ITAKA

Collaborative Project

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D5.5 Socio Economic Impact Assessment report

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Executive summary

Initiative Towards sustAinable Kerosene for Aviation (ITAKA) is a collaborative project designed to support the development of aviation biofuels in a 'sustainable' way. ITAKA is the first such project to assess the entire value chain at an EU level, using Camelina as a feedstock.

The aims of task 5.1.5 were to develop a socio-economic impact framework and investigate the social and economic impacts associated with Camelina feedstock production in Romania and Spain by focusing on different case studies scenarios that were representative of rural villages and towns in Romania and villages from different geographical areas of Spain. This report provides an analysis, synthesis and overview of socio-economic impact assessment (SEIA) methods and findings in Romania and Spain.

There are no standard SEIA methods that are universally applicable, and these have to be developed on the local level. SEIA is an emerging and complex area of endeavour, especially when applied to the production of alternative fuels. An understanding of local culture was essential when recording community perception relating to Camelina investment and production in a particular area. Information on the perceived benefits of Camelina production that emerged from the research required the refinement of the original SEIA framework partway through the research study.

Slightly different frameworks were designed for each country, but the socio-economic indicators used in the analysis were the same for both. The main differences in the indicators used reflected both the availability of data and differences in perception relating to local priorities for social and economic development.

The mixed method approach of questionnaire and interviews, chosen to gather impact data, proved appropriate for the type of research required to underpin an SEIA procedure. This report examines the extent to which the selected instrument was appropriate, what were the strengths and weaknesses of the approach taken in the different case studies and how the methods had to be revised and adapted. Measuring perception about social well-being was more problematic than quantifying changes in the economic environment, so this part of the survey was better addressed through interview rather than the use of questionnaires.

A Baseline Study which constituted a significant part of this research was conducted in parallel in both countries. SEIA requires a multidisciplinary approach, tailored to the specific conditions at a particular locality and making use of diverse and complex data sets. This explains why the baseline study needs to be carefully designed and its outcome analysed in some depth. To support the analysis, data were grouped as social data & economic data on one side, and primary and secondary data source on the other. The main stakeholders included in the study were: landowners and farmers, representatives of the local workforce, local authorities and Non-Governmental Organisations.

The SEIA used in Romania was structured primarily around development and economic factors including: land ownership and use, levels of agricultural mechanisation, the size of the available workforce, existing infrastructure and level of taxes raised. Social aspects linked to quality of life, which were incorporated into the 'people development' category, included increased employment and lower social costs, better education and health, a cleaner environment.

The SEIA used in Spain had a more general approach. The social and economic factors are considered equally in importance, when selecting who should be involved in the process, what data are needed, how important existing regulations are, how to weigh benefits versus risks. This framework explores the main challenges in the community such as: rural social-cohesion, soft and hard infrastructure, amongst others. SEIA for Spain identifies quality of the environment as part of quality of life, together with benefits related to education and health.

Primary and secondary data were analysed to provide a better understanding and mapping of the positive impacts & benefits of Camelina production, as well as identifying potential risks associated with investment in Camelina (such as poor farming) that could be later mitigated.

The analysis revealed that Camelina production has the potential to deliver a net positive impact for communities in both Romania and Spain. The positive impacts related primarily to economic impacts connected to direct job creation and employment, as well as opportunities for wider economic diversification.

However, there were some negative impacts identified as results of data analysis. They included biodiversity losses, congestion due to increase road traffic in the region and poor farming practice (i.e. over cultivation and mismanagement of farm land).

The main finding of the Baseline Study was that local socio-economic impacts are diverse and will differ according to such factors as the nature of local economic organization, social profiles, local culture and aspiration. Furthermore, it became apparent that consideration should be given to the longevity of those impacts, and only then can a tentative evaluation of the wider effects pertaining to some, or all, of the other factors be attempted.

In both countries direct economic factors linked to development, appeared to be more important than the social aspects. But the need for more jobs, creating an alternative for the local economy was more evident in Romanian stakeholders than in Spain. All Romanian stakeholders involved in the SEIA exercise wanted to contribute to the study, with most of them expressing the hope that Camelina feedstock production would start in their region soon.

At this point, a synthesis was considered to compare and contrast the economic projections, based on identified impacts in the two reports and contrast these findings with CCE's opinion, our ITAKA partner ([1]CCE, 2015). The results showed a positive impact regarding Camelina investment in both countries.

Securing an appropriate level of participation from local stakeholders was challenging in some areas. An important lesson learned was the need to proactively engage in an information and awareness building exercise before such surveys started. Level of involvement by stakeholders and participation in questionnaire surveys and interview was higher in Romania than in Spain. Although same methodologies were used, the selected ways to access relevant information were different. This was reflected in the volume and type of data gathered in each area. However, it is worth mentioning SEIA exercise for Romania went beyond the scope of this task and explored the economic impact in monetary value. This explains the volume of data, higher in Romania than in Spain.

In both countries farmers were found to be the most productive participants in the study. As well as being the main drivers for future change, they have the necessary knowledge and connections to mitigate any production-related risks at local level.

The need to redesign the questionnaire is also part of lesson learnt, with regard to Spanish local authorities mainly. Also, questionnaire needs to be better adapted to local farmers' requests and priorities. This aspect is different from country to country, or even between different regions within the same country.

In conclusion, while SEIA Framework proved to be an effective research tool for use in both countries, due to limited time and obstacles to data collection, the ability to draw far reaching and detailed conclusions from these studies is restricted.

Additional research is required to understand better how extend the use of this tool to encompass the entire Camelina biofuel value chain and how it could be adapted for use in other cultures, regions and other feedstock.

[1] CCE-Camelina Company España (www.camelinacompany.es)

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Abbreviations

SEIA Socio-Economic Impact Assessment

ILUC indirect Land Use Change

GHG Green House Gas

LCA Life Cycle Analysis

RED Renewable Energy Directive

RSB Roundtable on Sustainable Biomaterials

Definitions

SEIA	Socio-economic impact assessment focuses on evaluating the impacts development has on a community quality of life, and economic well-being
Rural community	A community which comprises a group of inhabitants who live a rustic or country lifestyle
Quality of life	The standard of health, comfort, and happiness experienced by an individual or group
Hard infrastructure	Underlying foundation of the system of public works for core services such as water management, energy, transportation, and information technology
Soft infrastructure	Human institutions that provide core services to a culture such as health, public safety, emergency services and education

1. Introduction

Overview

The European Commission report on *European Energy Security Strategy* (COM (2014) 330 final) details the need to ensure energy security into the future, to meet growing demand, and so support and protect economic development. This is set against a background of growing energy demand, forecasts of diminishing oil supplies and the risks posed by reliance upon supplies from countries outside the European Union (such as Russia).

A European Commission consultation document (or 'Green Paper') for the *EU's 2030 Climate and Energy Policy* details a potential greenhouse gas emission reduction target of 40%, and does not exclude from consideration a 30% target for the proportion of energy that renewables should make up by 2030 (EC Green Paper 2030; COM (2014) 15 final).

A third report (*The Common Agricultural Policy*, A partnership between Europe and Farmers, COM 2012) outlines the growing food demands within the European Community, the risks to food production within Europe arising from the effects of climate change. The costs and risks of importing food from elsewhere in the World and therefore the need to ensure food security.

Meanwhile, over the past 50 years, the amount of land given over to farming has declined due to the importation into Europe of cheap food products (Millstone E.,1999). Considerable areas of land have also been lost to food production due to contamination caused by industrial processes (Schierhorn, *et al.,* 2013). These changes have been driven by, and taken place alongside growing patterns of migration into urban areas (Pasakarnis, G & Maliene, V., 2010), which have led to increasing levels of poverty and social deprivation in many rural communities.

Biofuels production are seen as a way of addressing the challenge of energy security. The production of biofuels through the growing and processing of crops (such as Camelina), has the potential to revitalised rural communities, creating employment, supporting social and economic development and developing new skills.

The sustainability of biofuels from agricultural sources, is however, a critical issue that needs to be assessed before large scale production can be considered, given that this industry could compete with food production through land use and water supplies and, therefore threaten food security.

The aims of task 5.5 of the ITAKA project were to develop a socio-economic impact assessment framework and investigate impacts associated with Camelina feedstock production in Romania and Spain.

The objectives required to deliver these aims included:

1. Defining the scope of the Socio-Economic Impact Assessment (SEIA);
2. Identifying the relevant social and economic aspects of selected communities from both countries, through a baseline study;
3. Designing a specific SEIA framework for each country;
4. Assessing the potential development impacts associated with Camelina production.

The approach used in this task was to explore the socio-economic impact of Camelina production by focusing on different case studies scenarios that were representative of small rural village, large rural village, small rural town (Romania) and villages from different geographical areas in Spain.

This summary report provides an analysis, synthesis and overview of the SEIA methodology and findings of studies carried out in Romania and Spain.

Socio-economic impact assessment, SEIA, is an emerging and complex area of endeavour, especially when applied to the production of alternative fuels. At the current time there is significant

interest in the development of biofuel production, at global level (Rutz, D., R. Janssen (eds.), 2014), and SEIA can clarify several aspects associated with investments related to different elements of the biofuel value chain. The Roundtable on Sustainable Biomaterials (RSB) standard is a minimum threshold assessment designed to protect potentially vulnerable people and communities, but does not explore the true socio-economic impact of Camelina, or other feedstock investment (RSB,v2.0, 2011).

Against this background, it is important to investigate whether SEIA can provide an appropriate way of assessing the challenges affecting rural communities involved in biofuel feedstock production. Research is needed in order to design an SEIA framework that is tailored to specific local conditions that can be implemented using available data, to refine it with additional input and test the validity of the output.

As a methodological tool, SEIA is designed to assist communities in making decisions that promote long-term sustainability, including economic prosperity and social development, which leads to an increased quality of life.

There are no methods that are universally applicable, and these must be developed on the local level (Eijck, J.A.J. van, *et al*., 2013). A reliable sustainability assessment methodology requires location-specific and operational data. Existing SEIA Guidelines (MacDonald, Alistair,2006) need to be followed (or proper guidelines developed) prior to start the SEIA process.

To better assess the business opportunities provided by Camelina production, identify possible risks, and develop mitigation plans to address those risks, SEIA frameworks need to be built on a well-informed setting and robust information.

The two areas of study included in this exercise were contrasting in a number of ways but particularly in terms of their scale: the Spanish SEIA was conducted in the context of Camelina production over a large area (2013: 6000 ha, 2014: 2000 ha,) whereas the Romanian SEIA was conducted in the context of small scale cultivation (c. 200 ha.) and so, it is to some extent a projection study.

SEIA Framework

The SEIA procedure starts with the selection of proper guidelines which have the role of explaining how to conduct a socio-economic impact assessment. Specific information on what an SEIA is and why it should be undertaken is included in the Framework along with an acknowledgement that the SEIA Framework will itself have to be reviewed as more detailed information is collected about local conditions and data availability.

SEIA Guidelines

Guidelines need to be developed and followed in designing a SEIA tool. This requirement comes from the fact that a socio-economic impact assessment can assist in planning and decision-making, and guide structural adjustment issues related to a selected community. So, some recommendation regarding strategic rules and plans need to be designed prior to this assessment.

SEIA guidelines used as a starting point for this project were informed by the Mackenzie Valley: Review Board (2012) instrument developed by the Canadian Environmental Assessment Agency.

During the 2 years of the research within ITAKA project (2012/14), the initial guidelines were refined by comparison with different other sources, the last being the book of Dominik Rutz and Rainer Janssen, *Socio-Economic Impacts of Bioenergy Production* (2014).

The role of SEIA Guidelines is to select valued socio-economic components that will be part of a SEIA Framework. Such components would include data relating to: health and well-being, land

access and use; equitable business and employment opportunities; adequate services and infrastructure; adequate sustainable income and lifestyles, amongst others.

The present task considers a significant proportion of the above mentioned socio-economic values, but the environmental aspects are only addressed at a high level (i.e. the presence of waste management facilities) and not discussed in any depth. It is apparent, however, that there would be a need for further research on such issues to develop a fully comprehensive SEIA framework for large scale Camelina feedstock production.

Elements of SEIA Framework

The SEIA framework was designed to take account of information relating to impacts of rural development, culture and different forms of economic activity, in both countries. Two different frameworks were designed, but the selected socio-economic values used for each were the same, wherever data availability permitted. Differences consisted in the link between those values, and local perception regarding priorities for development. Local community aspects were described by general background information about farming practices, farm ownership and workforce statistics, with a focus on economic facets (payments to public sector and/or local authorities, levels of employment, opportunities for procurement and earnings generated by feedstock production, amongst others).

Two particular aspects were carefully considered when designing SEIA Framework:

- Understand the local stakeholders behaviour, their approach to Camelina;
- Basic economic impact evaluation of the benefits of Camelina production, including potential associated risk: assess community profits from Camelina investment vs possible vulnerability.

