

**SIXTH FRAMEWORK PROGRAMME**  
**FP6-2004-INCO-DEV-3**  
**PRIORITY A.2.3.: Managing Arid and Semi-arid Ecosystems**



**Third Periodic Activity Report**  
**(01.01.2009 – 31.12.2009),**  
**December 2009**

**ANNEX 5-3-3: Survey on funding opportunities**

**Deliverable D5.3 (Lead contractor: ESD, Due date: December 2009)**

## **COMPETE**

**Competence Platform on Energy Crop and Agroforestry  
Systems for Arid and Semi-arid Ecosystems - Africa**

**Responsible Partner:**

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**Project Co-ordinator:**

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## Project Partners

Participant role	Participant number	Participant name	Participant short name	Country	Date enter project (month)	Date exit project (month)
CO	1	WIP – Renewable Energies, Germany	WIP	DE	1	36
CR	2	Imperial College of Science, Technology and Medicine	Imperial	UK	1	36
CR	3	Utrecht University	RUUTR.STS	NL	1	36
CR	4	Stockholm Environment Institute	SEI	SE	1	36
CR	5	Austrian Biofuels Institute	ABI	AU	1	36
CR	6	Höhere Bundeslehr und Forschungsanstalt für Landwirtschaft, Landtechnik und Lebensmitteltechnologie Francisco Josephinum	FJ BLT	AU	1	36
CR	7	ETA - Energia, Trasporti, Agricoltura s.r.l.	ETA	IT	1	36
CR	8	European Biomass Industry Association	EUBIA	BE	1	36
CR	9	Practical Action	Practical Action	UK	1	36
CR	10	Consiglio Nazionale delle Ricerche	CNR	IT	1	36
CR	11	E+Co, Inc. (not funded)	E+Co	USA	1	36
CR	13	Institute for Sustainable Solutions and Innovation	ISUSI	DE	1	36
CR	14	AGAMA Energy (Pty) Ltd	AGAMA	ZA	1	36
CR	16	Center for Energy, Environment and Engineering Zambia	CEEEZ	ZM	1	36
CR	17	Environnement et Développement du Tiers-Monde	ENDA-TM	SN	1	36
CR	19	Food, Agriculture and Natural Resources Policy Analysis Network of Southern Africa	FANRPAN	ZIM	1	36
CR	20	FELISA Company Limited	FELISA	TZ	1	36
CR	21	Mali-Folkecenter	MFC	Mali	1	36
CR	22	MOI University	MU	Kenya	1	36
CR	24	Tanzania Traditional Energy Development and Environment Organisation	TaTEDO	TZ	1	36
CR	25	UEMOA - Biomass Energy Regional Program (PRBE)	PRBE	BF	1	36
CR	26	University of KwaZulu Natal	UKZN	ZA	1	36
CR	27	University of Cape Town - Energy Research Centre	UCT, ERC	ZA	1	36
CR	28	Chinese Academy of Agricultural Sciences	CAAS	CN	1	36
CR	29	Centro Nacional de Referencia em Biomassa, Brazil	GENBIO	BR	1	36

**Project Partners (continued)**

Participant role	Participant number	Participant name	Participant short name	Country	Date enter project (month)	Date exit project (month)
CR	30	Indian Institute of Science	IISC	IN	1	36
CR	31	The Energy and Resources Institute	TERI	IN	1	36
CR	32	Universidad Nacional Autonoma de Mexico	UNAM	MX	1	36
CR	33	Universidade Estadual de Campinas	UNICAMP	BR	1	36
CR	34	Winrock International India	WII	IN	1	36
CR	35	Interuniversity Research Centre for Sustainable Development - University of Rome "La Sapienza"	CIRPS	IT	1	36
CR	36	Universitetet i Oslo	UiO	NO	1	36
CR	37	University of Bristol	UNIVBRIS	UK	1	36
CR	38	University of Botswana	UB	Botswana	1	36
CR	39	University of Fort Hare	UFH	ZA	1	36
CR	40	TWIN	TWIN	UK	1	36
CR	41	Joint Graduate School of Energy and Environment	JGSEE	TH	1	36
CR	42	African Development Bank Group (not funded)	AFDB	Int.	1	36
CR	43	Energy for Sustainable Development Ltd.	ESD	UK	1	36
CR	44	Eco Ltd.	Eco	UK	1	36
CR	45	Chinese Association of Rural Energy Industry	CAREI	CN	1	36
CR	46	Food and Agriculture Organisation of the United Nations (not funded)	FAO	Int.	1	36
CR	47	Conservation International Foundation (not funded)	CI	USA	1	36
CR	48	Foederation Evangelischer Kirchen in Mitteldeutschland	EKMD	DE	1	36

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**LIST OF ACRONYMS**

ACAD	African Carbon Asset Development Facility
ACCE	African Carbon Credit Exchange
AREED	African Rural Energy Enterprise Development
CDM	Clean Development Mechanism
CER	Certified Emission Reduction
DNA	Designed National Authority
DSCR	Debt-Service Coverage Ratio
ETS	Emissions Trading System
FIT	Feed-In Tariff
GKI	Green Knowledge Institute (part of ACCE)
IPP	Independent Power Producer
mtoe	mega tonnes of oil equivalent
OGM	Out Grower Module
PDD	Project Design Document
PIN	Project Identification Note
PPA	Power Purchase Agreement
RE	Renewable Energy
ROE	Return on Equity
ROI	Return on Investment
TBL	Triple Bottom Line
VER	Verified / Voluntary Emission Reduction
WB	World Bank

## 1 INTRODUCTION

This work has been conducted in the framework of the project COMPETE (Competence Platform on Energy Crop and Agroforestry Systems for Arid and Semi-arid Ecosystems - Africa), co-funded by the European Commission in the 6<sup>th</sup> Framework Programme – Specific Measures in Support of International Cooperation.

The main purpose of this deliverable is to undertake primary market research and to demonstrate its results in order to identify on-the-ground issues and opportunities around the financing of bioenergy projects in Africa – from both, project developers', as well as project investors' perspectives. The approach chosen reflects this purpose, i.e. two questionnaires were developed (one for project developers and one for project investors) and through a mixture of telephone and email responses, 12 relevant market players provided their feedback (seven project developers and five project investors).

Responses have been provided by bioenergy market players based in the following countries: Ghana, Kenya, South Africa, The Netherlands, Togo, United Kingdom, United States and Zambia - with all respondents currently being active in the development and financing of bioenergy projects in Africa.

The structure of this deliverable is such that the results of the primary market research undertaken are presented in sections 2 and 3, i.e. (a summarised version of) the questions and the (complete) feedback of the bioenergy project developers, as well as the bioenergy project investors, respectively. The most important aspects of the feedback to each of the questions have been highlighted in *grey italic* to facilitate the illustration of the key outcomes of the market research. Finally, the actual questionnaires are provided in Annex 1 (project developers) and Annex 2 (project investors).

## 2 MARKET SURVEY – PROJECT DEVELOPERS’ PERSPECTIVE

### 2.1 APPROACH

The project developers’ version of the market survey consists of a total of 17 questions (the questionnaire is provided in Annex I: ‘Market survey - project developers’). In view of the limited time that respondents can spare to provide their feedback, these 17 questions have been categorised into 10 essential questions (i.e. the most important ones which survey respondents should answer first – highlighted in red font in the questionnaire in Annex I) and 7 other questions (i.e. the ones that should be answered if time allows after having responded to the essential questions first – highlighted in blue font in the questionnaire in Annex I).

### 2.2 SURVEY RESULTS

This section presents an overview of the responses to the project developers’ market survey. The results are presented in sequential order, i.e. based on the order of the questions in the questionnaire. All essential questions have been specifically identified in the sections below explaining why some questions (i.e. the non-essential ones) have had less feedback than others (i.e. the essential ones).

