In this deliverable we first present a technical note on how to identify the key agro-energy stakeholders involved (or potentially involved) in the production of biodiesel in the province of Foggia (Capitanata). Subsequently, we present the questionnaire which will be distributed to these stakeholders.

A TECHNICAL NOTE
IDENTIFYING THE AGRO-ENERGY STAKEHOLDERS IN CAPITANATA

1. The methodological approach

The Biomass, depending on its nature and type, may trigger the activation of numerous and diverse agro-energetic chains, involving many stakeholders in various related sectors. The main strategic aim of the bio-refinery scheme (which is a technological and organisational evolution of the biomass use) is creating a dense and broad network of all existing productive chains, integrating the biomass conversion processes and equipment to produce fuels, power, food and chemicals, making optimal uses of the side streams generated during farming/harvesting, primary processing and secondary processing. It is precisely through this gradual integration, that bio-refineries encourage different sectors and economic chains to form a dense and structured network
of productive activities, making the best use of available local resources. Such network would, eventually, evolve into a technological niche.

In its traditional meaning, the concept of chain includes all technical and entrepreneurial operators involved in the production process (more precisely in raw material cultivation and its processing into the final product ready to go on the market) as well as all service operators, upstream and downstream of the chain itself, who contribute to the achievement of adequate levels of production and efficiency.

This conceptualisation, however, is now considered too restrictive and should be revised to include other stakeholders that might have (directly and indirectly) a significant impact on the development of the chain itself. This is especially true when we consider that the concept of chain has actually replaced that of ‘technological cluster’ and ‘productive district’.

Such an enlarged chain is a milieu where the traditional players of the sector interact with other stakeholders who do not play a direct role in the productive chain but rather carry out actions that are pertinent to political and institutional, rather than ideological and cultural, questions. They can put in place relevant guidelines and influence the choices and decisions of institutions and administrative bodies at the national and local levels, as well as those of coordination and control entities, local government, public opinion, political movements and NGOs. In this context, it is worth-noting that one of the main issues in the development and take-off of new technologies in the renewable energies field, especially in Italy, is the exclusion of certain stakeholders – those not typically represented by the key economic actors as well as political institutions - from decision making processes.

Taking into consideration these stakeholders is of an utmost importance as the sustainability of energy production from renewable resources, especially from vegetal biomass, depends on the interaction with institutions, agencies and local communities, as power agencies that support the network with their resources and play a central role in it.
2. **The integration at the local level**

In order to ensure the sustainability of the production of renewable energy, and particularly that of biomass, a close interaction with institutions, communities and entities at the local level is required. The main advantage which lies in such collaboration is the fact that it facilitates the ability to combine projects for the recovery, processing and use of agricultural products with the supply of energy services in favour of the local area.

2.1 **Identifying the levels of the agro-energy system**

A theoretical examination of the complex energy system allows only a partial identification of its different components. A more thorough analysis can be done by classifying these components into different hierarchical levels (one inside the other, as Chinese boxes) that underlie the ‘organizational structure’ of the system and give insight into the relationships which exist between the various players operating in the sector.

In order to reach the objective of a strong local integration there is a need to put in place a system that combines public and private responsibility in decision-making and operational processes. Such a system should be based on the following components:

- The institutional setting;
- Local government;
- A wide public consultation mechanism and participation in decision making processes on local development strategies;
- A technological know-how from research and development (R&D) structures;
- An energy production district/niche and an extensive entrepreneurial network, well supported by local infrastructure.

2.2 **The institutional setting (and the participatory approach)**

One of the most important factors that allow the establishment and the sustainability of a ‘niche’ in the energy sector is an efficient institutional setting (both at the national-European and the local levels). The former sets the overall objectives to be pursued (for example, targets of energy saving, substitution of fossil fuels, energy efficiency, etc.) and determines the rules that govern the sector (Tab 1). The systems of regulations and permits are determined at different levels of hierarchy (EU, State, Regions), and both are the result of concrete actions of legislation and governance.

A. In order to examine the European and the national legislation bodies an analysis of the regulatory framework developed in recent years and of the
commitments taken in the international context by the European Union and its Member States is needed.