In designing a SEIA framework there are two phases of socio-economic impact assessment that need to be well-thought-out:

- Defining the scope of the Socio-Economic Impact Assessment (why);
- Identifying and Evaluating Development Impacts (what):
    - A. Quantitative Changes
    - B. Community Perceptions

The main pillars involved in SEIA frameworks encompassed:

- Existing local regulations and stakeholders involved: what legislation needs be known and who are the stakeholders involved in SEIA process: landowners, farmers, workforce, NGO, local authority, etc.
- Local ownership and involvement: who is the land owner: private, association, state; how large is the selected community: population size.
- Taxation policy at local, regional, national and EU level: tax on land at different level.
- Selected villages and consideration: infrastructure, income, work-force, employability, education, health.
- Assessing and quantifying Socio-Economic Impact at local level: represent benefits, profits due to Camelina production versus risk vulnerability.
- The information gathered needs to be refined from time to time and the link between pillars may change, according to assessment outcome.

2. Methodology

Mix Methods Approach

The first phase of this work focused on reviewing literature of theoretical concepts underlying the performance and challenges of socio-economic impact assessment. In this phase, various articles and technical documents related to SEIA were reviewed and available instruments to conduct social surveys were investigated. The main instrument selected for the collection of impact data was questionnaire and interview.

Next step involved a *baseline survey*, which was conducted to gather the necessary data (quantitative and qualitative) for identifying and quantifying the SEIA pillars.

The SEIA Frameworks were designed for each country, based on selected socio-economic values and available data for each study community. Subsequent phases required the application of this Framework to the selected communities, to identify existing challenges relating to Camelina production in terms of opportunities, benefits and risks that could be later mitigated.

The mixed method approach, proved appropriate to conduct the SEIA process, which requires a sustained programme of inquiry. By implementing these methods, it is possible to obtain "different but complementary types of data (qualitative & quantitative) on the same topic" (Morse, 1991). The results could then be synthesized to better understand the research problem (Gilbert, 2008). The investigation of quality of life or economic diversification in a given area requires a mixed method methodology, also known as Triangulation (Fielding and Schreier, 2001).

The first step was to determine what data would be needed and what was currently available. Then, information collection and integration mechanisms had be developed and converted in tables and spreadsheets.

Baseline Study

A Baseline Study is an important part of any project, its role being to analyse the present situation and identify the starting facts for the research. The approach taken in this research was based on FAO definition, a baseline study being "a descriptive cross-sectional survey that mostly provides quantitative information on the current status of a particular situation – on whatever study topic – in a given population. It aims at quantifying the distribution of certain variables in a study population at one point in time (FAO, 2013)".

The importance of a baseline study relies in its role as a starting point for a project, but also being an opportunity to establish priority areas/planning. Without a baseline, it is not possible to know the impact of a project, and its tools are used for evaluation.

The predetermined set of questions that is usually given to a sample was developed and tried for Romania SEIA firstly. The Romanian farmers and authorities showed willingness to get involved from the beginning and did not find the questionnaire too long, laborious.

A good sample selection is key, as it allows one to generalize the findings from the sample to the population, which is the whole purpose of survey research (Bryman, 2012). Such illustrative example is the same question addressed to farmers, workforce and local authorities: *In which area do you think Camelina crops will bring the most benefits and positive impact for local community?*

This section of the methodology is designed to address Objective 2, *Identifying the social and economic aspects of selected communities from both countries,* by presenting an analysis of the Baseline Study.

A standard survey was conducted to gather the necessary data (quantitative and qualitative) to feed the SEIA pillars. The Baseline Survey outcome represents the Results of SEIA exercise.

The case-study sites for each country were carefully chosen to illustrate different perspectives for SEIA assessment. Thus, data collected was specifically assigned to the designated locations. The extensive socio-economic questionnaire was designed to gather field data from landowners/farmers, workforce and authorities. This questionnaire was the basis for the interview and it was left to be filled in by other stakeholders that were not present during the survey.

Data collection

Data acquisition had two approaches: published statistical data and newly collected field data, gathered via a questionnaire and consultation with landowners, farmers, workforce and local authorities. The role of this consultation (interview) was to clarify some aspects and to add new information considered relevant by the researcher (i.e. related information can be found in both case-studies A/Romania & B/Spain).

The SEIA Questionnaire had 4 parts:

Part 1 – Primary data – with 5 sections and 25 dimensions addressing issues relating to:

- Local People
- Households
- Local Economy
- Local Infrastructure
- Land use/ availability

Parts 2, 3, 4 – Secondary data – with several questions (open-end and multiple choices), addressed to several stakeholders:

- Part 2: Local Authorities – with 8 questions
- Part 3: Farmers – with 25 questions
- Part 4 : Workforce – with 9 questions

Table 1 in section 1.6, shows some of the questions addressed to the above mentioned stakeholders, illustrating at the same time the responses. The full questionnaires used in Romania & Spain are presented in extension to Annex A and B.

Basic information collected from both countries

Study sites were chosen to be representative of contrasting rural communities. In Romania, the case studies were a small rural village (Axente Sever), a large rural village or small town (Rovinari) and small or medium rural town (Campina). In Spain, the location for the case studies (selected by Camelina Company Espana, ITAKA partner), covered the following regions: Guadalajara (El Pozo de Guadalajara & Chiloeches), Toledo (San Martin de Pusa) and Albacete (Minaya), were Camelina for the ITAKA project was growing.

General background information was collected from each site, to clarify the current situation relating to agriculture and land use, farmland ownership and farming practices, the advantages of Camelina crop development, land policies, levels of taxation raised, etc.

Additional data were collected on issues relating to quality of life (social aspects) as exemplified by numbers, ages and skills of people involved in agriculture; demographics; quality of households

and households' equipment (services); quality of local infrastructure; people & households; types of work and levels of employment; level of schooling; quality of health infrastructure, etc.

The economic aspects of the chosen community were illustrated by data on: levels of development of local infrastructure; numbers of agricultural related employees; local employment / unemployment rates; surviving local farms; existing local Camelina crop experience; existing local development projects; type of local taxes; initiatives to support local agricultural companies; possible risk associated to Camelina production, etc.

Comprehensive analysis of these data was conducted to help clarify where the most important benefits, as well as risks, associated with Camelina production would accrue to the local communities, the local economy, and local people.

Data on economic aspects obtained through survey were limited regarding Spain, so only for Romania SEIA economic framework was analysed in depth, to inform the economic impact evaluation. The researcher in charge of this task went beyond the SEIA framework/scope and explored the economic impact in detail. The tool that was used for this assessment is illustrated on page 62, Figure A.10 *Assessing and quantifying the economic impact*. This explains the difference in the amount of gathered data between Spain and Romania. For instance, it was difficult to draw a conclusion regarding Spanish Local Authorities little engagement in data collection process, based on inconclusive data. Nevertheless, the comparison between SEIA in Romania and Spain is useful for SEIA implementation in different cultures, societies, economic status, etc. This comparison does not include the assessment of economic impact translated in money valuation.

SEIA Analysis

SEIA involves the collection and collation of a wide variety of data relating to very different issues associated with environmental and social (quality of life) impacts, it therefore requires careful design and analysis. An effective assessment of the socio-economic impacts of Camelina production requires a combined methodology, both quantitative and qualitative and one which takes account of specific local conditions. For example, a proposed development may increase employment in the community and create demand for more affordable housing. Both effects are easily quantifiable. Also of importance, however, are the perceptions of community members about whether the proposed development is consistent with a commitment to preserving the rural character of the community, including environmental protection. Assessing community perceptions about development requires the use of methods capable of revealing often complex and unpredictable community values.

The baseline survey in Romania and Spain revealed some community values of national and local specificity, which influence their perceptions regarding Camelina feedstock production. An understanding of local cultures, and the refinement of the data collection approach was therefore necessary. The questionnaire was the first instrument to use to approach stakeholders, the associated face to face interview being to clarify issues raised by specific questions and capture additional opinions and perception regarding Camelina production in their region.

SEIA can identify and distinguish numerous measurable impacts of a proposed development but not every impact may be significant. Ideally, the people who are impacted, directly or indirectly, should have a say in whether impacts on valued socio-economic components are significant or not.

The researchers visited the study sites in 2013 and 2014, before and during the harvest season. It was during the second visit, they started to fully understand the variety of impacts that Camelina production would have on those communities, and in consequence during this second season, the socio-economic impact assessment framework was further refined to improve its effectiveness.

Community data: statistics

Statistics relating to community data included: the structure of the population (sex, age distribution, available workforce), agriculture land (ha) available; type of crops being grown (ha); the ownership of agricultural land (family owned; company or state owned).

For Romania (Copsa Mica and Rovinari), information on areas of degraded and contaminated land was recorded, knowing that Camelina was grown in this region as part of an earlier project sponsored by Airbus (Dimitriu & Eychenne, 2011) designed to assess its impact across the entire value chain. The communities within Spain however have no heavy industry in the vicinity and no contaminated soil was recorded. Camelina feedstock was considered in a rotational process to barley, wheat, peas, etc., in Spain, while in Romania Camelina was planted in degraded, contaminated land.

Social data - quality of life

Other important information for the SEIA framework relates to the quality of life and standard of living of case study communities: types of jobs and levels of employment, quality of education and health provision, quality of local infrastructure, levels of services, etc. Households and households' equipment will consist of the provision of: water supply, sewage, electricity, central heating, kitchen, in-house bathroom, facility for waste management, etc. Other data relate to levels of schooling: primary, secondary, higher education. Information on level of education, for example, is necessary to identify existing skilled within the potential workforce or identify the need to develop skills required to support the development of an economy based upon Camelina production.

Economic data

Data related to economic aspects is reflected in levels of employment / unemployment, opportunities for job creation, payment of national & local taxes, hard & soft infrastructure development, projects related to construction, housing development, the evolution of new services and opportunities for economic diversification, etc. For example, a proposed development may increase employment in the community and create demand for more inexpensive housing, thus leading to employment within the construction industry, all of which are measurable. However, it is also important to assess the perceptions of community members about whether such developments are welcome and consistent with commitments to preserving the rural character of the community, including protection of the environment.

Investment in Camelina can therefore give rise to a significant change in land use with economic, social and environmental consequences.

The SEIA Framework

The SEIA frameworks used in Romania and Spain are illustrated in Figure 1. and Figure 2. Data grouping are presented along with indicators and perceived significance.

The SEIA developed for use in Romania was structured mainly around development and economic factors: land ownership and use, mechanisation, local workforce, development of hard and soft infrastructure, taxes on land and profit due to investments. Social aspects and quality of life are incorporated in ‘people development’ box, which implies increased employment / lower social costs, better education and health, cleaner environment. ‘Rural social cohesion’ box, which shows aspects of depopulation and induced growth, illustrate also social aspects related to SEIA.

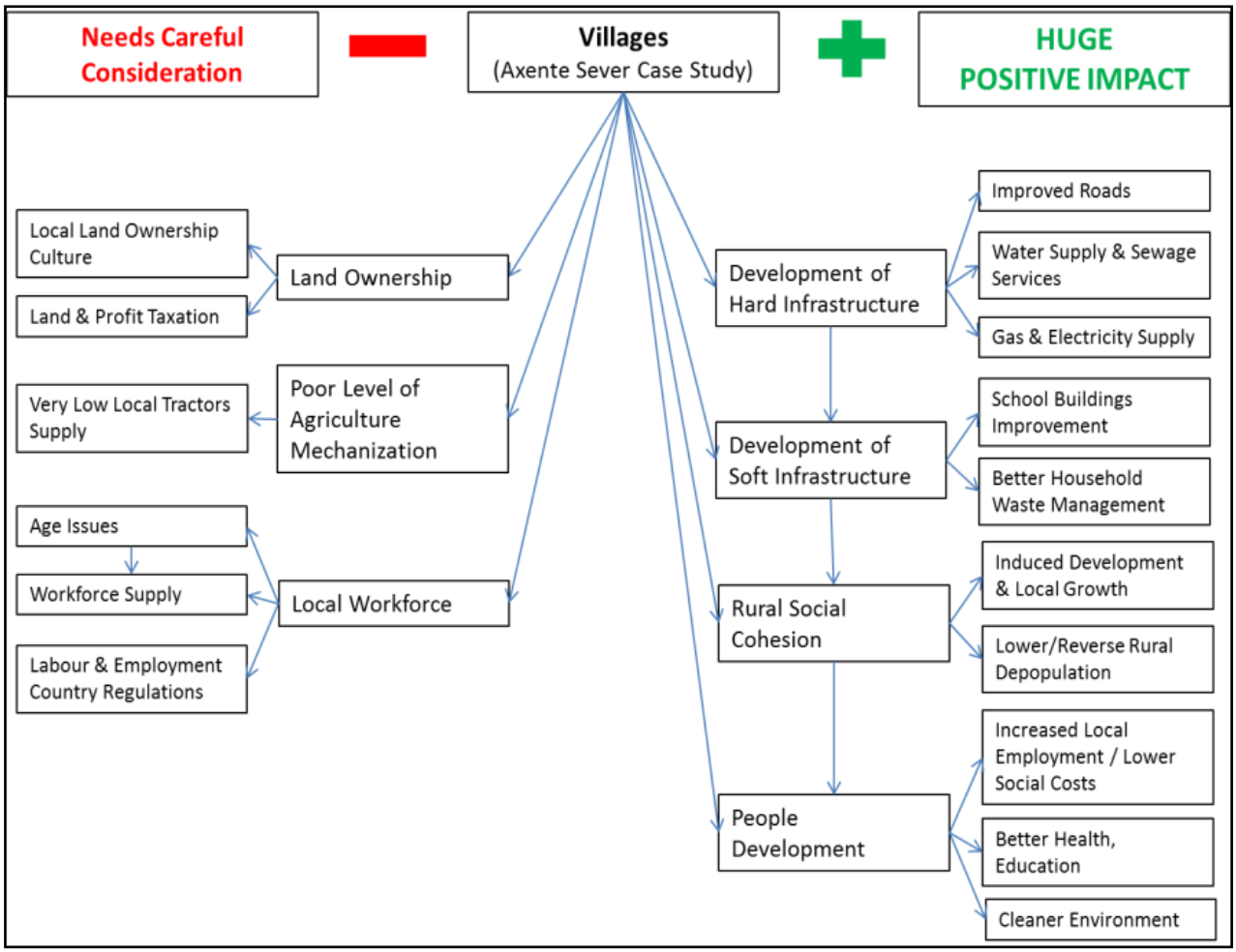

Figure 1. SEIA Framework Romania (for village)

Note: at each community level, the positive impacts (huge, large, significant) and benefits, on the one hand, and the uncertainties on the other, could be put together for a better understanding of risk mitigation areas. Thus, for village community, the balance between benefits and risks, show huge positive impact *vs.* uncertainties (Figure1.), based on existing data related to Camelina investment in Romania rural area. Small town recorded large benefits and medium town, significant benefits, while risks remain uncertain and need careful consideration.