#### 2.2.1 PART A – Organisations and their activities in the bioenergy markets

##### Question 1: Role and size of the respective business in the bioenergy market

A summary of the responses to this question is presented below:

- *The roles of the responding organisations in the bioenergy market include*
  - *Project finance, structuring and development*
  - *Policy research / development*
  - *Market research for bioenergy products*
  - *Technical advice on bioenergy market activities*
  - *Ownership and control of plant oil - and other biomass feedstock through out grower module for the refining and manufacture of bio- and syndiesel in Zambia and export of excess crude*
  - *Development of new bioenergy products*
  - *Development of the opportunities for biochar*
- *With respect to the size of the respective businesses, most of the responding organisations categorised themselves as small market players, e.g.*
  - *Ten energy professionals, with six of them being bioenergy experts*
  - *Start-up, four full time equivalent staff in 2009*
  - *The biggest entity that responded is a medium-sized organisation producing 250 million liters of Euro Din 590 standard diesel / year.*

Question 2: Nature of the funding requirements for bioenergy enterprises (i.e. what do bioenergy ventures / businesses actually need funding for) and identification of the three most important types of funding requirements

The responses to the first part of this question -i.e. *nature of the funding requirements for bioenergy enterprises*- included the following aspects:

- *At risk speculative development funds* (to take project from idea to project)
- *Development funding to bring in projects*
- *Long term equity*
- *Long term debt and working capital* (e.g. *equipment, salaries*)
- Development funding to do work on projects (e.g. land lease, travel, legal, engineering, general negotiation, etc)
- Co-financing possibilities

In terms of the latter part of the question -i.e. identification of the most important types of funding requirements-, project developers identified the following aspects as being most important:

- Shareholder funds
- Project related finance
- Grants and soft loans
- At risk speculative development funds
- Development funding
- Long term equity

### **2.2.2 PART B - Project developers and the financing of their bioenergy activities overall**

Question 3 (essential): Main problems that project developers face with respect to getting access to financing/capital

The list below indicates the feedback provided to this question:

- *Offering a realistic margin/return to shareholders/investors*
- *Underwriting risks*
- *Managing uncertainties*
- *Land ownership of project*
- *Collateral*
- *Limited budget and experience of Designated National Authorities (DNAs)*
- *Small projects difficult to attract financing*
- *Business model, e.g. Out Grower Module (OGM)*
- *Cheaper alternatives* (has implications on financial feasibility of investment)
- *Inadequate financial and tax incentives*
- Project viability
- Country and continent risk perceptions in the market place
- Low understanding of clean technology
- Perceived issues regarding corruption in government and bureaucracy
- Focus on project risk and unwillingness to diversify through multiple projects

- Carbon markets:
  - *General uncertainty about carbon markets*
  - *Unresolved methodological issues which undermine investor confidence*
  - CDM markets expire in 2012, though the EU ETS commitment of post-2012 CERs from least developed countries is helpful
  - Identifying up front purchase commitments for carbon offsets against which one can collateralize loans to fund project development
  - Alternatively, finding credit buyers who are willing to pay in advance
  - Voluntary carbon markets are slowing, and lack sufficient volume and liquidity to drive demand and forward contracts as described above
  - Fear of carbon impermanence

Question 4: Potential sources that could be approached to ask for funding for your bioenergy business

Respondents provided the following *potential sources that can be accessed to tap funding* for their business activities:

- *Private parties*
- *Equity funds*
- *Banks*
- *Angels and venture capitalists*
- *Business partners*

Question 5: Current financing of bioenergy projects in Africa

Question 5.1 (essential): a) sources of the funds for the early-stage development of your business, i.e. business idea, pre-feasibility and feasibility and b) funding sources after the establishment of the feasibility of your business

The feedback provided to this question was as follows:

- *Funding sources up to and including feasibility study:*
  - *Own equity / balance sheet / shareholders funds*
  - *Forward sales of project outputs*
  - *At risk funding in exchange for large equity share*
  - *Carbon financing:*
    - *Carbon funds (equity, advance on purchase)*
    - *Private sector CDM developers (equity, advance on purchase)*
    - Carbon feasibility studies can sometimes be funded by bilateral and multi-lateral sources
  - Project hosts (equity, public sector budgets)
  - International development institutions (e.g. World Bank & UN agencies)
  - Governments
  - NGOs/INGOs
- *Funding sources post feasibility study:*
  - *Own equity / shareholders funds*
  - *Project finance*

- *At risk funding in exchange for large equity share*
- *Lenders (debt – secured or unsecured)*
- *Mezzanine finance providers (hybrid debt/equity)*
- *Carbon finance:*
  - *Investors/private sector CDM developers/project hosts (equity)*
  - *CER buyers (advance on purchase)*
  - *Carbon finance projects of this nature are funded by private sector forward contracts, though in short supply*
  - *In voluntary markets from voluntary corporate climate commitments, in the CDM markets from polluters, mostly in Europe*
  - *Also from bilateral and multi-lateral sources*
- *Joint developments*
- *Equipment suppliers (lease or credit)*
- *Governments*

Question 5.2 (essential): Funding sources for additional capital requirements for potential or actual expansion of your business

Survey participants provided the following responses to this question:

- *Funding sources for additional capital for expansion of business already realised:*
  - *Requirements for business expansion:*
    - *Shareholder funds exhausted*
    - *New capital difficult to raise*
  - *Funding sources for business expansion:*
    - *Fresh shareholder funds*
    - *Development banks*
    - *ODA & government*
    - *Institutional investors*
- *Anticipated funding source for potential expansion plans*
  - *Fresh shareholder funding*
  - *Loans and equity investments from specialized private sector investors as well as European country governments*
  - *Capital market*
  - *Margin on early product sales (higher prices)*
  - *Institutional investors*
  - *Financial institutions*
  - *Governments*

Question 5.3 (essential): Other sources of financing that could have been tapped, as well and reasons for why they were not used

Below is a summary of the feedback resulting from the responses to this question:

- *Other potential options of financing your business:*
  - *Own finance*
  - *Commercial banks*
  - *Bank debt*

- *Venture capital*
- *Equity dilution*
- *Revenue ploughed back into business*
- *Reasons why these were not used:*
  - *Limited availability / short of funds due to market difficulties*
  - *Need to retain control / would result in long-term relationship (no early exit)*
  - *Expensive to obtain / increasingly costly (interest rate margins + arrangement fee)*
  - *Additional collateral required / increasingly tight covenants or guarantees*
  - *Commercial banks would be likely to take charge over all unencumbered assets*
  - *Data requirements high*
  - *Maximum debt funding for projects ~70%*
  - *Limited expectation of success – better to earn and invest*
  - *Little market because there is inadequate understanding among potential end users and concerns about secure supply*

### **2.2.3 PART C - Issues around funding criteria and how to potentially resolve them**

Question 6 (essential): Criteria that project developers have to fulfil to attract funding from financing institutions

A summary of the responses to this question is provided below:

- *Virtually eliminate risk; in fact, more than this – no risk!*
- *Security / collateral, i.e. land, PPA, environmental, extensive data, etc.*
- *Developers' track record and technical expertise*
- *Demonstration of financial feasibility and payback period*
- *Business plan, including production forecast, impact studies, maturity of technology utilised and where possible / applicable, inclusion of carbon financing*
- **Carbon finance:**
  - *A PDD or at least a PIN*
  - *Local country approval and securing of local partners for project implementation is a plus*
- **Stability of market**
- **Value for money**
- **Clear deliverables**
- **Trust**
- **Transparency**

Question 7 (essential): Desired changes to be implemented by funding institutions to make access to financing more realistic for project developers

Market survey respondents provided the following feedback to this question:

- *Offer development insurance on projects (pays out on failure)*

- *More speculative and up front funding – secured across a number of projects thereby reducing risk*
- *Lower interest rates*
- Short term development loans (covered by the above, but not to cover premiums)
- A reducing security requirement so that a project developer may give up (e.g.) 90% of the project initially and is able to earn back in as project development proceeds (e.g. based on project stage and developer funds)
- Consideration of non-financial criteria (TBL), too
- Carbon financing:
  - Acceptance of carbon credits as collateral
  - Policy clarity around cap and trade post-2012, both in EU as well as in US, this is the biggest barrier to financing in this sector today
  - Obviously funding institutions cannot control this, so then we need their risk tolerance to increase. If country governments instituted more policy measures that would mitigate investment risk in the carbon markets, this would help.
  - In the US there is talk about a \$30 million cook stove carbon finance investment facility. This would help a lot.