- **Key Reference Actors at the European and National level: KRA_1 (see Annex)**

B. At the regional level the Environment and Energy Plan of Apulia Region (PEAR) has been drafted, after a careful preparatory study. It provides guidelines to be implemented in the energy sector and in energy saving, making reference also to the renewable sector, and specifically to that of biomass. Various regional and provincial by-laws have also been put in place to regulate the manner in which agro-energetic plants should be set.

- **Key Reference Actors at the Region’s level: KRA_2 (see Annex)**
- **Key Reference Actors at the Province level: KRA_3 (see Annex)**

C. With respect to NGOs, several key reference actors can be taken into consideration:

- **Key Reference Actors with respect to NGOs: KRA_4 (see Annex)**

### 2.3 The local energy district

Developing an agro-energy chain implies forming and coordinating a complex network of relationships within the area. Such a network should facilitate the convergence of expectations of the various stakeholders and the development of a common core view. In this sense, the creation of a new technological niche is not given by the mere cooperation of stakeholders “having the same economic role” (e.g. pool of entrepreneurs), but rather it is the functional interaction of all interested parties, including (first and foremost) the ‘local’ in its many forms of organisation.

This local **productive district** consists of both *companies* integrated in the production system as well as *institutions* active involved in the local economy. It should be emphasized that such districts should not be considered as the mere aggregation of small and medium-sized enterprises, located in a restricted area; rather, the term refers to a more extensive representation of the capacity of the system (of enterprises and local institutions) to develop a strategic plan aimed at creating and strengthening regional factors of competitiveness *(Tab 2 and Tab 3)*.

- **Key Reference Actors with respect to Institution of the local Economy: KRA_5 (see Annex)**
- **Key Reference Actors with respect to the Entrepreneurial system: KRA_6 (see Annex)**
- **Key Reference Actors with respect to Trade and Industrial Association: KRA_7 (see Annex)**
2.4 The energy sector: stakeholders in the productive sector

Broadly speaking, a production chain aimed at the generation of energy from agricultural biomass can be divided into four basic steps:

a. Cultivation and/or collection of biomass (depending on whether they are dedicated crops or residual biomass). This phase is geographically distributed and its main input shows a variable concentration ratio (of mass per unit area), depending on the type and productivity of the crops involved;

b. Transportation and geographical concentration of the raw material at the storage facility, including, if necessary, storage in chilled environment, until its transferred to the industrial plant;

c. Conversion of the biomass into an energy product (fuel, electricity, heat), directly consumed or further transferred up to the final user through a distribution network;

d. Conversion into food and/or bio-products of all the side streams generated during farming/harvesting, primary and secondary processing.

This is the base-line from which we can identify the potential stakeholders of the productive agro-energy chain, namely: farming enterprises, companies involved in collection and transport of products, and utilities that manage the production of energy in the biomass plants.

One factor which plays a critical role in outlining the organisational structure of the chain is the farmer. Having this notion in mind, one distinction specification must be made: a long chain is a chain where farmers produce energy crops that other companies purchase, process and convert into energy or fuel. In a short-chain, on the other hand, the producer and the end-user of the agro-energy product are basically the same. In other words, farmers engaged in the production of biomass use their own equipment for its conversion into energy for their own needs and self-consumption. In case of over-production, one possibility would be to sell the energy produced through the channels which the liberalised energy market offers. In this case, the chain integration takes place as farmers, although not directly converting biomass into energy/products for sale, still participate in the profits of the chain as a whole.

Schematically, in a ‘complete’ chain the following components can be identified (Tab 4):
• Energy company, private or publicly-owned, that manages the power generation of electricity/heat. It is the leading stakeholder who provides the investment required for the setting up of the plant.
• A Consortium which defines and implements the agricultural planning strategy, coordinating the local activities and disbursing the necessary funding.
• Fuel Company/Cooperative, which works closely with the Consortium. It is responsible for ensuring the supply of fuel to the plant;
• Other operators (cooperatives and/or privates) interested in undertaking complementary activities (packaging, harvesting, storage of raw fuel, maintenance of plants, logistic services in municipalities, etc.).