The SEIA framework used in Spain (Figure 2.) adopted a different structure, one that weighs social and economic factors equally. This framework had a more general and balanced approach, which can be later applied to different case-studies. It shows who should be involved in the process, what data are needed, how important existing regulations are, the link between benefits *vs.* risks, and the main challenges for the community: rural social-cohesion, soft and hard infrastructure, amongst others. This framework identifies environment as part of quality of life, together with benefits, education, and health.

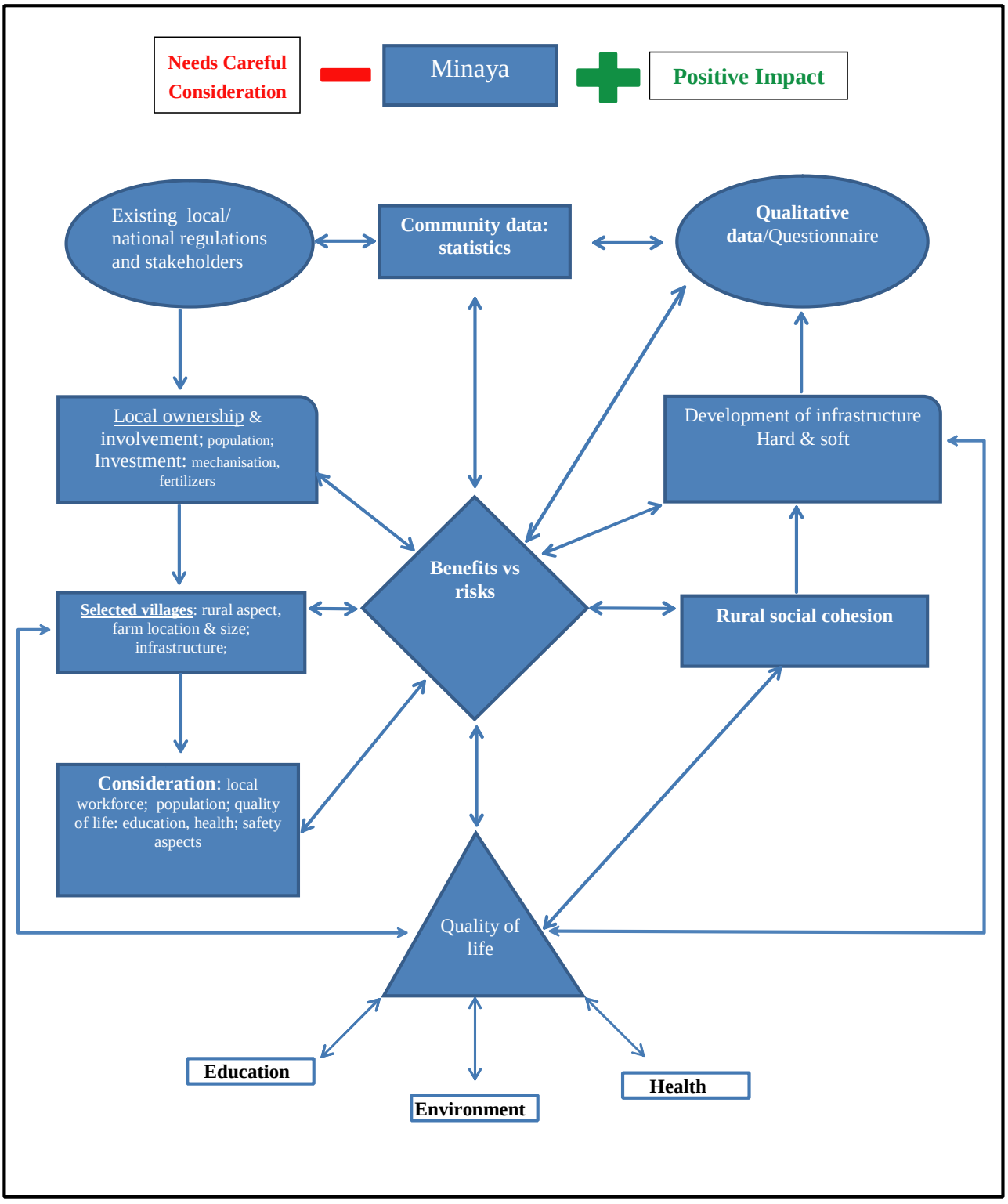

Figure 2. SEIA Framework Spain

A small number of interviewees questioned the viability of SEIA exercise in connection to investment in Camelina feedstock:

- *Will SEIA results convince financiers to come to our region and invest in Camelina? We need, different type of business, and this feedstock seems to be perceived as positive in our area (*Interviewee: farmer & landowner from Iasi-Romania*; 5 Sept. 2014*).

- SEIA needs too many data type; it seems difficult to process them, even by grouping. Farmers will not have time to answer to that long questionnaire; you need to make it shorter or use interview instead. Local Authority representatives may be interested, based on economic crises, still felt in this part of Spain (Interviewee: shop assistant/community member Mynaia, 24 April, 2014).

3. Case studies

CASE STUDY A: Socio Economic Impact Assessment of Camelina Production in Romania

This case study A is looking to assess the socio-economic benefits of Camelina production in Romania. In order to do this we first looked at the current agricultural situation in Romania and presented three case studies on different communities, as well as the potential socio-economic impact of Camelina production. Further, we designed a socio-economic framework that helped us, on one hand, to understand where and to whom would accrue the most benefits, and, on the other hand, what were the main challenges for Camelina production in Romania. We have also designed an extensive socio-economic questionnaire (bi-lingual English and Romanian) that was used to acquire field data. Then, we analysed all data available from different perspectives – the socio-economic impact, the benefits for local communities and economies, as well as the stakeholders' behaviour and incentives. Additionally, we had a view on potential risks and their mitigation measures. Finally, we drew conclusions and recommendations, and explained the next steps.

Further socio-economic impact assessment studies will be needed at later stages, to evaluate the overall impact of the whole Camelina value chain at both local and national level.

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In European countries, Camelina was grown as an agricultural crop before the Second World War and up to the nineteen fifties. It holds promise as a source of human food and animal feed products. The renewed focus on this crop is mainly due to search for the new sources of essential fatty acids, particularly n-3 (omega-3) fatty acids.

To date, we have looked at current situation in Romania and we visited three different sites of Camelina production – three very different communities with their own specificities. We have developed a basic understanding of Camelina production stakeholders' behaviour and we have designed the field questionnaire aimed at these stakeholders. We have visited these sites both in 2013 and 2014, before and during the harvest season. We have started to understand the positive impacts Camelina production will have on these communities and developed a socio-economic impact assessment framework to assess these impacts.

We did the field research to gather local and specific data and to substantiate these findings with primary data from public sources for all current Camelina production sites selected in Romania. These allowed us to refine our understanding of the socio-economic impact of Camelina production on different communities. A specific socio-economic impact assessment framework has been developed and tested.

Furthermore, this research will give us a proper foundation to make further recommendations on Camelina production development and its positive socio-economic impact on local communities, beyond ITAKA scope.

This research should become the foundation for further studies on:

1. Socio-Economic Impact Analysis
    a) Midstream SEIA – analysis for midstream (refinery) part of the Camelina Value Chain:
        I. We recommend to be done further down the Camelina Value Chain
        II. We recommend to be done from at least two points of view – using an already in use refinery site (Neste) and potentially a new one (Steaua Romana)
    b) End-user SEIA – analysis for Airlines Companies:

I. We recommend to be done as to take into account the GHG and carbon tax impact, and implications for the Airlines Companies

c) Logistics SEIA – throughout the whole Camelina Value Chain as to integrate all activities

d) SEIA Robustness - Integration (all activities along Camelina Value Chain) and Refinement (for use in different countries)

2. Economic Development Framework:

a) Camelina Crop Business Model & Economics – we recommend to further develop, test and refine an economic model for Camelina Crops for, and from the point of view of Farmers and Local Authorities

b) Midstream Business Model & Economics – we recommend to further develop, test and refine an economic model for midstream (conversion) activities for and from the point of view of refinery business

c) End-user Business Model & Economics – we recommend to further develop, test and refine an economic model for end-users activities for, and from the point of view of airlines

d) Supply Chain Integration Model

i. As a preparation for full-scale implementation and development

ii. It should include GHG Economics

- Carbon-tax benefits for Airlines
- Environmental Benefits

Further research, as illustrated above, will better explain the role of Camelina feedstock in rural development and will highlight the importance of implementing SEIA across the entire value chain.

A1. Literature Review

Socio-economic impact studies are commonly used to evaluate the local, regional and/or national implications of implementing particular development decisions. Typically, these implications are measured in terms of economic indices, such as employment and monetary gains, but in effect, the analysis relates to a number of aspects that include social, cultural and environmental issues (Abdrabo & Hassaan, 2003).

The problem lies in the fact that these latter elements are not always tractable to quantitative analysis and, therefore, have been precluded from the majority of impact assessments in the past, even though at the local level they may be very significant.

In reality, local socio-economic impacts are diverse and will differ according to such factors as the nature of the technology, local economic structures, social profiles and production processes. A summary of some of the benefits associated with Camelina – local bioenergy production is listed in Table A 1.

The nature and extent of any particular enterprise's socio-economic impact will depend upon a number of factors. These factors include the level and nature of the capital investment, the availability of local goods and services, the degree of regional monetary leakages, the time scale of both the construction and operation of the enterprise, and various institutional and energy policy-related factors such as capital grants and subsidies (Egon & Streeck (Edt), 1994).

Table A.1. Benefits associated with Camelina – local bioenergy production

Social Aspects	Increased Standard of Living Environment Health Education Social Cohesion and Stability Migration effects (mitigating rural depopulation) Regional Development Rural Development
Macro Level	Security of Supply / Risk Diversification Regional Growth Reduced Regional Trade Balance Export Potential
Supply Side	Increased Productivity Enhanced Competitiveness Labour & Population Mobility (induced effects) Improved Infrastructure
Demand Side	Employment Income and Wealth Creation Induced Investment Support of Related Industries

Accordingly, in the following sections we will discuss the identified impacts noted above at large.

A. The Social Dimension

In many ways the social implications, arising from local bioenergy investment represents the '*woolly*' end of impact studies, nevertheless they can be broken down into two categories: those relating to an increased standard of living and those that contribute to increased social cohesion and stability.

In economic terms, the 'standard of living' refers to a household's consumption level, or its level of monetary income. However, other factors contribute to a person's standard of living but which have no immediate economic value (De Vaus, D.A., 2002). These include such factors as education, the surrounding environment and healthcare, and, accordingly, they should be given equal consideration (Gomm, Roger**,** 2009).

Moreover, the introduction of an employment and income-generating source, such as bioenergy production, could help to stem adverse social and cohesion trends (e.g., high levels of unemployment, rural depopulation, etc.). It is evident that rural areas in Romania are suffering from significant levels of outward migration, which mitigate against population stability. Consequently, given bioenergy's propensity for rural locations, the deployment of bioenergy plants may have positive effects upon rural labour markets by, firstly, introducing direct employment and, secondly, by supporting related industries and the employment therein (e.g., the farming community).