#### **2.2.4 PART D - Financing and commercialisation of bioenergy and how to improve that process**

Question 8 (essential): Other kinds of support potentially useful for project developers to maximise the prospect of attracting funding (e.g. other types of bioenergy enterprise development support, such as skillsets / training, tools, guidelines, etc)

The *types of support identified* by the survey respondents *include*:

- *'Standard' spreadsheet models to cover major project types and calculate required indicators DSCR (Debt service coverage ratio) etc*
- *Example legal documentation in word format, e.g. template contracts that do not require extensive legals*
- *Data on such things as biomass parameters (BTU values, etc)*
- *Basic rules of thumb / engineering support*
- *Structure, strategy and finance criteria*
- *Government support in selling bioenergy to end users and other measures to secure markets*
- Strong research partnership
- Resolving methodological issues
- All of these types of support are already available if one seeks them out, uncertainty whether they would help at this point

Question 9 (essential): Prospects / business opportunities regarding trade of bioenergy products and services

A summary of the responses to this question is provided below:

- General feedback regarding *trading opportunities*
  - There should be scope for trading of biofuels, either national markets or export markets, i.e. for sales e.g. to other African countries or to Europe

- *Examples: niche markets such as airline biofuel trial projects*
  - *Challenging to make trading of by-products commercially viable*
  - *Given generally bad infrastructure in Africa, it is often commercially most viable to use the biofuels locally*
- *Trading business opportunities nationally / internationally:*
  - Overall:
    - Market needs to be educated to support / enable trading opportunities
  - *Nationally:*
    - *Fuel switching opportunities for sustainable fuels*
    - *Rising fossil fuel prices*
    - *Overall, limited opportunities*
    - *Climate change concerns at local level*
  - *Internationally:*
    - *For international trade, export / import finance support would increase chances of success*
    - *High quality clean cook stoves manufactured outside Africa and imported into Africa, as they are not currently available for sale in Africa. This could be facilitated by working with local country governments to eliminate import taxes on these products (currently at 40% and higher) and promoting local partial assembly of these products. For example, give a grant to Envirofit or StoveTec to set up manufacturing facilities in Africa*
    - *Renewable fuels to premium markets*
    - *Overall, only niche markets in developing countries*
- *Types of bioenergy-related products potentially to be traded:*
  - *Solid fuel commodities (torrefied, pelletised etc) for coal replacement*
  - *Energy from biomass, ethanol, bio-diesel concentrated feedstock for fermentation*
  - *Efficient cook stoves*
  - *Carbon offsets*
  - *Unprocessed feedstock*
- *Types of potential main trading partners:*
  - *Petroleum companies for the purpose of blending (ethanol and biodiesel)*
  - *Cook stove retailers*
  - *Carbon finance project developers*
  - *Manufacturing industries*
  - *Public sector (e.g. governments)*
  - *Brokers*
- *Areas that need to be improved to enable project developers to benefit from trading activities:*
  - *Terms of trade – stricter implementation of Emissions Trading Systems (ETS), etc*
  - *Recognised carbon price*

Question 10: Main current markets for bioenergy products, i.e. bioenergy products and clients

The *main current markets for bioenergy products* identified by survey respondents are as follows:

- *Fertiliser products, biochar – local sales*

- *Carbon offsets – international customers*
- *Petroleum companies – Synthetic and Biodiesel*

Question 11 (essential):

- a) Type of measures government can implement to support the financing of bioenergy projects
- b) Other types of stakeholders -apart from financing institutions and governments- which are important for the financing of bioenergy ventures / projects in Africa

A summary of the responses to these two questions is provided below:

- a) *Types of government support:*
  - *Development and enforcement of consistent and clear policies and market conditions:*
    - *e.g. on blending regimes / biofuel standards (remove regulatory risks)*
    - *to encourage community involvement in renewable energy systems for productive purposes*
  - *Establishment of a national and regional renewable energy investment facility with major banks preferably targeting hydro, solar water heaters, and modern biomass;*
  - *Government-enacted renewable energy portfolio protocol obliging industries to utilize a minimum proportion of total energy from renewable sources including bioenergy*
  - *Integration of renewable energy financing into the energy budget*
  - *Support of capacity development*
  - *Provision of tax incentives*
  - *Provision of help to secure land tenure*
  - *Government guarantees (or equivalent)*
  - *Removal of multi tiered paperwork / bureaucracy / simplification of procedures*
  - *Realistic goals (% , mtoe, etc.) and strategies (vs., food, fuel and fodder needs)*
  - *Target wealthier consumers (discriminatory, e.g. tourists)*
  - *B & C elimination (i.e. 'bribery & corruption')*
  - *Realistic feed-in tariffs*
  - *Definition of benefit sharing mechanisms*
  - *Advocacy of pro-poor approach*
  - *Demonstration of use of renewable energy in public facilities*
- b) *Other types of stakeholders:*
  - *Farmer organizations*
  - *Major local banks (to establish renewable energy investment facility / to support initiatives that minimize risks faced relating to renewable energy)*
  - *Bilateral and multilateral donors (to support government led renewable energy initiatives)*
  - *Community groups of settlers/tenants on land areas*
  - *Early adoption by 'Green' Corporates*
  - *Private parties – commercial*
  - *To develop and implement programs to finance local municipalities to adopt renewable energy;*

## 2.2.5 PART E - Risks of biofuel ventures and how to overcome them

Question 12 (essential): Specific opportunities and risks of biofuel ventures and how to overcome the risks

The identified *opportunities and risks and ways to overcome the risks identified by survey respondents* are listed below:

- *Opportunities:*
  - *To extend sustainability of feedstocks*
  - *Enactment of policies friendly to bioenergy*
  - *Expanding the carbon market*
  - *Profit*
  - *Total forest cover of 650 million hectares (69.8 million hectares in West Africa) accounting for approximately 17% of the world's total forest cover;*
  - *Of the 650 millions hectares of land very suitable for agriculture only 200 million hectares are currently being utilized*
  - *With favourable agro-climatic conditions and available arable land (including semi-arid lands suitable for crops like Jatropha) Africa can become a global superpower in the supply of biofuels but most countries do not even have a specific national biofuels policy or consumption targets.*
  - *In terms of the carbon market, Africa accounted for only 1.97 percent of all registered CDM projects as of July 2010 (only 45 out of 2,282 projects) and most of these projects (17 out of 45) were located in just one country, South Africa. Globally, China dominates the CDM market with close to 70 percent of volumes transacted in 2007*
  - *Finance mechanisms for conservation of natural resources in that will also deliver livelihood benefits*
  - *Develop new crops/processes*
  - *More flexible power purchase arrangements (e.g. in Kenya “firm” power gets a higher price than infirm and there is no real definition of what “firm” is)*
  - *In the case of efficient cook stoves, addressing major public health and past use issues at scale*
  
- *Risks:*
  - *Bio-mass fuel supply*
  - *Untested technologies at the local level*
  - *Uncertain policy framework / uncoordinated policies*
  - *Risk of carbon finance rejection and loss of investment*
  - *Long payback times*
  - *Working with communities*
  - *Uncertain markets – revenue stream*
  - *Financial, infrastructure and market barriers*
  - *Institutional and regulatory hurdles*
  - *Lack of skilled human resources*
  - *Lack of awareness and scarcity of information on technology selection*
  - *Quality of the end products in comparison to international standards*
  
- *How to overcome the risks:*
  - *Piloting/demonstration in collaboration with academic/research institutions*
  - *Harmonization of policymaking process*
  - *Streamline carbon finance approval process and make it more predictable and shorter*

- *Strengthening skills and knowledge of local manpower on clean energy technologies (e.g. training targeting specific labour forces)*
- *Dissemination of technical and economic information on clean energy technologies (e.g. information campaigns with equipment providers)*
- *Establishment of appropriate regulatory framework (e.g. setting of feed-in tariffs)*
- *Infrastructure planning and investment for market access (e.g. transmission lines, rural roads, decentralized power generation)*
- **More market structure to improve contract reliability**
- **Support for innovative projects**
- **Awareness campaigns**
- **Inclusion of stakeholders**
- **Building of confidence in the investment community and promoting African entrepreneurship**
- **Development of institutional capacity to facilitate carbon financing**