The energy farm: business models

From an entrepreneurial point of view, there are several models of agro-energetic companies which can be broadly divided into three groups:

I. Farms cultivating the raw material for energy generation

These are individual or associated farms focused on the production of raw materials, such as oil-rich crops (rapeseed, sunflower, soybean, etc.) for the biodiesel production through transesterification of the oil, or on crops rich in carbohydrates and sugars for the production of bioethanol, through fermentation. In case of vegetable oil production, the chain is much shorter, as the biofuel can be produced directly by the farm without any further industrial processes.

Other companies which belong to this group are those investing in annual or multiannual grass crops, trees and shrubs to provide biomass for the production of heat and/or electricity and forestry companies, which through the management of forest areas, collect wood (in form of firewood, wood chips, etc.) for heat and/or electricity production.

The element that brings together these companies is their contribution to the agro-energy sector, which is limited to the production and provision of raw material which is then subjected to an industrial process or which is directly sold to energy production (e.g. wood chips).

II. Farms growing energy biomass for direct use

This can be the case in, for example, agri-touristic farms, which produce wood chips for the heating of the complex, using modern automated high-performance equipment. Another example may be the pure vegetable oil produced from own sunflower crops fueling a generator that provides the electricity necessary for the same farm.
III. Farms that, in addition to the production and use of bio-fuels, sell other products to third parties

This is the case, for instance, of companies producing biodiesel that can also sell the glycerine (the main by-product in the process of transesterification of the vegetable oil to get biodiesel) to food, pharmaceutical, healthcare, chemical and industrial plants.

Another example is given by agro-energy cooperatives producing fuel from energy crops grown by their associates, and/or producing biogas through slurry digesters. Moreover, the farm produces and sells electricity, which is fed into the network or sold to the local community (usually as distributed heat through a district heating system). In this case, the company constitutes a complete chain in order to maximize the added value, organising the process, cultivating the fuels, investing in technologies and facilities, running them, and selling the energy produced.

Models of entrepreneurial aggregation

A consortium of owners is a form of business association that can have an effect both on the economic side as well as on the promotion of agro-forestry resources. More precisely, it might have positive effects on the management and organisation of companies and on the possibility to secure funding from EU, national and regional authorities. Such a structure allows solving problems related to the fragmentation of ownership. Indeed, while for large companies the investment in strategic planning is economically viable, this is not the case for small- and medium-sized companies that must join in a consortium of owners.

Logistics: collection and transportation of biomass

Logistics, at the company level or at the chain level, is essential for the effective transportation and storage of goods and information from suppliers to consumers. It consists in numerous activities (from the supply of raw materials and components up to recycling and waste management) and concerns the allocation of space and time of many tangible and intangible resources.

Logistics, at the local level, however, is the set of strategic planning processes and governance of facilities and activities that allow the flow of goods and products in a particular geographic area, in a consistent way, by improving the access to goods, services, people and places, and maintaining and renewing the available resources.

Transport, therefore, plays a primary role in the chain whether locally, nationally and internationally. A good local interconnection between the various players in the sector would lead to networks integration and to lower costs of transport.
The agro-mechanical companies

The most critical issue of agricultural residues lies in their systematic collection, which is not suitable for small companies as the low value of the product does not justify the cost of purchase of machinery. From the late 70s the Italian mechanical industry has started producing machinery for the collection of pruning, but only in recent years there has been a cautious commitment of some companies to use such machines.

In light of what was said so far, it is understandable how the role of the agro-mechanics companies is of absolute importance for the agro-energetic sector. These companies offer highly specialised services, the possibility of using cutting-edge technology and timely intervention in addition to net savings in initial investment and lower management costs for the individual company.

The agro-mechanic company can take part, with considerable savings for farms, in many phases of the production process, such as cultivation, seeding and fertilising, but especially during harvesting, preservation, storage, pretreatment of the products and their delivery to the processing plants.

The business of energy services

Within the chain, service companies for the construction of facilities can also play an extremely important role, since in such activities high cost machineries are necessary, and these usually cannot be easily absorbed. For this purpose, it is important to consider the role that may be played by utilities, including those publicly-owned and even more by ESCOs (Energy Service Companies?), in the construction of machineries necessary for the conversion of biomass into energy.