B. Macroeconomic Effects

The increased use of bioenergy, which exhibits both a broad geographical distribution, and diversity of feedstock, could secure long-run access to energy supplies at relatively constant costs for the foreseeable future. The use of indigenous resources implies that much of the expenditure on energy provision is retained locally and is re-circulated within the local/regional economy giving rise to the development of secondary industries and associated services. The increased use of biofuels, which exhibits both a broad geographical distribution, and diversity of feedstock, could secure long-run access to energy supplies at relatively constant costs for the foreseeable future. Camelina can be used for the transport sector in general, for cosmetics (oil) and as animal feed (Camelina cake). If Camelina is grown on contaminated land, a special assessment needs to be conducted.

Research on selected sites from Romania shows heavy metals do not get into oil, but some of them do get into Camelina cake, eliminating its use for animal feed (Barrett, *et a*l., 2014). Nevertheless, the type of contaminated site should be researched in advance, to evaluate how the produced oil and cake will be used. Currently there are 28 Romanian farmers involved in ITAKA, most of them using Camelina as rotational crop.

Investing in Camelina feedstock at local level will have a macroeconomic effect owing to the involvement of the transport sector as an end-user.

C. Supply Side Effects

Supply side effects are rather subjective in regional impact studies, as they are commonly deemed those impacts that are the result of improvements in the competitive position of the region, including its attractiveness to inward investment. These effects are likely to differ in kind and will depend upon the development, but generally such 'economies of speculation' relate to changes and improvements in regional productivity, enhanced competitiveness, as well as any investment in resources to accommodate any inward migration that may result from the development.

Taken together, these effects may result in the establishment of pockets of complementary economic activity, where related (and often local) industries mushroom in response to increases in local demand. Accordingly, supply side effects have a much broader scope, and as such, quantitative assessments are much more speculative. Despite this caveat, some projects could be justified purely because they may have significant long-term supply side effects, even if they are difficult to quantify with any confidence prior to the development.

D. Demand Side Effects

Demand side effects constitute the focal point of the majority of socio-economic impact studies, and are concentrated upon for several reasons. Most notably, they are relatively easy to define and the scale of the investment's impact can be quantified with reasonable accuracy. Moreover, it is the economic impact that is most important to regional developers and decision makers.

Demand side effects are primarily quoted in terms of employment and regional income. They can be categorised accordingly into:

- Direct Effects
- Indirect Effects
    - Induced Effects
    - Displacement Effects

The derivation of the above should form the basis of socio-economic analysis. However, the extent to which these effects can be totally captured at a local level will depend crucially on the quality of the information available.

Considerable effort should be made to determine the extent and direction of capital flows both within the region under analysis and, more importantly, out of the specified region. If this 'leakage' element is ignored, then it gives rise to misleading spurious predictions about future employment and income gains.

Furthermore, consideration should be given to the duration of the impacts, and only then can a tentative evaluation of the wider effects pertaining to some, or all, of the other factors be attempted.

Sustainable rural development

Sustainable rural development is defined in very precise coordinates: stabilizing population rural areas by eliminating or reducing the rural exodus, the eradication (fighting) poverty by stimulating and increasing employment, promoting equal opportunities for all rural residents, increasing quality of life and general welfare by preserving, protecting and improvement of the environment and countryside. An advantageous economic development based on sustainable principles regarding all natural components: air, water, soil, biodiversity, forests and underground resources. Each of the above plays an important role in community life.

Socio-economic effects can impact both positively and negatively on individuals and communities as a whole that are both directly and indirectly affected by development in a local area. This can also apply to individuals and communities who are not in the immediate local area, but are, nevertheless, affected by the project as a result of associated economic activity, including those involved in the biomass supply chain elsewhere in the country.

A2. Current Situation in Romania

A2.1. Agriculture and Land Usage

According to the National Statistics Institute, around 32% of country's workforce is involved in agricultural activities – from land farming to animal stock rearing. The main problems encountered by Romanian agriculturists are a lack of major investments in agriculture, due to difficulty in accessing available funds, landownership fragmentation and erosion of soil, property-related lawsuits and obsolete technology.

A2.1.1. Low Mechanization of Agriculture

The Romanian agriculture has a very low level of mechanization, not only *per se* but also when compared with other European countries.

Table A.1. Romanian Agriculture – Tractors and Combine Harvesters, end of 2012

	Romanian Agriculture Mechanization		**RO Average ha/equipment**	**EU Average ha/equipment**
1	Tractors	177,893	19	13
2	Combine harvesters for cereals, oilseeds, seed (auto propelled)	20,196	164	112

During the last couple of decades, the Romanian crops in any field continued to decrease comparatively with their European counterparts (Alecu, 2012) Although the number of tractors and combine harvesters have increased during the last decade, mainly due to large private agricultural exploitations, the situation regarding agriculture work at country level remains poor. This is because Romania has a very fragmented land and old population in its rural areas (Romanian Statistical Yearbook, 2011).

A2.1.2. Farmland Ownership

The low level of agriculture mechanization is strongly related to the land ownership situation in Romania. During the Communist Period (1944-1989) land was mainly owned and worked by the state. Furthermore, during the same period, most of the ownership deeds have been destroyed and most of the land ownership laws have been changed. Although during the last 23 years a lot of EU *Acquis*, legislation and regulations have been adopted in regards with the land ownership rights, their implementation and enforcement is still lacking. This resulted in a highly fragmented, land ownership in Romania – where millions of people (landowners) own only small areas of less than 2ha. (see Table 3 below). The income gap between Romania and the other EU countries is large. Romania's GDP per capita is only 34% of the EU–25 average or 32 % of the EU–15 average. Disparities are even wider in the agricultural sector, where the per capita income in Romania is 13% of the EU–25 average and 9% of the EU–15 average. However, Romanian agriculture remains a very important sector, not just for Romania itself but also for the EU. Poland and Romania are the two largest agricultural economies of the twelve new EU member states (NMS), after Poland, both in size and population.

It should be noted that, usually, land ownership in Romania has a bit of different meaning than in the rest of EU. Due to historic reasons, there is no Land Registry in Southern and Eastern Romania. As such, the big majority of landowners does not have a proper deed for their land and usually they have an official document from local authorities (local council) stating the size of the land and the neighbours. Most of the time these documents have been issued without a proper measuring on the field and mostly without any proper registration onto the local or regional Land Registry. On top of this, these document states one person as the owner while there are usually other relatives owning the land, sometimes in common, but they decided to keep it like this, due to the very high (relative to their income) land registration costs. Table3 below shows the extent of this land fragmentation.

Table A.2. Land Ownership Fragmentation in Romania

	Family-Owned			
	Size of Exploitation (ha)	**# of Exploitations**	**Total (ha)**	**Average Size of Exploitation (ha)**
1	0.1 – 1	1,994,384	731,411	0.37
2	1 – 10	1,739,104	4,963,918	2.85
3	10 – 100	76,730	1,632,649	21.28
4	Over 100	4,426	979,468	221.30
	Total	**3,814,644**	**8,307,446**	**2.18**
	Company-Owned*			
	Size of Exploitation (ha)	**# of Exploitations**	**Total (ha)**	**Average Size of Exploitation (ha)**
1	0.1 – 1	5,149	2,106	0.41
2	1 – 10	8,728	34,905	4.00
3	10 – 100	6,702	246,674	36.81
4	Over 100	10,022	7,387,577	737.14
	Total	**30,601**	**7,671,262**	**250.69**

*Including Universities, Research Institutes, State-Owned Companies

The vast majority of private persons landowners (97.87%) owns on average 1.53 ha. Such a highly fragmented land ownership led, over time, to:

- Low or inexistent investment in mechanization
- Inability to make long-term plans
- “In-house consumption” mind set for these landowners

On the other hand, the institutional ones, which are only a fraction of the total land owners (0.80%) owns and/or exploit vast surfaces – around 392 ha on average. This situation led to:

- Highly mechanized agriculture, almost comparative with the EU one
- High crops yield, especially for those that invested in irrigation systems
- Long-term development and export focus

Given the above land ownership fragmentation, institutional company-owned exploitations owners have a lot of local clout, being closely connected with local authorities. Furthermore, besides their investment in agricultural mechanization most of them invested also in connected services and infrastructure (warehousing, crop conditioning, transportation, and so on) and even in local skills development as to secure a motivated work force for their needs.

A2.1.3. Farmland Usage

While cereals are the main crops cultivated in Romania, the farming land area dedicated to them is just under 60% of the total farming land area, or about 70.63% of total farming-grade land.

Table A.3. Farming Land Usage in Romania*

	Farming Land Usage	**ha**	**% of total**
	Cultivated Land		
	Cereals	3,020,254	57.79%
	Oilseeds	154,562	2.92%
	Fodder	142,482	0.01%
	Technical Plants	274	0.02%
	Seed	855	2.73%
	Un-Cultivated Farming-grade Land	960,000	18.37%
	Contaminated Land	950,000	18.18%
	Total	**5,226,427**	

*Forests, orchards and pastures are not included

Source: National Institute of Statistics, 2012

There are two main points here:

- There are 960,000 ha of un-cultivated farming-grade land – most of it as a result of the above discussed land ownership fragmentation and lack of / inability to invest in mechanization.
- There are 950,000 ha of contaminated land - most of it around mono-industry small towns but affecting most of the villages in the surrounding area.

A2.1.4. Camelina Crops Advantages

Camelina is a very versatile crop. Although its main use is currently for biofuels, the extruded product remaining after cold extraction could be used as livestock feed.

Camelina advantages as biofuel crop:

- Easy and low cost land preparation – usually with a normal tractor, without requiring any special add-on tooling
- Very low cost of crop development – some of the testing areas used to use fertilizers, some not, without significant differences between the two. Furthermore, even for those areas where the fertilizer has been used, a very common brand of fertilizer has been chosen, without any special formulation and/or requirements, without significant

differences between the two. This statement is valid for polluted land selected as part of the Romania case-study.

- Easy and low cost harvesting – using basic, usually available combine harvesters for cereals
- Short life cycle – Camelina reach its maturity in 88 - 92 day which makes it the crop of choice for “second crop plantation” and/or “two harvests per year”

Camelina is being currently crop-tested on highly polluted land, in Romania, with the help of Biotehgen, Bucharest. The results so far are very encouraging especially given its highly desirable characteristics:

- Highly adaptive to contaminated land – given the huge contaminated land area in Romania; it could become a golden opportunity in putting this land to use and, even more, start rebuilding the local communities around these land contaminated areas.
- Camelina meal, the by-product of Camelina when the oil has been extracted could be used as a livestock feed. Preferable, polluted land should not be involved if Camelina meal is intended to be used as cake.
- Camelina meal, the extruded product remaining after cold extraction of the oil generally contains 10% – 12% oil (approximately 5% omega-3 fatty acid) and 40% protein.
- Camelina meal and oil are evaluated as a source of omega-3, the meal having crude protein content.

A2.1.5. Land Policies and Taxation

As of early June 2013, the Romanian Government passed a bill deciding to lower the tax on land to nil for contaminated and degraded land – Romanian Fiscal Code, art.257, lit. H.

This new development is supposed to provide a strong incentive for contaminated landowners in helping them to use this land and, in time, to return it into a farming-grade level.

A2.1.6. Age & Skills of People Involved in Agriculture

Although currently Romania has an almost equal split between urban and rural population (54% urban population versus 46% rural), during the last two decades there was a huge rural-to-urban population migration. Adding on the out-of-the-country emigration, again mostly from rural areas, one will start realizing that the majority of rural population is quite old, low-skilled, below-average in terms of income and wealth.

Table A.4. Urban & Rural Working Age Population Structure by Sex and Age Group

Rural	20-60 yrs	over 60 yrs		**Urban**	20-60 yrs	over 60 yrs
9,262,851	4,692,274	2,362,968		10,858,790	6,639,238	2,129,062
	50.66%	25.51%			61.14%	19.61%
Masculine	20-60 yrs	over 60 yrs		**Masculine**	20-60 yrs	over 60 yrs
4,602,941	2,475,316	990,082		5,185,636	3,227,076	889,720
	53.78%	21.51%			62.23%	17.16%

Feminine	20-60 yrs	over 60 yrs		**Feminine**	20-60 yrs	over 60 yrs
4,659,910	2,216,958	1,372,886		5,673,154	3,412,162	1,239,342
	47.58%	29.46%			60.15%	21.85%

Source: National Institute of Statistics, 2012

Growing Camelina in rural area could have a huge impact on local communities whether by increasing local cohesion, by lowering rural depopulation, by inducing local development and growth, or by increasing local employment.

A2.2 Preliminary Case Studies - Three types of locations

The local development and testing areas for Camelina in Romania (i.e. selected case-studies) have been very carefully chosen as to cover different types of locations as below:

- Village – under 5,000 inhabitants, please see below the Axente Sever Case Study
- Small Town – under 15,000 inhabitants, usually mono-industrial, please see below the Rovinari Case Study
- Medium Town – under 50,000 inhabitants, please see the Campina Case Study

A2.2.1. Village - the Axente Sever Case Study

Axente Sever is a village located in the central part of Romania, within the very close proximity of the town Copsa Mica. Axente Sever is located in the NV of Sibiu, 36 km from the city Sibiu, 11 km from Medias and 1 km from Copsa Mica town.