**Question 13: Existing collaboration in the field of bioenergy between project developers and research activities and potential benefits from such a collaboration**

Survey participants provided the following responses to this question:

- *Existing collaboration in the field of bioenergy between project developers and research activities:*
  - *Yes, in the field of*
    - *standards and certification*
    - *fuel parameters*
- *Potential benefits from such a collaboration:*
  - *Independent verification*
  - *More project pre-feasibility rules of thumb*
  - *More specific data acceptable to funders*

**Question 14: Potential implications of global financial crisis on bioenergy business activities in Africa**

The following implications have been identified by survey respondents:

- *Introduced uncertainty over financial products offered in the carbon market*
- *Getting access to funding seems more difficult – despite seemingly high availability*
- **Failed to deliver Copenhagen**
- **Failed to deliver a reasonable (\$50/t) carbon price**

**Question 15: Categorisation of bioenergy projects and potential category thresholds**

A summary of the response to this question is provided below:

- **Categories:**
  - **Local/imported capital**

- Fuel dedicated (in this case there is a contractual arrangement with surplus supplies)
- Fuel not dedicated
- Potential thresholds:
  - in the range of 5 MW (typically determined by equipment size and financing fee costs)

### 3 MARKET SURVEY – PROJECT INVESTORS’ PERSPECTIVE

#### 3.1 APPROACH

The project investors’ version of the market survey consists of a total of 23 questions (the questionnaire is provided in Annex II: ‘Market survey - project investors’). The overall approach to this part of the market survey is identical to the one in the previous section, i.e. in view of the limited time that respondents can spare to provide their feedback, these 23 questions have been categorised into 14 essential ones (i.e. the most important ones which survey respondents should answer first – highlighted in red font in the questionnaire in Annex II) and 9 other ones (i.e. the questions that should be answered if time allows after having responded to the essential questions first – highlighted in blue font in the questionnaire in Annex II).

#### 3.2 SURVEY RESULTS

This section presents an overview of the responses to the project investors’ market survey. The results are presented in a sequential order – based on the order of the questions in the survey itself. All essential questions have been specifically identified in the sections below explaining why some questions (i.e. the other ones) have had less feedback.

##### 3.2.1 ***PART A - Identification of potential solutions to the existing issues of financing / investment of bioenergy activities in Africa***

Question 1 (essential): Investor security

- 1a) Main aspects that create investor security in the field of bioenergy in Africa
- 1b) Measures to overcome hurdles in creating / improving such investor security
- 1c) Specific measures that have been implemented by certain African countries to create investor security

A summary of the responses to this question is presented below:

- 1a) *Main aspects that create investor security:*
  - *Credibility and viability of the offtaker*
  - *Credibility and capability of the developer*
  - *Investor-supportive regulation with respect to reinvesting profits (e.g. in some countries, profits can not be re-invested outside the national boundaries)*
  - *On a country level, investors need to be able to move their investments quickly in and out*
  - *Better understanding of bioenergy activities by financiers*
  - *Effectively addressing potential issues around food versus fuel debate*
  - *Generally, strong policy support in order to create actual markets*
  - *Energy markets with little / no subsidies for fossil fuel-based energy*
  - *Cost of capital in Africa (i.e. counteracting uncertainty in the economy, inflation, depreciation) with the aim of preventing loss of the value of investment*
  - *The project structure*
  - *Guaranteed electricity / energy tariffs*
  - *Social investment*
  - *Reduction of the number of donor-sponsored projects as these create competition / subsidies in the RE markets*

- 1b) *Measures to overcome hurdles in creating / improving such investor security:*
  - *Creation of a RE-related 'one stop shop' for investors;* this avoids issues that investors currently face regarding finding / getting access to relevant investor-/financing-related RE information (both offline, as well as online);
  - *Policy documents actually do need to be enforced*
  - *Creation of in-country capacity to develop Funds,* whereby promoters can access low interest capital to cover sufficient equity contribution (like an empowerment Fund)
    - E.g. all donor money for RE projects could be put into an RE fund which would be used to support guaranteed energy tariffs (similar to FIT, i.e. annually decreasing tariffs)
  - *Harnessing opportunities related to carbon financing and carbon credit trading*
  - *Development of*
    - *Enabling framework [e.g. feed-in tariffs (FIT), tax incentives]* and appropriate local capacity for the manufacture, installation, maintenance, operation and marketing of bioenergy projects (this could include the creation of lobby groups)
    - *Legal framework* that stimulates the development of Independent Power Producers (IPPs) and provides visibility for contractual agreements –PPAs; overall a predictable legal framework
    - *National strategy for coordination of bioenergy-related research programmes* and improved collaboration between research and bioenergy project developers
    - *Development of / availability of insurance products* to mitigate certain types of risks
  - Micro-economic management / strong economic market / no depreciation of currency
  - Decreasing the currently very high costs of loans (e.g. 35% - 37% interest rates in Ghana; if USD denominated loans: 7-10%)
  - Availability of seed capital
  - Promotion of international co-operation on programmes focusing on bioenergy
  - Improvements at national level, i.e. stable government, stable legislation
  - Abolishment or at least stabilisation of corruption levels
  
- 1c) *Specific measures already introduced (e.g. by certain countries) to create investor security*
  - *Kenya:*
    - Recent launch of the *National Task Force on Accelerated Development of Green Energy* (coordinated by the office of the Prime Minister). On top of benefiting from carbon finance, the renewable energy generation in Kenya will inject additional power to the national grid to assuage fears of the manufacturing sector and potential investors. By June 2012, according to the Office of the Prime Minister, the country will have boosted its energy capacity by up to 2,000MW through geothermal, wind, bio-fuel, and solid waste and coal-driven power plants. The Prime Minister chairs a taskforce that is to advise the government on the projects to be implemented. The taskforce's chief task is establishing financing partnerships with the private investors
  - *Rwanda:*
    - The Ministry of Infrastructure and Energy (MININFRA) is currently *piloting a number of bioenergy programmes* with the support of development partners and has a strong staff base dedicated to the development of bioenergy

- *Tanzania:*
  - A number of *policies supportive of bioenergy* have been enacted. The government of Tanzania has within her energy, agriculture, land environment and forest policies, statements of intentions to improve the supply and demand of bioenergy and ensure its sustainability. In 2006, the Government of Tanzania created the *National Biofuels Task Force* to promote development of the sector and develop legislation to stimulate use of biofuels. Furthermore, a *statement on blending biofuels* with mineral petrol has been slotted in the New Petroleum Supply Act
- *Seychelles*
  - *Bagasse-based cogeneration* in the sugar industry *has been promoted* for many years
- *South Africa:*
  - *Blending fuel policy*
- *Zambia:*
  - Energy is in the process of becoming a priority sector through the *Zambia Development Agency, which provides incentives to investors* (tax breaks)
- *Mali:*
  - Though not effective yet, Mali *is currently developing a legal framework specific to the biofuel industry*
- The *World Bank's ESMAP programme (Energy Sector Management Assistance Program)*: a global technical assistance program which helps build consensus and provides policy advice on sustainable energy development to governments of developing countries and economies in transition (source: <http://www.esmap.org/about/index.asp>)
- Energy funds that e.g. support rural electrification projects; country examples: Mali

Question 2 (essential): Other types of support for organisations to optimise their bioenergy-related activities (e.g. tools, skillsets, risk instruments, etc)

The following *other types of support* have been identified by survey respondents:

- *Setting up a special purpose fund for bioenergy (possibly run by Government)*
- Creation and strengthening of a *forum for bioenergy practitioners* to exchange information on new developments and/or challenges
- Need for *capacity building in financial industry*, i.e. knowledge of credit officers regarding bioenergy, e.g. risk assessment, knowledge of bioenergy technologies
- *Special tools / instruments*, e.g. risk analysis tools, risk mitigation instruments
- *Risk sharing mechanisms*, and further investment incentives