- **Key Reference Actors with respect to Agro-Energy Enterprises: KRA_10 (see Annex)**
- **Key Reference Actors with respect to Energy Service Companies: KRA_11 (see Annex)**

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7 A clear and comprehensive definition of an ESCO is difficult to find due to the variety of types of companies that belong to this category and the different strategies taken by them on the market. The definition that suits it better, in our opinion, is the following: an ESCO is a company that finances, develops and installs projects aimed at improving the energy efficiency and the maintenance of costs related to equipment installed for that purpose.
3. Conclusions: strategies and course of action

The economic and logistic advantages related to a chain-supply organization are twofold: its virtuous scale-economy effects as well as the substantially lower biomass transport and storage costs. These considerations suggest that there is a need for a well established energy policy, aimed at supporting the agro-energy chains, particularly those structured at a small scale and with a direct connection with a local biomass supplying.

In this respect, a ‘joint agreement’ among the whole range of actors of the agro-energy-chain could be a first step in the right direction to maximise the productive efficiency, minimize the operational costs and equally share the profits and the added value generated from the energy conversion biomass process. In such a context, the optimal interaction between the agricultural and the industrial sectors is essential in order to guarantee a reliable, long-lasting and beneficial biomass supply.

A policy aimed at guiding, coordinating and supporting, led by local government, is considered crucial to the successful functioning of such an entrepreneurial initiative. The ‘formula’ that is proposed and actually implemented at the regional scale is that of an Energy district, to build local market conditions that can adjust and match the energy demand with the energy supply, preserve the capital investments needed to develop the bio-energy sector and allow the development of efficient energy use, is of vital importance. Hence, the farming enterprises must be recognized as a vital part of the bio-energy-chain and well-balanced conditions between the agricultural and industrial parts of the chain must be established.
Tab 1. THE INSTITUTIONAL SETTING

EUROPEAN UNION → REGULATORY FRAMEWORK

REGION → AUTHORIZATION FRAMEWORK

PUBLIC OPINION, LOCAL COMMUNITY, ACTIVE CITIZENSHIP → LOCAL GOVERNMENT

NATIONAL GOVERNMENT → GENERAL LAND PLANNING

PROVINCE → REGIONAL PLANNING

LOCAL GOVERNMENT → LOCAL PLANNING

MACRO-TARGET DEFINITION →

Tab 2. THE LOCAL ENERGY DISTRICT

ADMINISTRATOR OF THE ENERGY INFRASTRUCTURES → SUPPLIERS OF THE ENERGY SERVICES

REGIONAL PLANNING → PRODUCTIVE DISTRICT ON RENEWABLE ENERGY

LOCAL GOVERNMENT → RESEARCH & INNOVATION

LOCAL PLANNING → ENTREPRENEURIAL SYSTEM

ENERGY MARKET AND BIO-MATERIAL→ CREDIT AND FINANCIAL SYSTEM
ANNEX:  KEY REFERENCE ACTORS OF THE BIOFUEL OR BIORAFINERY CHAIN

KRA_1

Key Reference Actors at the European and National levels:

- European Biofuels Technology Platform: http://www.biofuelstp.eu
- Biofuels Technology Platform (Chairman: prof. Giampietro Venturi, University of Bologna); http://www.biofuelstp.it
- European Union: http://europa.eu.int/index_it.htm
- Directorate General of Energy and Transport, the EU: http://europa.eu.int/comm/dgs/energy_transport/index_it.html
- Italian Ministry of Productive Activities: http://www.minindustria.it/
- Italian Ministry of Environment: http://www.minambiente.it/
- Italian Authority for Electric Energy and Gas: http://www.autorita.energia.it/
- Electric System Administration – Renewables (Gestore del sistema elettrico - Fonti Rinnovabili): http://www.grtn.it or http://www.gsel.it
- Italian Electricity Transmission Grids Operator: http://www.terna.it/
- Electric Market Administrator (Gestore del Mercato Elettrico): http://www.mercatoelettrico.org/
- Acquirente Unico plc.: http://www.acquirenteunico.it/

KRA_2

Key Reference Actors at the Region’s level:

- Department of Environment, Apulia Region (Dr. Michele Losappio – Regional Councillor);
- Department of Agriculture, Apulia Region (Dr. Enzo Russo – Regional Councillor);
- Department of Economical Development, Apulia Region (Dr. Sandro Frisullo – Regional Councillor);
- PEAR coordinator, Association AFORIS (Dr. Gian Maria Gasperi);
- Technical committee in charge of the preparation of PEAR, Ambiente-Italia organization (Dr. Rodolfo Pasinetti).