The landscape is hilly, crossed the river Târnava Great and Visa. The village, located in a truly a wine area -Târnavelor - was known for its vineyards and wines. This area is known as one of the most important wine centers of the county.

The village is located on the Sibiu-Media National Road and its inhabitants could easily travel by road or by rail. There is a main rail station in Axente Sever and another one 3mi away, in the small village of Agarbiciu.

Copsa Mica used to be very well known for its two big polluters – SIMETRA and CARBOSIN, two big chemical plants used to produce black carbon. Presently, a huge area of over 14,000ha agricultural land (excluding forests and associated land) along the Tarnava Valley is defined as contaminated land. Although the chemical plants were located in Copsa Mica their pollution split over and covered land from different villages and town within their vicinity.

The Axente Sever village is bordering the Copsa Mica town along the Tarnava Valley and such the biggest impact of pollution outside Copsa Mica is felt mostly here and on its used-to-be but now contaminated land.

The adverse impact of sulphur dioxide emissions and particulates containing heavy metals of the companies from Copsa Mica is significant over all environmental factors in the area. In period of 1996 - 2007 there were conducted by EPA Sibiu systematic atmospheric measurements outlining the degree of pollution from Sometra. Mean annual SO2 ranged insignificant in the range from 1996 to 1999. Between 2001 - 2005 the SO2 concentration decreased, followed by a significant increase in 2007. Concentrations of lead and cadmium in suspended particles remains high, the highest annual average values being recorded in 2003, as the content of Pb and Cd to be followed by a decrease in the period of 2004 - 2007.

Sibiu EPA Experts say that the activities of the first stage of action were to capture particulate emissions, ambient air particulate concentrations decreased with attainment of maximum admissible concentrations, which are also correlated with decreased heavy metal content of the powder. Water quality affected river Târnava industrial waters containing high heavy metals discharged from the platform, content that exceeds the limits for a Class III quality. River pollution has decreased since 2006 due to investments made by Sometra (Rehabilitation and modernization of water circulation, modernization of water treatment & purification, increase wastewater recycling) surrounding river section downstream with the limits for a Class III quality.

Soil quality - historical pollution with heavy metals continues, the affected area being of 800 ha. The groundwater identified significant concentrations of heavy metals. Accumulation of significant heavy metals were found in cultivated plants in the area, high concentrations being found in plant tissue of trees and perennials.

For re-vegetation in the area situated nearby the Company, integrated environmental permit requires society to achieve afforestation and building works and other works to improve lawns green area affected by pollution. Also in the authorization phase, the Company is obliged to fund the restoration of forest vegetation affected and setting reconstruction necessary to mitigate environmental impacts.

Demographics of Axente Sever

To understand the Axente Sever demographics we will look at few social dimensions:

- Population by Age-group and Sex – this would help us in getting a better understanding of working-age population distribution by age and sex – please see Table 6 below.

- Households & Households' Equipment – this would provide us with an overview of the general development of Households in the area that we could use as a proxy in assessing the local people level of well-being – please see Table 7 below.

- Levels of schooling – this could be used as a valuable proxy for working skills availability in the area – please see Table 8 below.

- Current Local Infrastructure – it is a very useful information about the current state of local infrastructure and where the main benefits, with the most impact, could occur – please see Table 9 below.

Table A.5. Axente Sever Population by Age-group and sex

Total	**under 20 yrs**	**20-60 yrs**	**over 60 yrs**
3,690	891	2,078	721
	24.15%	56.31%	19.54%
Masculine	**under 20 yrs**	**20-60 yrs**	**over 60 yrs**
1,843	445	1,088	310
	24.15%	59.03%	16.82%
49.95%	49.94%	52.36%	43.00%
Feminine	**under 20 yrs**	**20-60 yrs**	**over 60 yrs**
1,847	446	990	411
	24.15%	53.60%	22.25%
50.05%	50.06%	47.64%	57.00%

How to read it: There are 1,843 males in Axente Sever, of which 445 (24.15%) under the age of 20yrs, or 49.94% of total under 20yrs population.

Table A.6. Households and Households' Equipment

# of Households	People per Household	Water Supply	Sewage	Electricity	Central Heating	Kitchen	In-house Bathroom
1,333	2.77	89.30%	84.10%	97.50%	24.50%	94.40%	69.00%

How to read it: there are 89.30% of Households with central water supply, or 69% of Households with in-house bathrooms.

Table A.7. Level of Schooling

University		High School & Vocational		Primary & Secondary School		None	
People	%	People	%	People	%	People	%
234	6.34%	1,559	42.25%	1,414	38.32%	49	1.33%

Table A.8. Current Local Infrastructure

Central Water Supply	Community Sewage Availability	Gas Supply	Landlines Phones Availability	Electricity Supply	Cable TV	Internet Availability	Roads Total (mi)	Modern Roads (mi)	Primary Schools
No	No	Yes	Yes	Yes	Yes	Yes	15.6	4.4	3

To complete the above overview on Axente Sever Local Infrastructure, it should also be mentioned that there are, within the village:

- 1 Nursery
- 1 Library
- 1 Medical GP (1 GP and 2 assistants)
- 1 Vet
- 1 Police station (2 policemen)

Taking into account the general information about the Axente Sever village, and looking at the above data from the Romania Census 2011, one could easily sketch the quintessential image of the small Romanian village.

People & Households

- almost half of the population having high school and/or university studies

- usually 60% of village population is of working age

- although around 20% of village population is over 60yrs old, most of them are still actively working their own small plot of land

- less than 25% of houses have central heating and usually less than two thirds of them a modern bathroom (defined as a toilet & bathtub within/inside the house)

Work & Employment

- very few employment opportunities besides agriculture or own land working

- low or lack of local industrial workshops and/or factories

- above national average unemployment rate

- people will be more than willing to work in farming.

Local Infrastructure

- no central water supply

- no community sewage and/or waste management systems in place

- low access to health services – for any health needs beyond the local GP they will need to travel to the nearest town

- less than one-third of the roads are modernized (defined as having a surface of asphalt, cement or stone pavement).

Local Unemployment Rate

The local unemployment rate at the end of June, 2013, was 4.33% - 90 people out of the 2,078 working age inhabitants of the Axente Sever. Although the local unemployment rate looks low it should be mentioned that usually very few people from villages are entitled to register as jobless and then be able to claim unemployment benefits. Furthermore, after 24months of unemployment the jobless person is taken out from statistics since s/he will not be receiving any unemployment-related benefits.

Local Camelina Crop Development

The Camelina crop in Axente Sever covers a small surface but it is very important due to its close proximity to the above mentioned Copsa Mica chemical plant and also the high level of ground pollution, contaminated soil.

This Camelina crop might have a great impact on local community - given its resilience on contaminated land, it could become the crop-of-choice in reclaiming contaminated land for agricultural use.

Figure A.1. Camelina Crop development in Axente Sever (as of 18 June 2013)

Expected Benefits of Camelina Production

Given the current level of development of the biggest majority of villages in Romania, we envisage that the most benefits will occur in:

- Development of hard local infrastructure – improved roads, water supply and sewage services, waste management services, heating/cooking gas supply

- Development of soft local infrastructure – improved school buildings

- Increase rural cohesion – due to local economic growth and lower urban migration

- Local people development – better job opportunities, lower social costs

In order to increase our understanding about Axente Sever village and to gauge the socio-economic impact of Camelina production and its long-term sustainability we will complete the above view with the results from our Socio-Economic Impact Analysis of Camelina Production Questionnaire – please see Annex 1.

A2.2.2. Small Town - the Rovinari Case Study

The Rovinari town is located in the Southern part of Romania. It is a small town, with less than 12,000 inhabitants, and it mainly grew due to the nearby coal exploitation for the Rovinari Coal Power Station - one of the largest electricity producers in Romania. The whole town has been built and developed around RCPS (Rovinari Coal Power Station) and its activities, being basically a mono-industrial town, highly dependent on the on-going business of RCPS.

The Coal Exploitation and the Rovinari Coal Power Station activity resulted in the creation of a huge dump - over 4,000 ha. Rovinari Coal Power Station succeeded, during the last years, to lower the growth rate of its dump by improving its technology and its anti-pollution efforts. The company and some local stakeholders are now actively searching new, smart, ways to improve the situation by looking for new usage of their huge surface of contaminated land.

On the other hand, the Coal Exploitation, the Rovinari Coal Power Station and the related contractors are the main employers in the area, resulting in a mono-industrial profile of the area. Furthermore, the local employment opportunities are very low to non-existing since the local investment is very low, due to the recession in general and local lack of development funds in particular.

Demographics of Rovinari

To understand the Rovinari demographics we will look at few social dimensions:

- Population by Age-group and Sex – this would help us in getting a better understanding of working-age population distribution by age and sex – please see Table10 below

- Households & Households' Equipment – this would provide us with an overview of the general development of Households in the area that we could use as a proxy in assessing the local people level of well-being – please see Table11 below

- Levels of schooling – this could be used as a valuable proxy for working skills availability in the area – please see Table12 below

- Current Local Infrastructure – it is a very useful information about the current state of local infrastructure and where the main benefits, with the most impact, could occur – please see Table13 below

Table A.9. Rovinari Population by Age-group and sex

Total	**under 20 yrs**	**20-60 yrs**	**over 60 yrs**
11,816	3,134	8,074	608
	26.52%	68.33%	5.15%
Masculine	**under 20 yrs**	**20-60 yrs**	**over 60 yrs**
5,994	1,578	4,161	255
	26.33%	69.42%	4.25%
50.73%	50.35%	51.54%	41.94%
Feminine	**under 20 yrs**	**20-60 yrs**	**over 60 yrs**
5,822	1,556	3,913	353
	26.73%	67.21%	6.06%
49.27%	49.65%	48.46%	58.06%

Table A.10. Households and Households' Equipment

# of Households	**People per Household**	**Water Supply**	**Sewage**	**Electricity**	**Central Heating**	**Kitchen**	**Bathroom**
5,056	2.34	91.80%	91.80%	98.30%	44.70%	92.60%	91.60%

Table A.11. Level of Schooling

University		High School & Vocational		Primary & Secondary School		None	
People	%	People	%	People	%	People	%
716	6.06%	5,990	50.69%	3,500	29.62%	265	2.24%

Table A.12. Current Local Infrastructure

Central Water Supply	Community Sewage Availability	Gas Supply	Landlines Phones Availability	Electricity Supply	Cable TV	Internet Availability	Roads Total (mi)	Modern Roads (mi)	Primary Schools
Partial*	Partial	Partial	Yes	Yes	Yes	Yes	36.2	16.8	3

*This is how the local council currently reports it.

To complete the above overview on the Rovinari Local Infrastructure, it should also be mentioned that there are also:

- 3 Schools
- 1 High-school
- 1 Library
- 1 Small Hospital (121 beds)
- 1 Police station (18 policemen)

Taking into account the general information about the Rovinari, and looking at the above data from the Romania Census 2011, one could easily sketch the quintessential image of the small Romanian town.

People & Households

- more than half of the population having high school and/or university studies

- almost two-thirds of town population is of working age

- a small proportion (5%-8%) of town population is over 60yrs old, some of them are still actively working their own small plot of land

- almost half of houses have central heating and a very high proportion of them a modern bathroom (defined as a toilet & bathtub within/inside the house).

Work & Employment

- very few employment opportunities besides agriculture or own land working due to the mono-industrial profile of the area

- above national average unemployment rate

- people might be willing to work in farming

Local Infrastructure

- partial central water supply – the core of the town has central water supply, while the surrounding area don't

- partial community sewage and/or waste management systems in place – again, available for the core of the town, but not for surrounding areas

- moderate access to health services but of low quality due to lack of specialist and competition

- almost half of the roads are modernized (defined as having a surface of asphalt, cement or stone pavement)

Local Unemployment Rate

The local unemployment rate at the end of June, 2013, was 4.42% - 357 people out of the 8,074 working age inhabitants of the Rovinari town. Small and especially mono-industrial towns typically have a rate of unemployment comparable with villages due to the narrow diversification of local economy and lack of alternative job opportunities.

Local Camelina Crop Development

The Camelina crop development in Rovinari covers two separate areas, although both of them are pretty similar. The main difference between the two is the soil composition/due to contaminants – although both are on contaminated land, the level of contamination is different between the two areas. These two areas are another living proof of Camelina's resilience on contaminated land and its huge positive impact on returning these vast areas of land (around 900,000ha in Romania) to agricultural use, to local economy, for the benefit of local community.

Figure A.2. Camelina Crop development in Rovinari – Area 1 (as of 19 June 2013)

Figure A.3. Camelina Crop development in Rovinari – Area 2 (as of 19 June 2013)

Expected Benefits of Camelina Production

As Rovinari could be seen as the average small town in Romania, we think that for such communities the most benefits will happen in:

- Development of hard local infrastructure – improved roads, water supply and sewage services, waste management services, heating/cooking gas supply

- Development of soft local infrastructure – improved school buildings

- Increased productivity – due to local economic growth and the induced development

- Local people development – better job opportunities, lower social costs, cleaner environment

In order to increase our understanding about the small town of Rovinari and to gauge the socio-economic impact of Camelina production and its long-term sustainability we will complete the above approach with the results from our Socio-Economic Impact Analysis of Camelina Production Questionnaire – please see Annex 1.

