013. It has a total volume of 20 Mio. EUR.

2.1.1. Perspectives of financial actors concerning public financing instruments

The public compensation of the market failure in the eco-innovation sector was seen as positive and necessary by most of the interviewees. Nevertheless, some private capital providers were criticizing the lack of industry-specific know-how by the public stakeholders, as well as the static formal support requirements and the high bureaucratic efforts connected with public financing instruments.

2.1.2. Perspectives of SMEs concerning public financing instruments

Most of the consulted enterprises stated to make use of public grants for assessments and consultations, e.g. for establishing an energy management system needed to benefit from reductions of the Renewable Energy Act apportionment in future. However, interviewed SMEs identified several barriers comprising (i) the challenge to find appropriate public funding possibilities and to fulfill its specific and changing procedures and conditions, (ii) the lack of contact persons that are able to give branch-specific and detailed advices and (iii) the bureaucracy, needed time and the required large amount of enterprise-internal information. Furthermore, public finance was associated primarily to consultations but not as a means for investment in eco-innovations. Therefore, the interviewed SMEs would appreciate a transparent design of the funding landscape across all levels of government. A one-stop shop for funding advice and for existing current funds could be established and would help to choose an appropriate support program going beyond consultations.

2.2. General Overview of Relevant Private Financing Institutions

Besides applying for loan capital at the large amount of private commercial banks, as the Deutsche Bank, Commerzbank or the Volksbanken, companies have also the possibility to raise capital from private capital sources such as private equity or venture capital companies.

If a private equity or venture capital investor provides capital for a seed or a start-up company, they usually get a certain share (mostly minority stake) of the company in return and have thus the possibility to bring in their expertise and networks. Furthermore, so-called business angels are a very common possibility for mostly very young companies to raise their equity share and to profit of the expertise of well-connected businesspersons. Typically, business angels have a regional investment focus, organizing themselves into angel networks and providing informal capital in exchange for convertible debt or ownership equity. They usually require a very high return on investment, as their investments usually bear extremely high risks due to the early stage of the companies.

The main barrier for private investments in eco-innovation and resource efficiency is that there is no special treatment at commercial banks for the different financing requirements. In the standard credit rating process no special evaluation criteria for this sector exists. That is why there is often a low level of technical knowledge among the creditors concerning the eco-innovation sector and recent political framework conditions.

For private equity and venture capital companies eco-innovation is often only one sector among others, but a few special funds are focusing on it. However, eco-innovations are typically capital and time intensive, and thus bear a higher risk of failure. Due to this, it is very difficult for this kind of companies to find suitable investors. Additionally, to minimize their risk, investors often prefer to invest within an investment consortium, but co-financiers for early stage investments (highest risk), especially private ones rarely exist in Germany.

As private equity or venture capital companies usually receive a certain share of the company and are able to influence the management of the company, there is a lot of scepticism about the investment instruments itself and their implications among the enterprises. However, the most important aspect for rejecting investment proposals of capital-seeking companies by private equity and venture capital companies is the often insufficient expertise of the (top) management team.

Several interviewees mentioned that a significant improvement for private funding would be to stabilize the political framework. Especially in the field of environmental sound technology the regulations could be affected by a political change. Yet, the state has the responsibility to implement reliable conditions in order to increase the attractiveness of particular financing fields for private enterprises. For investors, for instance, the feed-in compensation for renewable energies is said to be no key criteria in favor of an investment decision, as it is assessed as too unstable.

Moreover, by some interviewees a larger diversification of funding fields and an earlier financing in the innovation cycle phases was proposed - e.g. for prototypes - as finding investors in these early stages is very difficult.

As one good practice example for private financing of eco-innovation projects, Sirius Venture Partners has the so called “EcoTech Fund” that is specialized on renewable energy and eco-innovation (maximizing resource and energy efficiency) investments. The relevant sectors for the EcoTech Fund are renewable energies, biogas plants, thermal storage systems, absorption refrigerating systems and green electricity traders.

2.2.1. Perspectives of financial actors concerning private financing instruments

Due to the entry into force of new regulations such as the Basel III agreement a further withdrawal of commercial banks in the credit sector is assumed.