KRA_3

Key Reference Actors at the Province level:

- Department of Economic and Financial Planning, Province of Foggia (Dr. Leonardo di Gioia - Provincial Councillor);
• Department of Productive Activities, Province of Foggia (Dr. Pasquale Pazienza - Provincial Councillor);
• Department of Agriculture, Province of Foggia (Dr. Savino Antonio Santarella - Provincial Councillor);
• Coordinator of the Territorial Plan and Provincial Coordination (PTCP), Province of Foggia (Dr. Stefano Biscotti).

KRA_4
Key Reference Actors - NGOs:
• Local Agenda 21 associations (in many municipalities in Capitanata and especially in San Severo on the issue of a Turbogás Plant);
• Environmental organizations: Lipu, WWF, Legambiente, Italia Nostra, Greenpeace-Italy, Kyoto Club-Italy;
• Technical Associations: ITABIA (Italian Association on Biomass); FIPER (Italian Federation of Renewable Energy Producers); APER (Italian Association of Renewable Energy Producers); AIEL (Italian Association of Agro-Forest Energy); FEDERPERN (Renewable Energy Producers Federation).

KRA_5
Key Reference Actors - Institutions of the local economy:
• Local Chamber of Commerce (Dr. Eliseo Zanasi, president; Dr. Matteo Di Mauro, Chairman);
• Local Banks and Financial Institutions (mostly those banks that have activated specific financing services for bioenergy).

KRA_6
Key Reference Actors - the Entrepreneurial system:
• Regional Technological District of Clean Energy (registered office in Brindisi);
• Regional Productive District of Renewable Energy and Energy Efficiency - New Energy (a consortium of 263 energy companies);

KRA_7
Key Reference Actors - Trade Unions and Industrial Associations:
• ASSINDUSTRIA, Associazione degli Industriali di Capitanata (Industrial Association of Capitanata), Dr. Eliseo Zanasi, President; Dr. Raffaele Poliseno, Chief Executive Officer.
• Coldiretti Foggia, Dr. Pietro Salcuni, President; Dr. Antonio De Concilio, Chief Executive Officer.
• Confagricoltura Foggia, Dr. Luigi Lepri, President; Dr. Antonio Poppi, Chief Executive Officer.
• CIA – Confederazione Italiana Agricoltori – Foggia.
• Copagri – Foggia, Dr. Luigi Inneo, President.

**KRA_8**  
*Key Reference Actors - Research and Innovation:*
• Department of Agro-Environmental Sciences - University of Foggia.
• National Council of Research (CNR) – Division of Coastal Ecosystems - Lesina (FG).
• Council for Research and Experimentation in Agriculture (CRA) – Cereals Research Centre (CRA-CER, Foggia).
• Energy and Environment Research Centre - University of Lecce.

**KRA_9**  
*Key Reference Actors - Energy Enterprises:*
• 3A Adriatic Association of Agro-energy farms – Foggia, Dr. Nicola Danza, President.
• Union of the Biodiesel Producers (Assocostieri) – Dr. G. Jacorossi, President; Dr. Maria Rosaria di Somma, Chief Executive Officer.
• Biodiesel Production:
  o BIO-VE-OIL OLIMPO SRL Corato (BA)
  o ITAL BI OIL SRL Monopoli (BA)
  o FOX PETROLI SPA Vasto (CH)
  o CAFFARO BIOFUEL SRL Torviscosa (UD)
  o NOVAOL SRL Ravenna (RA)
• Biodiesel Plants and Equipment:
  o Naturfuel s.r.l Palo del Colle (BA).
• Association of Alcohol Producers (Assodistil) – Dr. Marco Bertagni, Chief Executive Officer.
• Bioethanol Production:
  o CAVIRO s.r.l. - Carapelle (FG).
  o BALICE S.n.c - Via Prov. Ceglie Adelfia Km. 3.
  o DE LUCA S.a.s - Via Trepuzzi, 35, 73051 Novoli (LE).
• Energy Plants:
  o Italgest, Melissano (LE), Dr. Paride de Masi, Managing Director.
  o Casa Olearia Italiana, Marseglia Group, Monopoli (BA), Dr. Leonardo Marseglia, owner and Managing Director.
**KRA_10**