A2.2.3. Medium Town - the Campina Case Study

The town of Campina is situated in the Southern part of the country, at less than 60m north from Bucharest. The town developed during time mainly due to its position near the Carpathian Mountains and, from 1900, due to the oil & gas explorations and exploitations within Prahova County of which it is part. It has a diversified industry and it benefits for being crossed by the main roads from Bucharest, the capital, to central part of the country and further away to Europe.

Demographics of Campina

To understand the Campina demographics we will look at some few social dimensions:

- Population by Age-group and Sex – this would help us in getting a better understanding of working-age population distribution by age and sex – please see Table14 below

- Households & Households' Equipment – this would provide us with an overview of the general development of Households in the area that we could use as a proxy in assessing the local people level of well-being – please see Table15 below

- Levels of schooling – this could be used as a valuable proxy for working skills availability in the area – please see Table16 below

- Current Local Infrastructure – it is very useful information about the current state of local infrastructure and where the main benefits, with the most impact, could occur – please see Table 17 below:

Table A.13. Campina Population by Age-group and sex

Total	**under 20 yrs**	**20-60 yrs**	**over 60 yrs**
32,935	5,487	18,997	8,451
	16.66%	57.68%	25.66%
Masculine	**under 20 yrs**	**20-60 yrs**	**over 60 yrs**
15,576	2,834	9,291	3,451
	18.19%	59.65%	22.16%
47.29%	51.65%	48.91%	40.84%
Feminine	**under 20 yrs**	**20-60 yrs**	**over 60 yrs**
17,359	2,653	9,706	5,000
	15.28%	55.91%	28.80%
52.71%	48.35%	51.09%	59.16%

Table A.14. Households and Households' Equipment

# of Households	**People per Household**	**Water Supply**	**Sewage**	**Electricity**	**Central Heating**	**Kitchen**	**Bathroom**
14,796	2.23	97.50%	97.40%	99.40%	73.70%	92.60%	91.80%

Table A.15. Level of Schooling

University		**High School & Vocational**		**Primary & Secondary School**		**None**	
People	%	People	%	People	%	People	%
6,674	20.26%	15,174	46.07%	7,811	23.72%	603	1.83%

Table A.16. Current Local Infrastructure

Central Water Supply	Community Sewage Availability	Gas Supply	Landlines Phones Availability	Electricity Supply	Cable TV	Internet Availability	Roads Total (mi)	Modern Roads (mi)	Primary Schools
Yes	Yes	Yes	Yes	Yes	Yes	Yes	85.3	57.7	7

To complete the above overview on the Campina Local Infrastructure, it should also be mentioned that there are also:

- 7 Schools
- 5 High-schools (attracting students from nearby villages)
- 2 Hospitals (450 beds)
- 4 Museums

Taking into account the general information about Campina, and looking at the above data from the Romania Census 2011, one could easily sketch the quintessential image of the medium Romanian town:

People & Households

- more than three-quarters of the population having high school and/or university studies
- almost two-thirds of town population is of working age
- a good proportion (15 - 20%) of town population is over 60yrs old, some of them are still actively working or helping rearing their nephews
- more than three-quarters of houses have central heating and a very high proportion of them a modern bathroom (defined as a toilet & bathtub within/inside the house).

Work & Employment

- a good supply of employment opportunities with the local industry and services sector
- below national average unemployment rate
- it might be hard to attract people to work in farming

Local Infrastructure

- the big majority (over 97%) of Households have central water supply
- the big majority (over 97%) of Households have community sewage and/or waste management systems in place
- good access to health services of above average quality
- almost two-thirds of the roads are modernized (defined as having a surface of asphalt, cement or stone pavement)

Local Unemployment Rate

The local unemployment rate at the end of June, 2013, was 3.72% - 707 people out of the 18,997 working age inhabitants of the Campina town. Usually the unemployment rate is small as the size of the town grows – the bigger the town the bigger the size of local economy the bigger the number of job opportunities the lower the employment rate.

Expected Benefits of Camelina Production

The vast majority of medium towns in Romania fit the Campina's description above. We think that for such communities the most benefits will happen in:

- development of hard local infrastructure – improved roads, water supply and sewage services, waste management services

- development of soft local infrastructure – improved school buildings, improved public open spaces

- enhanced competitiveness – multiplied induced regional development, export capabilities and potential

- local people development – better job opportunities, lower social costs, cleaner environment

In order to increase our understanding about the medium town of Campina and to gauge the socio-economic impact of Camelina production and its long-term sustainability we will complete the above view with the results from our Socio-Economic Impact Analysis of Camelina Production Questionnaire – please see Annex 1.

A3. Socio-Economic Impact Assessment (SEIA) Framework

A3.1 The Need to Design a SEIA Framework

As the future developments will take place we need a tool to assess the socio-economic impact and furthermore, the biofuel production sustainability and its risk mitigation if needed.

The SEIA Framework will help in building up a profile of the local area that can be monitored and updated over time, and be used to benchmark changes and impacts in the local area. In time, with new Camelina production areas added and with the extension of the value & supply chain, the SEIA Framework will become not only a very valuable knowledge base but also a very helpful tool for:

- Confirming socio-economic issues and impacts associated with the operation – for easily assessing the area where the Camelina production and its associated value chain benefits will have the greatest impact. It will also help in identifying the main development issues and opportunities within the local area

- Identifying risks that need to be managed (to the community and to the operation) – both in terms of sustainability and local positive impact

- It will provide a tool for socio-economic analysis over time or comparatively between different locations with the some country, region, or even between countries.

Furthermore, a SEIA Knowledge Centre (or Database) could be developed:

- At country level
    - Establish a SEIA Archive where all the related studies to be kept during the time
    - Establish a SEIA Versioning – when new questions/data are added to the study
- Inter-country

As more data will be collected, more complex and refined analysis could be performed increasing in this way the richness of our understanding of the social and economic factors, impacts and benefits of Camelina production and value chain onto different communities, within different countries and cultures, both as a snapshot and during time.

A3.2 SEIA Framework Structure

The structure of the SEIA Framework consists of two major parts:

- Local Community Social Analysis and Assessment– where we will look at the three local stakeholders – the local authorities, the farmers/landowners and the workforce. We will collect qualitative and quantitative data collected using primary and secondary sources and then run a complex analysis of it. This will help us understanding and uncovering the main areas where the most important benefits will accrue to the local community, local economy, and local people.

- Economic Impact Evaluation – where we will gather economic data regarding local/national tax regulations, local economy development and local employment and job creation potential. This will help us in assessing the economic impact and will provide us with a tool to measure this economic impact in terms of money.

A3.3. Local Community Social Analysis - Three Levels of Involvement

There are three categories of local stakeholders involved in the Camelina production – the workforce, the landowners and the local authorities. Although driven by different motivations, all these three parties have to willingly collaborate to get the most benefits for them while working for the best results for the Camelina production. We will look at each of these ones.

A3.3.1. The impact on Workforce

The Camelina production and its associated value chain will have huge positive impact on the local workforce by improving earnings prospects, providing job opportunities and improving the community life.

For most areas, especially for villages and small town, the Camelina production will provide a good deal of job opportunities for people looking for work and/or for people looking for better earnings prospects.

By increasing the area cultivated, the Camelina production will help reduce unemployment in the area, freeing at the same time funds from local budgets which otherwise will be allocated for social assistance; these funds could be then re-directed to local infrastructure development projects.

By offering more job opportunities, the Camelina production will act as a catalyst of local community life on the one hand and for the local economy diversification on the other.

The availability of local and skilled or semiskilled workforce and their willingness to take the jobs related to the Camelina production is cornerstone. While it might be pretty easy to find a lot of people willing to take on the job opportunities that will be on offer in villages and small town, it might be difficult, in some areas, to find the needed skills. On the other hand, the situation might reverse for Camelina production near medium town – where it might be easy to find skilled or semi-skilled personnel but they will be less willing to join as they might have other opportunities with industry and/or services.

To get a better understanding of the local availability of (semi)-skilled workforce and their willingness to work on Camelina farming, we designed six questions – three for Farmers and three for Workforce – within our SEIA Questionnaire – Annex 1.

F8. How many FTE employees do you use over the year for Camelina crop?

F9. How easy is to find skilled employees when needed?

F11. Do you have any on-the-job training programmes for your employees?

W2. Are you employed part-time or full-time?

W3. What percentage of your family income is derived from agriculture work?

W6. Having the opportunity, would you be interested in future work on Camelina crop?

A3.3.2. The impact on Farmers/Landowners

The farmers are another very important stakeholder in Camelina production and its associated value/supply chain. While their commitment is much higher than that of the workforce, their motivations are very different and the Camelina crops have what it takes to make them very interested:

- The Camelina crop is an attractive crop as it did not require too much costly input & can be worked with low specialisation agricultural mechanization. Given the low agricultural mechanization level in Romania, this crop will draw attention not only from big farmers but also from small local agricultural companies and /or small family-owned exploitation. Furthermore, there are around 900,000ha of un-cultivated agricultural-grade land in Romania and the easiness in farming of the Camelina crop could become a catalyst for the owners of this land to start working it.

- The Camelina crop has a short lifespan – around 88-90 days – making it very interesting for crop rotation. The Camelina crop rotation will bring a lot of benefits for farmers, not only in terms of increased profitability by improving the yield on the land, but also would provide the farmers with the option to take on polluted and/or contaminated land to expand their exploitation

- The Camelina crop capacity to grow on polluted and/or contaminated land will provide both farmers and local authorities with a great incentive to start developing and/or returning this kind of land to productive levels. Given that there are currently around 900,000hs of polluted/contaminated land in Romania, the Camelina crop could become the crop of choice for most of this land.

To get a better understanding of the farmers' motivations and commitment to work on Camelina farming, we designed six questions – four for Farmers and two for Workforce – within our SEIA Questionnaire – Annex 1

F2. For next year, the Camelina crop will be on the same area, bigger area, or smaller area?

F5. What percentage of your agricultural land is dedicated to Camelina crops?

F6. Is Camelina a rotation crop or the main one?

F7. Do you consider Camelina a land-yield boosting crop?

W5: Since starting working on Camelina crop, does your living/lifestyle improved?

W6. Having the opportunity, would you be interested in future work on Camelina crop?

A3.3.3. The impact on Local Community/Local Authorities

The local authorities are an indirect stakeholder in Camelina production but their local influence could be very important for the whole Camelina value/supply chain. Though not directly involved,

their motivations are different from the ones of the workforce or farmers and given the benefits of the Camelina production, they could turn into an important local stakeholder:

- As mentioned above, the Camelina crops could help local authorities put the local polluted/contaminated land to better use.

- By promoting and helping expand the Camelina crops, the local economy will benefit – not only in terms of an increase of local tax collected, but also lower social costs (due to job opportunities for people on social support), and, furthermore, by local economy diversification

- The indirect and induced effects of Camelina production might also play an important role in local economy – people will spend their wages locally, farmers will source some materials and services locally as well, all contributing to the increase of local economy.

- Local community will benefit from Camelina production and its associated value/supply chain – it will slow or even reverse urban migration, it might strengthen local community and so on.

To get a better understanding of the local authority incentives to help and support Camelina farming, we designed three questions – which we ask all three stakeholders – within our SEIA Questionnaire – Annex 1.

> *A3/F13/W7. In which area do you think Camelina crops will bring the most benefits and positive impact for local community?*
>
> *A4/F14/W8. Which of the local development projects could most benefit from Camelina crop-generated income for your local budget?*
>
> *A5/F15. Are there any local initiatives to support local agricultural companies?*

A3.3.4. Risk Management & Risk Mitigation

Given the local profile from the people and local economy perspective and taking into account the incentives and motivations of the above stakeholders, a risk management component for the SEIA Framework will be needed.

To get a better understanding of the risks that might impact on the Camelina farming, we designed three questions – which we ask both framers and local authorities– within our SEIA Questionnaire – Annex 1.

> *F9. How easy is to find skilled employees when needed?*
>
> *F10. What is the impact of the following taxes on your company development?*
>
> *F16/A6. What are the main risks for future increasing in Camelina crops?*

A3.4. Economic Impact Evaluation

There are four dimensions we will try to understand and evaluate in order to build a comprehensive economic assessment of the impact of the Camelina production.

A3.4.1. Payments made to the public sector and/or local authorities

Here will be all payments generated by local or national tax, or other local payments toward local authorities. Payments for services provided by local authorities or other local companies are not included here, as they are part of the local services purchasing.

Furthermore, profit taxes, royalties, license fees, rental fees, concession fees, registration fees, stamp duties, environmental levies, etc., will be included here. As there are slightly different specific local regulations and conditions within each community, it is important to gather information about them from local people that knows them first hand.