### **3.2.2 PART B – Organisational activities in the bioenergy markets**

Question 3: Organisational role in the financing market

The following *roles in the financial markets* were listed by survey respondents:

- *Provision of financial advisory services* and develop bankable documents, before issuing instruments in the market
- *Provision of credit guarantee*, and hence share risk with investors
- *Provision of loans and equity finance*
- *Provision of grants and concessionary funds*
- A Fund is being capitalised, which will invest through equity and debt financing

**Question 4: Organisational size and dimension of organisational bioenergy-related activities**

In terms of the organisational size and dimension of organisational bioenergy-related activities, the survey has revealed the following aspects:

- Organisational size:
  - Overall size of one of the responding organisations: small if organisational network is not taken into account
  - Overall employment of one of the responding organisations: over 50 people in Africa, Central America, Asia, Europe, and the USA
- Dimension of organisational bioenergy-related activities:
  - \$50million pipeline only in Zambia
  - Another responding organisation's average annual investment is around USD250,000 (e.g. investment in CHP projects)

**Question 5 (essential): Existing organisational products / services related to bioenergy-related financing actually brought to the market**

The *existing organisational products / services for bioenergy financing* are as follows:

- *Credit Guarantee*
- *Early stage venture development, business plan, prefeasibility, and feasibility studies*
  - for major industrial players
  - for improved cook stove technology (under AREED project, so concessionary loan)
- *Seed capital, construction loans, equity*
- Technical advice

**Question 6: Market activities in the bioenergy markets, including start of organisational activities regarding financing of bioenergy projects**

Below are the organisational market activities identified in response to the questionnaire:

- Start of organisational activities in the area of financing bioenergy projects:
  - *Start of organisational activities in the area of financing bioenergy projects ranged from 2000 to 2009*

- *Scope of organisational bioenergy market activities:*
  - *Early stage capitalisation of Funds, including in the area of bioenergy*
  - *Establishment of South Africa's first private equity clean technology fund, Evolution One in June 2010*
  - *African Biofuels and Renewable Energy Fund, ECOWAS Bank for Investment and Development, Togo*

**Question 7 (essential): Trends (and underlying reasons) of bioenergy-related financing activities**

*The following trends of bioenergy-related financing activities were identified by survey respondents:*

- **Downwards trend-related feedback:**
  - *Jatropha-related financing activities have decreased in some parts, e.g.*
    - Dutch-financed projects in general
    - in Mozambique and Madagascar, a number of investments have been discontinued due to lower than expected yields and financial implications resulting from the economic crisis
- **Upwards trend-related feedback:**
  - *More local developers have seen the opportunity to replace imported energy sources, and since Africa has abundant biomass, and is active in agriculture, it is easier to implement*
- **Other aspects:**
  - In Ghana, there is not a lot of bioenergy investment happening; reasons: initial outlay and because of relative cheapness of electricity (50% of total electricity comes from hydro power plants)
  - Hurdle: government policy and regulation are not clearly defined to protect investment

### **3.2.3 PART C – Financing sector and its bioenergy activities overall**

**Question 8 (essential): Requirements set by the financial / investment sector which bioenergy businesses need to fulfil to unlock investment**

A summary of the responses to this question is provided below:

- *Investment-related aspects:*
  - *For investors with a triple bottom line (TBL) approach (i.e. environmental, social and economic sustainability), the social and environmental requirements of their investments are often even more important than the economic ones*
  - *Collateral must cover entire loan amount*
  - *The venture needs to make a return on its investment with minimum risk*
  - *On a country level, investors need to be able to withdraw their investments quickly*
  - *Investment period and interest rate follow Bond market benchmarks*
  - *ROI >25%*

- On a project level, Return on Equity (ROE) are set to around 15% by European investors and to around 25% by U.S. investors
- Depends on project type: in the case of electricity for community, then Return on Investment (ROI); if electricity for offtaker (e.g. generating electricity from farm) then importance of revenue stream over time, i.e. anticipated savings / profit sufficient to pay back loan
- *Equity-related aspects:*
  - *In developing countries themselves, equity levels need to be at least 50%*
  - *Promoters/developers have put in sufficient resources into the venture; promoter's equity >20% or some form of grant funds, underwriting / risk sharing instrument*
  - *Equity ratios need to be higher since the start of the financial crisis*
- *Project-related aspects:*
  - *Guaranteed offtake agreements in place, e.g. Power Purchase Agreement (PPA)*
  - *Project structure*
  - *All permits have been obtained*
  - *Duly registration of the bioenergy business with the relevant authorities in the respective country; this includes compliance with all relevant requirements, such as environmental protocols*
  - *Agronomy model strong and another investor has invested into this sector, than commercial investor for processing is easily found*
- *Stakeholder-related aspects:*
  - *Sufficient experience of organisation and individual staff in the bioenergy field*
  - *Healthy balance sheet of bioenergy enterprise*
  - *Credibility and viability of parties involved: developer, and offtaker*
- *Risk-related aspects:*
  - *All possible risks analysed and mitigated*
  - *Technology being used must have proven track record*
- *Legal aspects:*
  - *Contractual framework*

Question 9 (essential): Requirements set by the financial / investment sector which bioenergy businesses need to fulfil to unlock investment – particularly for early stage venture development, e.g. business plan, (pre-)feasibility

The following responses were provided in response to this question:

- *Generally, project developers need to put in their own money for early stage venture development*
- *The project must be BANKABLE, i.e.*
  - *All risks mitigated, like off-taker, technology, sufficient input supply*
  - *Strong ROI - must make business sense*
- *Contractual arrangement with an offtaker; in the case of a project being developed for in-house consumption, the viability of the developing entity is critical*
- *Projects equity can e.g. also be sold on at an 'intermediate' stage, e.g. after business plan development*
- *There are separate markets for pre-feasibility studies / business plan / feasibility studies*

- Technical expertise
- Sound financial capacities
- Support for sustainable development-related aspects
- Very often, investors do not commit any funds unless a bankable business plan and technical feasibility are in place

Question 10 (essential): Scale and type of projects and in-house evaluation

- a) Minimum project size required to be considered for external financing?  
 b) Type of projects: commercial only or also community-type?  
 c) Is all bioenergy project evaluation (i.e. prior to investment decision) done in-house?  
 Reasons?

The respondents' feedback to this question is summarised below:

- a) *Minimum project scale required:*
  - *Minimum project scale required by project respondents ranges from 'no minimum project scale required' to 'minimum of \$1million'; where there is no requirement in terms of size, the critical factor is the capacity of the project to afford the financing being sought*
  - Under AREED (African Rural Energy Enterprise Development initiative), project scale is defined as follows:
    - SMEs: 100,000 – 500,000 USD
    - medium-scale bioenergy projects: 100-150kW (which require at least 3m USD)
- b) *Project type: commercial projects / community projects:*
  - *both types can be eligible, as long as projects are financially sustainable*
  - *commercial projects almost always have a better understanding of how to set up and run a business / project*
- c) *Pre-commitment project evaluation:*
  - *Evaluation is done in-house because a qualified staff portfolio exists within the company*
  - *Inhouse analysis with advisory consultants to review process, before being analysed by investment committee*

Question 11: Importance of social and environmental sustainability criteria for financing strategy

Survey participants provided the following responses to this question:

- for non-commercial projects (e.g. donor-funded or community projects), social and environmental sustainability criteria are often even more important than any financing-related criteria
- even for commercial projects, *social and environmental sustainability criteria have been identified as being a 'major consideration' – often following the triple bottom line approach (TBL)*

### 3.2.4 PART D – Carbon financing, risks of bioenergy projects overall and other aspects

Question 12 (all essential, apart from d)): Carbon financing

- a) general experiences made with carbon financing in relation to bioenergy projects
- b) main problems regarding carbon financing in Africa
- c) potential solutions of carbon financing-related issues in Africa
- d) estimated contribution (in %) of carbon financing to overall project cost of bioenergy project
- e) current involvement in carbon credit trading activities and potential measures to support carbon credit trading activities