*Key Reference Actors - Agro-Energy Enterprises:*
- National Union of the Agricultural Mechanization Enterprises - UNIMA - http://www.unima.it
- Provincial Association of the Agricultural Mechanization Enterprises – APIMA - http://www.apima.it/index.html; Foggia; Dr. Aproniano Tassinari, President;
- Agro-Mechanical Industry “Cicoria”, Palazzo San Gervasio (MT).
- 3A - Adriatic Association of Agro-energy farms – Foggia, Dr. Nicola Danza, President.

**KRA_11**

*Key Reference Actors - Energy Service Companies:*
- Watt Verde – Foggia; http://www.wattverde.it
QUESTIONNAIRE FOR INVESTIGATING THE NICHE'S POTENTIAL FORMATION

Introduction
The questionnaire here presented aims at collecting data in order to analyze the pre-conditions for niches’ formation. The data gathered can be treated as relational data and studied by means of the SN approach. It consists in four main sections: the first gathers basic information on the interviewed stakeholders; the second section aims at defining the social network within which firms and institutions (potentially involved in the production of biodiesel) operate; the third section collects data related to the niche creation mechanism (in the following paragraph we come back on this point specifying the main elements of interest); finally, the fourth section is concerned with the knowledge base of the firm.

A few notes on the niche creation mechanism
Niches are “protected spaces for the development and use of promising technologies by means of experimentation” (Kemp et al., 1998: 186). We can see niches as ‘incubation rooms’ for novelties because they are protected or insulated from ‘normal’ market selection in the regime (Schot, 1998).

In order to make such a social space effective for development and usage of promising technologies, three crucial elements are needed:

1) **Expectations should convergence towards a common view.** The relevance of such element has been supported by a large body of literature. For instance, Caniels and Romijn (2008) stress the importance of the convergence of expectations and the development of a common core view for the success of innovation processes within technological niches. Van der Laak et al. add that “firms, users, policymakers, entrepreneurs and other relevant actors participate in projects on the basis of expectations” (2007: 3216).

2) **Powerful actors with their resources should join the support network.** Smith et al. argue that “agency and power depend on the structuring effects of (...) resource interdependency. No single actor has sufficient resources on their own to coordinate responses to selection pressures, or build adaptive capacity” (2005: 1503);

3) **Learning interactions should occur among agents in the niche.** “For (...) experimentation and learning to be successful, it has to be an interactive process (...). The development and implementation of innovations is largely a social process. For example, it has been argued that close interaction between actors is essential because important tacit, informal and uncodified
elements in new knowledge can only be absorbed and shared by means of intensive—indeed direct—communication and learning by doing. Communication also helps to reduce uncertainty and complexity that are inherent in radical innovation processes. Furthermore, innovative activity is cumulative in nature. This means that new innovations build upon scientific knowledge generated by previous innovations”. (Caniels and Romijn, 2008, p. 615). Moreover, it has been noted by several authors (see Giuliani and Bell, 2005) that knowledge flows within a core group of firms characterised by advanced absorptive capacities. This pre-condition needs to coexist for the formation of an innovation niches.

References


QUESTIONNAIRE

Date:
Name of interviewee

Section 1. General information

Name of firm
Address
Telephone
E-mail
Role within the firm
Year of foundation

Type of firm
1. Sole trader
2. Single-person firm
3. Stock company
4. Cooperative society

Type of activity
1. Producers of sunflower
2. Producer of rapeseed
3. Producers of soya
4. Producer of maize
5. Producer of beetroot
6. Producer of beans
7. Producer of peas
8. Producer of algae
9. Other (specify)

Number of employees in the firm
1. Permanent
2. Temporary

Turnover amount
Section 2. General interaction

Please indicate the actors with whom you interact

<table>
<thead>
<tr>
<th>Institutions Roster</th>
<th>Kind of interaction</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Communication</td>
</tr>
<tr>
<td>Institutions name</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Firms Roster</td>
<td></td>
</tr>
<tr>
<td>Firm name</td>
<td></td>
</tr>
</tbody>
</table>

Section 3. Niche Mechanism

1- Convergence of Expectations:
A project for bio-fuel development and use is going to be planned for your region. The plan envisages experiments in the production of raw material for bio-diesel, the establishment of facilities for the production of bio-fuel and tax exemptions for some categories of users. Would you like to join the project?