Given the high fragmentation of land ownership and the lack of funds for investment all over Romania, the vast majority of small landowners leased their land to bigger farmers and/or local agricultural companies. These farmers and/or local agricultural companies, in exchange, are making payments to small private landowners from which the land has been leased. For our Economic Impact Evaluation, this payment could be translated to FTE employment – as will generate, most of the time, a living income for the lessor.

A3.4.2. Total employment

In order to assess the total employment generated by the Camelina production, we will look at the direct employment, indirect employment and induced employment.

Direct employment – the workforce employed for and in local Camelina production operations.

Indirect employment – the workforce employed as result of the operational requirements of Camelina production – with contractors, suppliers, and so on.

Induced employment – the workforce employed due to the local/national increase in other businesses – local shops and supermarkets, or local services providers, for example.

We will evaluate the employment as FTE – full-time equivalent, while we will need to be very specific whether is full-time, part-time, casual, and so on.

For contractors, we will use the percentage of business generated with/by contractors as a proxy and we define the relation as being % of turnover = % of FTEs

For the induced employment, we will use an employment multiplier (for our study we will define the employment multiplier as the number of induced jobs for each direct and indirect job created). We will use an employment multiplier 1.1 - 1.15.

Besides the local and national employment in terms of people, we can evaluate the Total Local Wages payments - which will directly benefit the local economy.

Furthermore, we can assess the Total Local Impact – as we know the local family size, we can calculate the number of people dependent upon local Camelina production.

A3.4.3. Total procurement generated by the Camelina production operations

Total procurement generated by the Camelina production operations could be further split into local and regional/national.

Depending on the Camelina Supply Chain, we would be further able to calculate a regional/national contribution.

A3.4.4. Evaluate induced impact

There might be also other induced effects/impacts of the Camelina production.

Improved soil - when crop on contaminated/polluted soil – could be one of the most important induced positive impacts of the Camelina production. Given the current situation in Romania, where around 900,000 ha of land are contaminated / polluted, and taking into account the recent

research showing a high resilience of the plant to these soils, Camelina could become the crop-of-choice for very large land areas around the country.

Better use for uncultivated soil – again, with the current situation in Romania, where around 900,000 ha of farming-grade land are un-cultivated, and taking into account the low requirements to establish Camelina crops, this feedstock could become the crop-of-choice for very large land areas around the country. Camelina can be involved as rotational crop when uncultivated land is suitable for cereal crops, provided that all such land is suitable for bioenergy production according to the RED.

A3.4.5. Contribution to the local / regional economy

Last but not least, we can calculate now the sum of local wages + local payments + regional/national payments + all other positive impact payment.

In order to evaluate the economic impact of Camelina production, we designed nine questions – one for all three of them and the remaining mainly for both framers and local authorities – within our SEIA Questionnaire – please see Annex 1.

A7/W9/F17. What local taxes do you need to pay?

A8/F19. What local taxes are you paying for Camelina employees?

F18. What national taxes do you need to pay?

F20. What national taxes are you paying for Camelina employees?

F21. Are you using local and/or national contractors?

F22. What percentage of your turnover is generated using local/national contractors?

F23. What percentage of your services purchasing is local/national?

F24. What percentage of your materials purchasing is local/national?

F25. How much do you pay, on average, for a leased Ha per year to small landowners?

A3.5. SEIA Field Questionnaire

The SEIA Questionnaire has been designed in order to collect two types of data:

- Primary data – data that is usually publicly available and could be easily obtained from local authorities and/or from national authorities (Romania Census 2011, National Institute of Statistics, Local Development Strategy Programmes, etc.).

- Secondary data – data that could be obtained by using questionnaires and interviewing local people involved in the Camelina production and its associated value/supply chain.

The SEIA Questionnaire will have 4 parts:

Part 1 – Primary data – with 5 sections and 25 dimensions

- Local People
- Households
- Local Economy
- Local Infrastructure
- Land

Part 2 – Secondary data – Local Authorities – with 8 questions (open-end and multiple-choices)

Part 3 – Secondary data – Farmers – with 25 questions (open-end and multiple-choices)

Part 4 – Secondary data – Workforce – with 9 questions (open-end and multiple-choices)

Each section has an open comments sections to help the interviewer in recording any comments/data s/he consider necessary but also to invite the interviewee to talk freely about related points and subjects s/he might want to.

After collecting both the primary and secondary data, a statistical analysis will be performed. The main purpose of it will be to help us in understanding and mapping the positive impacts & benefits of and the main risks for the Camelina production operations relative to both the size and development status of the local community and at the regional/national level. Further analysis will be needed as to include the whole Camelina value chain and its overall impact at the national level.

Based on the above considerations and example of questions, please see Annex 1 and Annex 2.

A4. SEIA Field Data Analysis

Biotehgen, our project partner in Bucharest, Romania, provided support for us in data acquisition while we did the data analysis and interpretation. Together with us, Biotehgen used its extensive network of local contacts with both local authorities and Camelina farmers for primary and secondary data acquisition.

A4.1. Local interviewees

As we designed three different questionnaires for the local stakeholders, we gathered field data from all of them independently being able this way to analyse some of their opinions not just along the other local people but also intra-community as well.

For the Local Authorities (and NGOs), the number of people that we should target to interview should be at least three for villages, going up to maximum of six for medium towns. As the villages have a small number of people in local administration, this number should cover at least the local mayor and at least two local councillors. For small and medium towns we would endeavour to interview local councillors and/or other internal staff that is part of the local economy/business/agriculture department as their knowledge and/or opinions might bring a lot of value. Wherever possible, given the local specific situation, we can also get in touch with local NGOs active in local environmental or people development or agricultural issues. Again, their local perspective could bring in a new dimension for our study.

For the Farmers, the number of people that we should target to interview will be the number of local farmers involved in Camelina production. The farmers' questionnaire is the most comprehensive one as we see them as the most important local stakeholders out of those three, on the one hand, but also as the main pillars in building up the Camelina both value chain and supply chain.

For the Workforce, the number of people that we should target to interview would be given by the size of the local Camelina crops. Since on the long term they might reap the most benefits of the positive impact of Camelina production, their number should be at least equal with the number of people from Local Authorities and Farmers, preferably much bigger.

A4.2. Field data acquisition

Each of the three questionnaires we designed could be completed in around 30min. For each community and given the local size of Camelina crops we would be able to calculate the number of interviewees, the total time needed for field data acquisition and the number of interviewers to complete the task. As each local community will have its own specificities, we would centralize the details beforehand using our current knowledge for each local development.

In terms of number of people to be interviewed, our recommendations are as follow:

For villages:

- 1-2 people from Local Authorities
- All farmers / landowners
- At least one to maximum three workers for each farmer

For small towns:

- 2-3 people from Local Authorities
- 1-2 people from local NGOs – if applicable

- All farmers / landowners
- At least two to maximum seven workers for each farmer

For medium towns:

- 3-4 people from Local Authorities
- 1-2 people from local NGOs – if applicable
- All farmers / landowners
- At least two to maximum 5 workers for each farmer.

We designed this sample based on a few basic statistical principles:

- To be large enough as to take into account the local specificities
- To cover all stakeholders involved , or affected by Camelina production
- To provide a statistical significant sample at regional and national level
- To be small enough as to keep our research costs within budget.

Another advantage of this sampling will be that we can interview the same people at future time or when needed – especially farmers and local workforce, but also local authorities since they are usually in office for at least three-four years.

The table below is a quick and easy to use tool to calculate the total numbers of interviews using the number of communities and farmers within each community – based on the above recommendations on the number of interviews for each type of community.

Table A.18. Calculate the size of the sample and numbers of interviews

		Local Authorities	Farmers / Landowners	Local Workforce	Total Interviews
Villages	1	1	2	4	7
Small Towns	1	1	2	4	7
Medium Towns	1	1	2	4	7
			Total Interviews		21

How to use it: Please insert data into cells and the calculation will be automatically. Please bear in mind it is just a model that will be refined as we will gather field data.

A4.3. Field data analysis

After successfully gathering the field data and the primary data, using our extensive questionnaire (Annex 1) we started to analyse and interpret it in order to have a first-hand perspective on the socio-economic impact of Camelina production in Romania. Analysing the primary data we will get a better understating of the current local community development – by looking at the population and workforce employment, households and local infrastructure. Using the field data, we would then be able to get a glimpse on the positive impact of Camelina production.

A4.3.1. Current local community development

It is very important to have an as better as possible "picture" of the current local community development as this will provide the foundation for the need of Camelina production. We are building this "picture" from three different perspectives – population and workforce employment, households and local infrastructure.

Population and workforce employment

- No of employees with State Owned Enterprises (SOE) – from more than 90% in villages to around 60% in medium town, out of the total local workforce. This indicator shows, on the one hand, the local reliance on state-provided jobs and, on the other hand, the low local entrepreneurship – both in terms of local capital seeking investment and local support for development.
- Local workforce occupation – from less than 40% in villages to around national average of 56% in medium towns. This indicator shows, on the one hand, low number of local work opportunities and, on the other hand, coupled with local unemployment indicator, the pressure on local and national budgets for paying benefits to otherwise a work-willing population.
- Local unemployment varies from around 17% in villages towards closer to the national average of 8% in medium towns.
- Individual average net monthly income for the last 12 months (as of end of 2013) is €198 in villages rising to almost national average of €306 in medium towns, while the Household average net monthly income for the last 12 months follows the same path, from €255 in villages to €505 in medium towns.

Table A.2. Population and workforce employment overview

Population and Workforce employment	Axente Sever	Rovinari	Campina
Total Population	3,690	11,816	32,935
Women	1,847	5,822	17,359
Men	1,843	5,994	15,576
Under 20	891	3,134	5,487
Between 21-60	2,078	8,074	18,997
Over 60	721	608	8,451
Percentage of Over 60 out of all population	20%	5%	26%
Employees	740	3,759	8,753
Entrepreneurs	14	186	1,216
Employed by SOE	675	2,843	5,494
% of Employees with SOE (State-Owned Enterprise)	**91%**	**76%**	**63%**
Employed by POE (Privately-Owned Enterprise)	65	916	3,259
% of employees with POE	**9%**	**24%**	**37%**
Work Force Occupation (Employment)	**36%**	**49%**	**52%**
Unemployment Last 3mths	96	329	761
Unemployment Last 12mths	58	174	236
% of Total Unemployment	**17%**	**12%**	**10%**

Average Monthly Income per Person Last 3mths (After Tax, GBP)	€193	€241	€299
Average Gross Yearly Income per Person Last 3mths	**€3,855**	**€4,822**	**€5,982**
Average Monthly Income per Person Last12mths (After tax, GBP)	€198	€256	€301
Average Gross Yearly Income per Person Last 12mths	**€3,952**	**€5,122**	**€6,015**

(BOLD – calculated values)

The Population and Workforce Employment profile for each community is a strong indicator, very useful in understanding and assessing:

1. The local workforce willingness to work – most of the unemployment and the low level of employment is mainly due to the scarcity of job opportunities. As such, a local development of Camelina crops will likely have a positive impact on community as a whole. The scale of this positive impact will be higher for villages while it will be still significant for medium towns.
2. The impact on local economy – in both directions, by lowering the pressure on local budgets for benefits and support while increasing the job and earning opportunities for local people. Again, this impact will likely be higher for villages – where people find it hard to get local jobs, while it will have a lower impact in medium towns.

Households

- Car ownership – is extremely low in villages (around 5-7%) while significantly increasing towards the national average in medium towns (38-40%). Coupled with local infrastructure indicator and the resulting public transport availability, this indicator highlights the lower workforce mobility in the villages compared with the one in medium towns.
- Household appliances ownership – within the Romanian culture, the low level of household appliances ownership in villages is putting a lot of pressure on households to be able to buy such things that might not only improved their everyday living but also their status within the community.
- Access to water/sewage – water and sewage services are usually provided by the Local Council.
- Access to gas/heating – gas and heating supply services are usually a mixture of Local Council and privately provided services. As such, given the cost of establishing and running such services, it should not be a surprise to find such low levels in villages and higher ones in medium towns. Furthermore, another issue here is the population density, as such gas/heating supply networks depends heavily on both the number and the geographical distribution of their customers.

Table A.3. Households overview

Households	Axente Sever	Rovinari	Campina
Households	1,333	5,056	14,796

Houses	1,333	3,784	6,859
Apartments	-	1,272	7,937
Own a Car	67	910	5,622
% of Households Owning a Car	**5%**	**18%**	**38%**
House Appliances (TV & Washing Machine & Gas Oven)	240	2,174	11,985
% of Households Owning Three House Appliances (TV & Washing Machine & Gas Oven)	**18%**	**43%**	**81%**
Access Water Supply	1,190	4,641	14,426
% of Households with Access to Water Supply	**89%**	**92%**	**97%**
Access Sewage Supply	1,121	4,641	14,411
% of Households with Access to Sewage Supply	**84%**	**92%**	**97%**
Access Gas/Heating Supply	327	2,260	10,905
% of Households with Access to Gas/Heating Supply	**25%**	**45%**	**74%**

(BOLD – calculated values,)

The Households profile of the community highlights the main area where the local council might be willing to invest the windfall of earnings due to local Camelina crops.