The above carbon financing-related questions revealed the following insights from survey respondents:

- a) *General experiences made with carbon financing in relation to bioenergy projects*
  - *Positive:*
    - *Successful collaboration with local industries to get CDM financing for bioenergy projects*
    - *An Exchange has been created, i.e. African Carbon Credit Exchange (ACCE) for carbon credits (CERs, VERs): projected CERs from bioenergy for Year 1 = 500,000*
  - *Negative:*
    - *CDM generally not providing the right incentives and too complex*
    - *Biomass not very applicable for CDM; only for voluntary market, but voluntary market has collapsed since the beginning of the global financial crisis*
- b) *Main problems regarding carbon financing in Africa*
  - *Cost of CDM is too high, e.g. registration fees (e.g. USD 25,000 – USD 50,000), monitoring / validation fees*
  - *Very long periods of*
    - *development of baselines and methodologies (especially for small-scale CDM projects)*
    - *approvals*
  - *CDM is too complex*
  - *Too much work required to develop PIN (Project Identification Note) / PDD (Project Design Document) in comparison to risk of project not coming through / not giving required return*
  - *Skillset and knowledge of carbon financing in Africa very scarce, including lack of competency to analyse risk and understand opportunities in the local financial sector*
  - *Low level awareness of CDM potential on the part of private sector, particularly investment and financial organizations*
  - *Lack of different types of financing available (only avenue people know is the money market, i.e. the Banks - not sufficient depth and can be incorrect financing)*
  - *Developers do not present their projects very well to financing institutions - a bankable document is a mandatory requirement*
  - *Other aspects:*
    - *Designated National Authority (DNA) staff often only working part-time*
    - *Corruption*

- There are six carbon financing funds within the World Bank (WB); however, applications are definitely too complicated
  
- c) *Potential solutions of carbon financing-related issues in Africa*
  - *Increase staff / staff availability within DNAs*
  - *Creation of a database of existing projects, emission reductions, other benefits, project developers, financiers, government support, etc.*
  - *Creation of a database of all the national and international issues, barriers, and challenges relevant to carbon financing in Africa*
  - *Capacity building of the financial sector (At ACCE, the Green Knowledge Institute can already create modules for the financial sector)*
  - *Development of risk sharing or risk mitigating mechanisms, e.g.*
    - empowerment fund, which provides citizens part of funding at low interest rates
    - grant funding for prefeasibility
    - development of venture capital industry is needed
    - insurance products to cover risks, and underwrite projects
  - *Effective institutional framework and specific instruments to support CDM investments in Africa, e.g.*
    - Public benefit charges to support CDM and bioenergy projects
    - Renewable portfolio standards requiring electricity suppliers to source a percentage of the energy e.g. from bioenergy
    - Specific loans for bioenergy projects
    - Creation of CDM financing schemes by private banks
  - *Making project developers aware that a minimum in terms of land availability is required to make carbon financing viable, i.e. to justify carbon financing transaction costs; such a minimum land availability could be around 5,000 – 10,000 ha*
  - Markets need to be created and protected through policy and regulation in order to develop the value chain and industry
  - Applications, e.g. for WB carbon financing funds either need to be simplified or related support needs to be provided free of charge to project developers
  - Design of general ranking of the easiest and most viable projects types (i.e. low hanging fruits first to build momentum)
  - Explore ways of integrating carbon markets into the main economy opening it to conventional legal and banking services
  
- d) *Estimated contribution (in %) of carbon financing to overall project cost of bioenergy project*
  - *Depends on the type of project, i.e. the range identified was between 2% and 25%*
  
- e) *Current involvement in carbon credit trading activities, experiences with the African Carbon Credit Exchange (ACCE) and potential measures to support carbon credit trading activities*
  - Current involvement in carbon trading activities:
    - *Two key market players in the area of carbon credit trading activities in Africa, i.e. African Carbon Credit Exchange (ACCE) headquartered in Lusaka, Zambia and African Climate Exchange (ACX) headquartered in Addis Ababa, Ethiopia*
    - ACCE is currently developing its actual trading platform
      - [most other exchanges look at information exchange and services which really look at developing the project and brokering the deal]. ACCE are in the process of trying to harness sufficient credits to trade

- ACCE has a flexible model to enhance the supply base (including access to knowledge through ACCE's Green Knowledge Institute (GKI), and finance through Fund Portfolio), work with partners around the world and develop a broker network
- ACX serve as a clearinghouse for the development of greenhouse gas reduction projects in Africa and its objectives are twofold, i.e.
  - facilitation of project management development actions in the African Union (AU) to establish sustainable renewable energy projects and business enterprises leading into Green House Gases (GHG) emissions reductions;
  - establishment of sustainable renewable energy projects for the AU with the objectives to increase regional employment, improve the skills base and promote local manufacturing in AU energy sector
- Experiences with the African Carbon Credit Exchange (ACCE):
  - *Market players have very little experiences with ACCE as yet*
- *Potential measures to support carbon credit trading activities:*
  - *More information required about carbon trading-related opportunities and risks*
  - *Sufficient resources are required (e.g. by ACCE), i.e. human resources, technology, finance, regime certainty, development of Africa appropriate methodologies, innovative financing, etc.*
  - Strengthening of policies supportive of carbon trading activities

**Question 13 (essential): Bioenergy-related characteristics / risks / opportunities**

a) particular characteristics of bioenergy projects in Africa

b) three most important risks related to bioenergy projects in Africa

c) three most important opportunities related to bioenergy projects in Africa

The responses to this question were as follows:

- a) *Particular characteristics of bioenergy projects in Africa:*
  - *Still relatively new technology, i.e. lacking track record and therefore limited investment experience*
  - *Many stakeholders have had to learn that it takes much longer than expected to establish biofuel / jatropha plantations in Africa*
  - *In some projects the entire value chain of business is too long. In the case of biodiesel, for example, a manufacturing plant has to worry about the agronomy side of things (instead of someone else running agronomy as a business). In Africa the cost of doing business is simply high, and complex*
  - Demand for end product is evident, but strategies of integration into current systems are insufficient and government directives not well defined
  - Structuring
  - Risk profiling
- b) *Bioenergy project-related risks:*
  - *Long-term availability of feedstock*
  - *Long-term price security of feedstock*
  - *Lacking experience and track record of project developers*
  - *Food versus fuel debate-related issues*

- *Viability of bioenergy projects strongly depends on fossil fuel prices*
  - *Reliability of bioenergy technology*
  - *Bioenergy-related legislative regime*
  - *Insufficient infrastructure*
  - Generally, viability of bioenergy projects remains a risk in many places across Africa
  - The bioenergy industry as a whole is still underdeveloped in Africa
  - Risk of securing offtake agreements
  - Contractual issues
  - Management issues
  - Corruption
- c) *Bioenergy project-related opportunities:*
    - *Availability of marginal land for growing feedstock*
    - *Feedstock residue also has a residual value for by-product production*
    - *Job creation*
    - Project developers should consider growing their own feedstock in order to be more independent from external feedstock suppliers
    - Establishing long-term power purchase agreements (PPAs) provide a bankable asset
    - Cheaper source of energy
    - Waste to energy
    - Biodiesel
    - Cogeneration
    - Low carbon development trajectory

**Question 14: Estimated average processing time of bioenergy financing requests and potential solutions to shorten this period**

A summary of the responses to these two aspects is provided below:

- *Estimated average processing time of bioenergy financing requests:*
  - *6-12 months*
  - *Each project is specific; the processing time is a function of the project development stage*
- *Potential solutions to shorten this period:*
  - *Build track record*
  - Project developers need to make available all the conditions precedent before disbursement

**Question 15: Potential implications of the global financing and banking crisis on bioenergy-related business activities (e.g. in terms of risk approach or collateral required)**

*The potential implications of the global financing and banking crisis on bioenergy-related business activities are as follows:*

- *African Banks have always been risk averse - nothing has changed!*
- *Limited resource available for on lending to project developers*
- *Types of collaterals typically required by project developers:*