2.2.2. Perspectives of SMEs concerning private financing instruments

SMEs make use of bank loans mainly for bigger investments, such as an enlargement of the enterprise, which is often connected with the introduction of new technologies (respectively new machineries) contributing to an improved resource efficiency. A single enterprise mentioned that investments in certain eco-innovations are investments into future but do not always lead to a quick profit. Hence, this SME would prefer long payback periods for bank credits. A small enterprise gave the example that some investments are needed quickly, e.g. in order to benefit from special offers.

However, applications for credits are often time-consuming and procedures change. Particularly for smaller loans processes should be simplified and accelerated.

2.3. General Overview of Relevant Innovative Financing Instruments

Besides public and private financing instruments, capital-seeking companies are searching for innovative ways of funding their resource efficiency measures. In Germany, there is a federal structure of the so-called Mittelständische Beteiligungsgesellschaften (MBGs) and Bürgschaftsbanken. They are commercially organized companies with public or commercial banks, associations and chambers (e.g. chambers of craftsmen) as shareholders. Additionally, there are private and independent investment banking companies or cooperatives providing private capital to dedicated energy and resource efficient projects.

In Germany, a newly evolved innovative financing instrument is the crowd funding, where the volume of private capital is provided by the so-called "crowd" - a large number of mainly private investors. With each investor providing only a small amount of capital, in sum a project can be financed. By today there is no dedicated crowd funding platform for resource efficient or at least eco-innovation projects. However, we know from interviewees that plans for such a platform are in progress.

In summary, one of the main barriers for innovative financing instruments to promote more eco-innovation projects is the dependency of these sectors from political support and the external juridical and political conditions for their investments.

As one good practice example for innovative financing instruments, the MBG Schleswig Holstein implemented a pilot project (whereas by today the other MBGs and Bürgschaftsbanken do not have similar instruments). With its "Programm für Nachhaltiges Wirtschaften" the MBG Schleswig Holstein constructed an opportunity for companies that fulfill certain sustainability criteria to raise capital with reduced interest rates. Companies may apply for an investment if significant resource efficiency improvements (including reduced drinking water and energy consumption), reduction of greenhouse gases and improved environmental protection are achieved.

The innovative financing models of MAMA Sustainable Incubation AG and the B.A.U.M. Zukunftsfonds eG represent another promising way to foster investments for eco-innovation and resource efficiency. Whereas MAMA AG undertakes a participation of the company via minority share of 25-35%, the B.A.U.M. Zukunftsfonds invests the capital of its investors only in single projects that lead to resource efficiency and/or energy saving in SMEs or public institutions, especially on the community level. The investors receive a rate of return of 4%, which are paid out of the saving amount. Especially for companies in the early stages investments of MAMA AG represent an interesting possibility, as they moreover provide or at least support follow-up financing.

2.3.1. Perspectives of financial actors concerning "innovative" financing instruments

Within the background of declining public budgets and rising capital constraints in the course of new regulations such as Basel III several interviewees stated, that innovative instruments have to mind this gap and thus, will get more popular in the future.

2.3.2. Perspectives of SMEs concerning "innovative" financing instruments

None of the interviewed enterprises mentioned that an "innovative" financing instrument plays a role for investments at present. A basic need seems to support information supply: A one-stop shop or a data bank should be created informing about existing or possible "innovative" financing instruments and required conditions.

In general, financing of resource efficient measures was not regarded as a major concern and can be afforded primarily by own savings. Whether a company is motivated to invest into eco-innovations is first and foremost a question of cost-effectiveness.

3. SWOT Analysis

Strengths	Weaknesses
• Public awareness for Eco-innovation and the potential of resource efficiency measures • Developed public funding infrastructure • Variety of financing instruments • Political support given to environmental issues	• Administrative Burden • Missing investment criteria for resource efficiency • Lack of knowledge regarding innovative financing instruments
Opportunities	**Threats**
• High resource efficiency potential within SMEs • Promising innovative financing instruments foster investments in resource efficiency measures • High demand on tailor-made financing schemes by SMEs	• Long payback period for eco-innovation investments • Risk aversion of banks • One-stop shop informing about existing or innovative financing instruments is missing