<table>
<thead>
<tr>
<th>Response</th>
<th>Because:</th>
</tr>
</thead>
</table>
| Yes:     | 1. This sector has great development perspectives and it represents an important chance of earnings for my firm  
2. This sector has some development perspectives and can represent an interesting chance of earnings for my firm  
3. This sector will have a difficult path of development but might have some chance of earnings for my firm |
| I don’t know: | 4. I don’t know the chances of development for this sector |
| No:      | 5. This sector will have a difficult path of development and scarce chances of earnings  
6. This sector can’t have development and chance of earnings |

2 - Networking with powerful actors
In your opinion, in order to make this project successful, the participation of which actors is important?

<table>
<thead>
<tr>
<th>Denomination</th>
<th>Because:</th>
</tr>
</thead>
</table>
| Name of Actor (institution or firm) | Of its capacity to mobilize people  
Of its technological and knowledge resource  
Of its marketing attitude  
Of its capacity to control over financial resources  
Of its capacity to control over material infrastructure  
This organisation just affects my activity (mark if yes) |
| Institutions | ... |
| Firms | ... |
3 - Learning Interaction

**Firms**
(forms of exchange: establishing formal collaboration agreements with other local firms on bio-diesel as joint experimentation, machinery acquisition, etc.; technological visit exchange; exchange of verbal information/advice)

<table>
<thead>
<tr>
<th>Roster</th>
<th>formal collaboration agreements with other local firms</th>
<th>Visit exchange with other local firms</th>
<th>Verbal exchange with other local firms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Firms Name</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Institutions**
(forms of exchange: knowledge transfer, collaboration)

<table>
<thead>
<tr>
<th>Roster</th>
<th>Could you mark, among the actors included in the roster, those that have transferred relevant technical knowledge to this firm?</th>
<th>Could you mark, among the actors included in the roster, those with whom this firm has collaborated in research projects during the last two years?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Institutions/organisation Name</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**International Actors**
(forms of exchange: knowledge transfer, collaboration)

<table>
<thead>
<tr>
<th>Roster</th>
<th>Could you mention any international actor (institutions, associations and firms) that have transferred relevant technical knowledge to this firm?</th>
<th>Could you mention any international actor (institutions, associations and firms) with whom this firm has collaborated in research projects during the last two years?</th>
</tr>
</thead>
<tbody>
<tr>
<td>International actor's Name</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Section 4. The knowledge-base of the firm**

1- Skilled workers:

<table>
<thead>
<tr>
<th>Roster</th>
<th>Number of technical employees with a graduate degree (BSc, MSc, MPhil, DPhil) in technical disciplines</th>
<th>Number of technical employees without a graduate title in technical disciplines</th>
<th>Number of consultants or agronomists in the firm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Firm’s Name</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
For firms that have indicated the number of technical employees with a technical degree, please specify:

<table>
<thead>
<tr>
<th>Roster</th>
<th>Maximum level of degree obtained (BSc, MSc, MPhil, DPhil)</th>
<th>Number of months spent employed by firms in the same industry</th>
<th>Number of months in which you have participated in scientific research projects</th>
<th>Other additional activities (courses, seminars, conferences, workshops) in which you have participated in the last two years. Indicate the number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Firm’s Name</td>
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</tbody>
</table>

2- Technological change:

<table>
<thead>
<tr>
<th>Roster</th>
<th>In the last 2-3 years has the firm invested in the acquisition of new machinery or equipment? Possible answers: Yes, No, Do not know</th>
<th>Is the machinery, or most of it, of the latest generation? Possible answers: Yes, No, Do not know</th>
</tr>
</thead>
<tbody>
<tr>
<td>Firm’s Name</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>