- *Landed property*
- *Guarantees from third parties especially financial institutions*
- More diversification of investment portfolio - this would help bioenergy projects in the end
- Cost of capital and ability to provide favourable terms
- In Zambia, the competition from Nigerian banks has changed the market place
- Collapse of the international biofuel market makes it unattractive for investors to finance projects in developing countries

Question 16: Nature of the funding requirements for bioenergy enterprises (i.e. what do bioenergy ventures actually need funding for) and identification of the three most important types of funding requirements

The responses to the first part of this question –i.e. *nature of the funding requirements for bioenergy enterprises*- included the following aspects:

- *Feasibility stage funding*
- *Raising equity*
- *Capex*
- Implementation

In terms of the latter part of the question, the most important types of funding requirements identified by project investors are as follows:

- Local Banks
- African Carbon Asset Development (ACAD) Facility
- ACCE, and their relevant Funds (including credit enhancement fund)

Question 17: Project financing options for bioenergy projects in Africa

The following *bioenergy project financing options* have been *identified by project respondents*:

- *Commercial banks*
- *Donors*
- *Grants and concessionary loans such as Africa Rural Energy Enterprise Development Project (AREED)*
- *Loans from Energy finance houses such as E+Co*
- *Venture capital*
- *Bi-lateral / multi-lateral funding sources, e.g.*
  - World Bank
  - UNDP
  - Specific projects:
    - Energising Development (EnDev) project<sup>1</sup>
    - Energy Sector Management Assistance Program (ESMAP)<sup>2</sup>

<sup>1</sup> Energising Development (EnDev) project: Dutch-German partnership on access to energy: [http://www.senternovem.nl/energising\\_development/general\\_information/index.asp](http://www.senternovem.nl/energising_development/general_information/index.asp)

- Regional Development Banks (AfDB)
- Funds

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<sup>2</sup> Energy Sector Management Assistance Program (ESMAP) is a global technical assistance program which helps build consensus and provides policy advice on sustainable energy development to governments of developing countries and economies in transition. ESMAP also contributes to the transfer of technology and knowledge in energy sector management and the delivery of modern energy services to the poor: <http://www.esmap.org/about/index.asp>

## Annex I: Market survey - project developers

### COMPETE – Bioenergy financing survey on funding opportunities – project developers

#### Short explanation of background and purpose of survey:

The COMPETE project ([www.compete-bioafrica.net](http://www.compete-bioafrica.net)) is funded by the European Commission and looks at issues around the development of sustainable bioenergy projects in Africa.

There are several aspects to this project (e.g. policy issues, land management issues, etc), but this particular survey is related to issues around the financing of bioenergy projects in Africa – from both, project developers', as well as project investors' perspectives.

#### Specific purpose of this survey:

The objective is to find out how existing financing mechanisms can be improved (or new financing mechanisms created) so that it will be easier for bioenergy ventures in Africa to access funding! This survey therefore investigates current problems and potential solutions in accessing funding for bioenergy projects. The survey will address project developers, financing institutions, as well as other relevant stakeholders.

It can be guaranteed that your input will remain absolutely anonymous and 100% confidential and no names of organisations or countries of origin or any other type of information will be published from which it will be possible to trace back any information from individual organisations. The only purpose is to gather on-the-ground information in order to develop a strategy on how to improve the financing of bioenergy projects in Africa. The final version of the report that will be created from the results of this survey as well as the final version of the overall strategy on how to improve the financing of bioenergy projects in Africa will both be published on the COMPETE website.

Given that this report will also be read by policy makers, by financial institutions, and by project developers, your input is extremely important to introduce real changes in the way how bioenergy projects in Africa will be financed in the future.

#### Key:

- All questions in **blue** are of **minor importance**, i.e. if you have time, it would be useful, if you could answer them.
- All questions in **red** are the **really important ones**, so your help in answering as many of them as possible is very much appreciated! The by far most important questions of this survey are questions 3, 5, 6, 7, 8, 9, 11 and 12.

**PROJECT DEVELOPER** version of the survey:

**PART A - YOUR ORGANISATION AND YOUR ACTIVITIES IN THE BIOENERGY MARKETS:**

- 1 What is your role in the bioenergy market, i.e. what does your business do and how big is your business (not interested in commercially sensitive information, like turnover, but just to get an idea of small-, medium- or large market player; e.g. annual production)?
  - Role in the bioenergy market:
  - Size of business:
  
- 2 What is the nature of the funding requirements for bioenergy enterprises, i.e. what do bioenergy ventures / does your business actually need funding for? Out of all your answers: which ones of them are the three most important ones?
  - Nature of the funding requirements for bioenergy enterprises:
  - Three most important ones:

**PART B - PROJECT DEVELOPERS AND THE FINANCING OF THEIR BIOENERGY ACTIVITIES OVERALL:**

- 3 Access to capital in general: What are the main problems that project developers face with respect to getting access to financing/capital?
  
- 4 What are potential sources that could be approached to ask for funding for your bioenergy business?
  - sources that could be approached for funding:
  
- 5 How are bioenergy developments currently mostly financed?
  - 5.1 Where did you get the funds from to develop your business idea, including pre-feasibility and feasibility study and what was the funding source after feasibility was established?
    - Funding source up to and including feasibility study:
    - Funding source post feasibility study:
  
  - 5.2 Since starting your business operations, have you expanded your business, did you need additional capital for that expansion and where did you get it from? Alternatively, if you haven't expanded your business yet, but have plans to expand, where are you thinking of getting the money from?
    - Funding source for additional capital for expansion of business already realised:
    - Anticipated funding source for potential expansion plans:
  
  - 5.3 Would there have been other options of financing your business and why didn't you use them?
    - Other potential options of financing your business:
    - Reasons why these weren't used:

**PART C - ISSUES AROUND FUNDING CRITERIA AND HOW TO RESOLVE THEM:**

- 6 What are the criteria that project developers have to fulfil to attract funding, i.e. what do the different types of financiers / financing institutions ask for before they are willing to offer financing?
- 7 Criteria set by financing sector – based on responses to previous question, what needs to change, i.e. what do funding institutions need to change to make access to financing more realistic for project developers?

**PART D - FINANCING AND COMMERCIALISATION OF BIOENERGY AND HOW TO IMPROVE THAT PROCESS:**

- 8 (Aside from the changes suggested in the previous question, i.e. what the funding institutions need to change to make access to financing more realistic for project developers,) what other kind of support would be useful for project developers to maximise the prospect of attracting funding? (e.g. other types of bioenergy enterprise development support, e.g. lacking skillsets, tools, guidelines for preparation of feasibility study / business plan, general business training, standards for sustainable bioenergy development, etc.)
- 9 Commercialising your bioenergy activities: What do you think are the prospects / business opportunities regarding trade of bioenergy products and services: a) nationally? b) internationally? (i) What types of bioenergy-related products and services could be traded, (ii) who could be your main trading partners and (iii) what needs to be improved to enable you to benefit from trading activities?
- a) trading business opportunities: nationally:
  - b) trading business opportunities: internationally:
  - (i) types of bioenergy-related products to be traded:
  - (ii) who could be main trading partners:
- 10 What are currently the main markets for your bioenergy products, i.e. what bioenergy products do you sell and what types of clients do you have?
- 11 What can governments do to support financing / investment in bioenergy projects in Africa (e.g. policy / taxation / capacity building / legislation to require large energy companies to purchase bioenergy from small-scale producers / etc.)? And are there any other stakeholders apart from financing institutions and governments that are important in the process of financing bioenergy ventures in Africa?
- type of government support:
  - other types of stakeholders:

**PART E - RISKS OF BIOFUEL VENTURES, HOW TO OVERCOME THEM AND OTHER ASPECTS:**

- 12 In comparison to other commercial ventures, (i) what are the specific risks and opportunities of biofuel ventures and (ii) what could be done to overcome these risks?
- Risks:
  - Opportunities:
  - How to overcome these risks:
- 13 Is there any collaboration between project developers and research activities (research institutions, universities)? If no, please provide details as to why that is the case and also, do you think you would benefit from such a collaboration?
- Collaboration yes/no and reasons:
  - Potential benefit from such a collaboration:
- 14 Has the global financial and banking crisis affected your business activities in any way? If yes, in what way?
- 15 What is the best way of categorising bioenergy projects? Obviously there is small-scale (e.g. local farmers) and large-scale (e.g. large foreign investors), but is there anything in between, i.e. medium-scale? Thresholds (hectares? annual output? other units?) of categories small-, medium-, large scale?
- Bioenergy project categorisation:
  - Potential thresholds:

## Annex II: Market survey - project investors

### COMPETE – Bioenergy financing survey on funding opportunities – project investors

#### **Short explanation of background and purpose of survey:**

The COMPETE project ([www.compete-bioafrica.net](http://www.compete-bioafrica.net)) is funded by the European Commission and looks at issues around the development of sustainable bioenergy projects in Africa.

There are several aspects to this project (e.g. policy issues, land management issues, etc), but this particular survey is related to issues around the financing of bioenergy projects in Africa – from both, project developers', as well as project investors' perspectives.

#### **Specific purpose of this survey:**

The objective is to find out how existing financing mechanisms can be improved (or new financing mechanisms created) so that it will be easier for bioenergy ventures in Africa to access funding! This survey therefore investigates current problems and potential solutions in accessing funding for bioenergy projects. The survey will address project developers, financing institutions, as well as other relevant stakeholders.

It can be guaranteed that your input will remain absolutely anonymous and 100% confidential and no names of organisations or countries of origin or any other type of information will be published from which it will be possible to trace back any information from individual organisations. The only purpose is to gather on-the-ground information in order to develop a strategy on how to improve the financing of bioenergy projects in Africa. The final version of the report that will be created from the results of this survey as well as the final version of the overall strategy on how to improve the financing of bioenergy projects in Africa will both be published on the COMPETE website.

Given that this report will also be read by policy makers, by financial institutions, and by project developers, your input is extremely important to introduce real changes in the way how bioenergy projects in Africa will be financed in the future.

#### **Key:**

- All questions in **blue** are of **minor importance**, i.e. if you have time, it would be useful, if you could answer them.
- All questions in **red** are the **really important ones**, so your help in answering as many of them as possible is very much appreciated! The by far most important questions of this survey are questions 3, 5, 6, 7, 8, 9, 11 and 12.

**PROJECT INVESTOR** version of the survey:**PART A - MOST CRUCIAL PART OF THIS QUESTIONNAIRE: IDENTIFICATION OF POTENTIAL SOLUTIONS TO THE EXISTING ISSUES OF FINANCING / INVESTMENT OF BIOENERGY ACTIVITIES IN AFRICA:**

- 1 Investor security:
  - 1.1 What are the main aspects that create investor / financier security in the field of bioenergy?
  - 1.2 What measures can be taken to overcome hurdles in creating / improving investor security in the field of bioenergy in Africa?
  - 1.3 Based on your experience, which countries already have measures in place that have created investor security in the field of bioenergy and what specific measures did they implement?
    - Name of countries:
    - Examples of measures in place:
- 2 Taking into account your existing in-house skills, tools, products, etc. related to financing of bioenergy projects, what other kind of support would be useful for your organisation in order to optimise your bioenergy-related activities and to be able to be more successful in the bioenergy markets? For example, would you as a financing institution / investor benefit from any additional tools, skillsets, risks and rewards / risk mitigation instruments of bioenergy projects, etc?

**PART B - YOUR ORGANISATION AND YOUR ACTIVITIES IN THE BIOENERGY MARKETS:**

- 3 What is your role in the financing market, i.e. what does your organisation do (e.g. equity or loan or grant funding; venture capital, etc.)?
- 4 How big is your organisation (i.e. not interested in commercially sensitive information, but just to get an idea of small-, medium- or large market player) and what is the dimension of your bioenergy-related activities, i.e. how much bioenergy-related financing / investment do you provide / invest annually (if a figure is provided, what is the currency)?
  - Overall size of organisation:
  - Dimension of organisational bioenergy-related activities:
- 5 What types / products of financing / investment for bioenergy businesses / projects have you provided so far across the bioenergy business value chain,
  - e.g. debt, equity loans, venture capital, etc?
  - e.g. early stage venture idea development, pre-feasibility, feasibility, raising equity, raising debt, implementation, entrepreneur development?
  - e.g. concessionary loans (medium- and long-term), dedicated bioenergy funds (if not, are you aware of any?), any other ones?

- 6 Please describe your market activities up to now regarding bioenergy-related business in Africa, e.g. when did you start investing in / providing financing for bioenergy businesses
- 7 (and in case that's not commercially sensitive information): is there an upwards trend or downwards trend in terms of your bioenergy-related financing provision activities? Any reasons for the trend?
- Trend: upwards / downwards and why:

### PART C – THE FINANCING SECTOR AND THEIR BIOENERGY ACTIVITIES OVERALL:

- 8 What are the criteria of the funding institutions / investors to decide whether or not to invest in bioenergy-related businesses, i.e. what requirements do bioenergy enterprises need to fulfil to meet funding requirements of the financial / investment sector? e.g. minimum ROI; minimum / acceptable debt/equity ratio; types of guaranteed instruments / collateral required / accepted; certain risk profile; pay-back time; proven concepts through demonstration/pilot projects?
- Criteria:
- 9 In particular: what requirements would a project developer have to meet so that you would consider investing / providing financing at early stage venture idea development, pre-feasibility, feasibility stage? (this is a major bottleneck for project developers!)
- 10 [in case that hasn't been covered yet by any of the earlier questions:] Scale and type of projects and in-house project evaluation:
- What is the minimum scale / project size that a project needs to have to even be considered for financing / investment by your organisation? (how is scale measured? \$ / annual output? Would bundling of a number of small projects be an option to get to the required minimum scale)?
  - Type of project: Do you prefer commercial projects or would a community-type project be of interest to you, too? Reasons?
  - Pre-commitment bioenergy project evaluation: do you do all of the evaluation for bioenergy projects financing / investment opportunities in-house or do you outsource any of that? Why?
    - Minimum scale:
    - Type of project:
    - Bioenergy project evaluation:
- 11 How important are social and environmental sustainability criteria for your financing strategy?

**PART D - CARBON FINANCING, RISKS OF BIOENERGY PROJECTS OVERALL AND OTHER ASPECTS:****12 Carbon financing:**

- 12.1 What experiences have you made with carbon financing / carbon credits (CERs, VERs), especially with respect to bioenergy projects?
- 12.2 What are the main problems regarding carbon financing in Africa?
- 12.3 How could these main problems regarding carbon financing in Africa be resolved?
- 12.4 Based on your experience, what is the contribution of carbon financing to overall project cost of a typical bioenergy project? (10-20%? Less?)
- 12.5 Are you involved in / considering to get involved in carbon credit trading activities e.g. using Carbon Credit Exchanges (e.g. CCX, ECX, etc) and if not, what support would you need to be able to get into carbon credit trading? Finally, what are your experiences regarding the African Carbon Credit Exchange (ACCE)?
- Involvement in carbon trading activities:
  - Support required to get into carbon credit trading:
  - ACCE:
- 13 Characteristics / risks / opportunities: In what way are bioenergy business activities different from other types of investments, i.e. what are their particular characteristics? Furthermore, what are the 3 most important risks and the 3 most important opportunities related to bioenergy business activities / related financing requirements?
- Difference / characteristics:
  - Risks:
  - Opportunities:
- 14 How long do you estimate is the average processing time of bioenergy financing requests and what could be done to shorten this period?
- 15 To what extent has the global financial and banking crisis affected your / the financing sector's bioenergy-related business activities? E.g. in terms of risk approach or approach to collaterals?
- 16 From the financing / investing point of view: "What is the nature of the funding requirements for bioenergy enterprises, i.e. what do bioenergy ventures need funding for?" E.g. idea development, pre-feasibility, feasibility, raising equity, raising debt, legal close, financial close, implementation, capex, opex, etc.? (chronological in terms of project development cycle); which ones are the three most important ones?
- 17 What bioenergy project financing options are you aware of, i.e. what sources could project developers approach to ask for funding for the development of their bioenergy business?

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