1. A local Camelina production development will likely have a huge impact on villages, where the need to invest in local household-related infrastructure is the biggest.
2. The local households will likely be willing to work and save to buy the household appliances they would like, adding one more reason to the local workforce willingness to work.

Local Infrastructure

- Local road infrastructure comprises of around 26% of modern/paved roads in villages, whereas is made of almost 70% of modern/paved roads in medium cities.

Table A.4. Local Infrastructure

Local Infrastructure	Axente Sever	Rovinari	Campina
Community Modern Roads within a 10m Radius	16	36	85
Community Paved Roads	4	17	58
Community Unpaved Roads	12	19	27
Ratio of Modern/Total Roads	**26%**	**47%**	**68%**

(BOLD – calculated values)

The low level of roads and rail infrastructure is a very good proxy for both the need for local development and for low workforce mobility.

Given the above picture of local community, local Camelina crop developments are very likely to have a positive impact on a string of local projects that might be developed not with the local council support but also for the greatest benefit of local people, local community and local economy. As such, when we asked different local stakeholders on the likelihood impact of Camelina crops we looked at some very specific local projects:

1. Building/improving schools – to increase not only the new generation opportunities and but also improve the learnings and personal development ones for adults
2. Building/improving local roads – to improve local infrastructure and also provide new jobs for their development
3. Improving local health services supply – by strengthening local economy, investing in improving local health supply facilities and attracting more qualified medical personnel
4. Improving local heating/cooking gas supply – to improve the living status of local people
5. Improving local running water supply – not only for people but also for local businesses
6. Improving local sewage/waste services supply – to improve local living conditions and work towards a more environmental friendly community.

For each community, implementing some or all of the above possible local projects, an extensive Camelina crop development might provide the catalyst factor in kicking off them – through local council involvement, local entrepreneurship, local workforce, all coming together for the economic and well-being development of the community.

The positive impact local Camelina crops development will be mostly visible in:

1. Improving local living conditions
2. Increasing local economy
3. Providing more and better local employment opportunities
4. Improving local infrastructure development – both in terms of roads and railways and in terms of local services – water, gas, sewage, waste management
5. Improving local agricultural land utilisation and increasing its yield
6. Increasing local economy diversification – which will lead to increasing local workforce's pool of skills and abilities
7. Reversing rural/local depopulation by creating better development opportunities for local people and attracting new ones to the community

As the Camelina production will grow over the country and more and more communities will be involved, we will be able to analyse the impact on different projects and on different area more accurately using our SEIA Framework.

A4.3.2. The Positive Impact of Camelina production development

As we have now an exhaustive overview of the local community projects that might be developed and the areas that might be impacted by the Camelina production development, we asked local stakeholders on the likelihood of this happening – that is, how different stakeholders perceive the positive impact of Camelina production – in general and by community type.

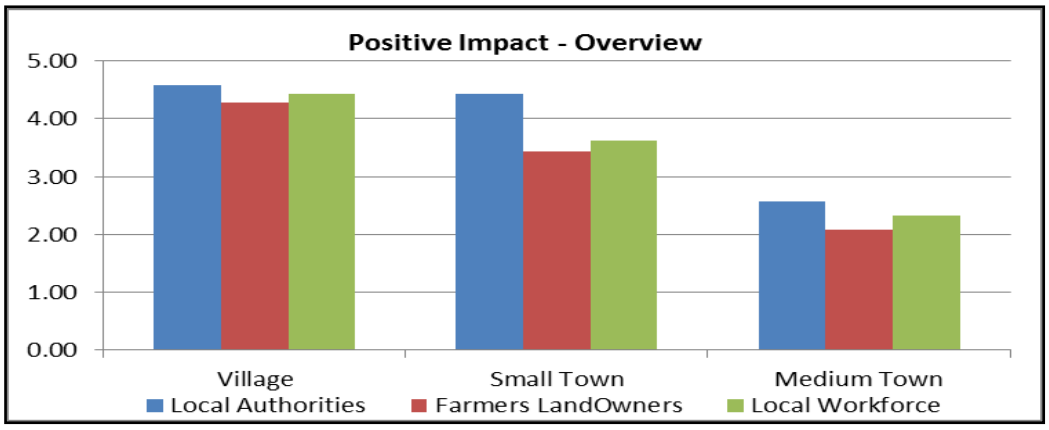

Figure A.1. Positive Impact as perceived by different stakeholders within different types of community on a scale 0 to 5 (5 being highest)

Local Authorites, represented by blue colour, were more impressed by the positive impacts of Camelina than any other stakeholder involved from villages, small or medium town, while the workforce was less impressed in the three selected case-studies. This explains the value of a business opportunity in rural area, assessed by Local Authorities.

Our field data confirms our previous assumptions that the positive impact of the Camelina production will be higher in villages and lower in medium towns. Furthermore, the local authorities' perception and one of the local workforce' is higher than the perception of farmers or landowners. In other words, the local authorities and the local workforce are more optimistic about the positive impact of Camelina production than the farmers and landowners. An explanation for this might be that the farmers and landowners are more realistic in their assessment as they are involved first hand in the Camelina production and might be more aware both of the risks or developing Camelina production and the slowness of local authorities in developing and implementing local projects.

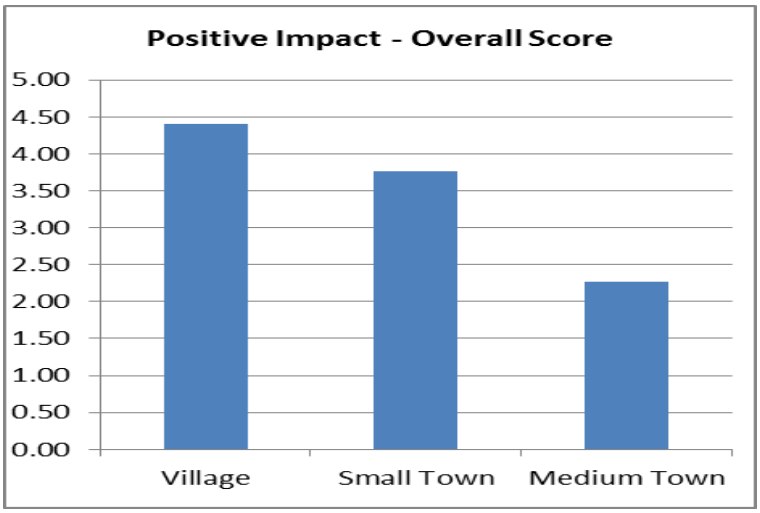

Figure A.2. Positive Impact by community type, on a scale 0 to 5 (5 being the highest)

Nonetheless, the positive impact is perceived and agreed by all Camelina production stakeholders and reinforced once again in terms of significance and local impact – higher in villages and lower in medium towns.

A4.3.3. Local Projects Development owing to Camelina production

When focusing on very specific local projects developments owing to Camelina production, the picture is slightly different, as it can be seen by comparing the graphs from Figure 6 and Figure 5.

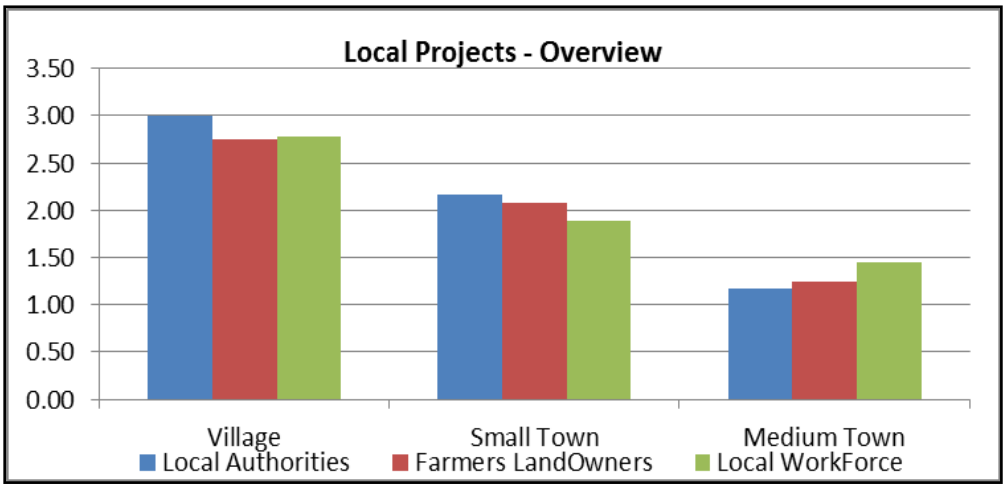

Figure A.3. Local Projects as perceived by different stakeholders within different types of community, on a scale 0 to 3.5 as preference (3.5 being the highest)

The Local Authorities' perception is the highest one in villages but the lowest one in medium towns. One explanation of this situation might be that the need to develop such local projects is much bigger in villages while the cost of developing them is much higher than in medium towns, or they might be other local projects that might need to be developed in medium towns.

It is also very interesting to compare the perception of the Local Workforce. The perception of the Local Workforce in medium towns is relatively higher than the one of the local authorities. It could be that Local Workforce is keener on seeing these projects being developed than the local authorities willingness and capabilities to do it.

Again, the Farmers and Landowners have a more balanced view – a lower perception in villages (maybe due to the lack of capabilities of Local Authorities to develop such projects) and slightly higher in medium towns.

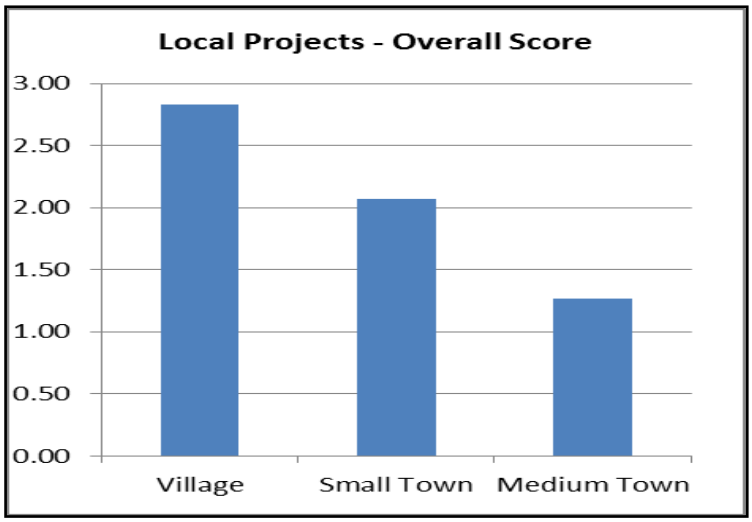

Figure A.4. Local Projects as perceived by community type, on a scale 0 to 3 as preference (3 being the highest)

Reassuringly, all stakeholders have a positive perception on the local projects development owing to Camelina production.

A4.3.4. Potential Risks

From our primary data collection, few points need to be highlighted:

A. Aging Population – Table19 – although perceived as an important risk at village-level communities, aging population might be considered a non-trivial risk in medium town as well.

B. Urban Migration – it used to be considered an important risk in the past few years but the trend is stabilizing now, even going down in terms of numbers of people leaving villages or medium towns for better job and life opportunities in medium and big towns. Furthermore, Camelina production will have a huge positive impact in lowering and even reversing this trend due to the new job opportunities and life improvement changes this crop might bring.

C. Low Income for Agricultural Workers – Tab 22 - it could be perceived as an important risks but given the differential between the income in villages and small and medium towns it could also highlight the opportunity to attract enough local skilled people with just a marginal increase of the monthly wage offered.

Table A.5. Population and Average Income Levels

POPULATION INCOME LEVELS	Axente Sever	Rovinari	Campina
Average Monthly Income per employee Last 3mths (After Tax, Euro)	€193	€241	€299
Average Gross Yearly Income per Person Last 3mths	€3,855	€4,822	€5,982
Average Monthly Income per Person Last12mths (After tax, Euro)	€198	€256	€301
Average Gross Yearly Income per Person Last 12mths	€3,952	€5,122	€6,015
Average Monthly Income per Agriculture Worker Last 3mths (After tax,Euro)	€119	€171	€233
Average Income per Agricultural Worker vs All Population	62%	71%	78%

A. Agricultural Land Availability – Table 23 – although never identified as a risk by Local Authorities ("we can provide change to the use of some of the land as long as the economical and/or social yields are better") nor by Farmers/Landowners ("if needed we can attract more small landowners to cultivate Camelina") it might become a sensible issue given the current situation of the land ownership in Romania – while for some land the ownership is not clear, some of the small landowners don't have the proper land ownership titles required when contracting a long term Camelina production.

Table A.6. Local Land Availability

LOCAL LAND AVAILABILITY	Axente Sever	Rovinari	Campina
Community Total Agriculture Land (ha)	4,034	288	3,476
Community Contaminated Land (ha)	150	10	87
Community Agriculture Grade Land (ha)	3,800	277	3,015
Family Owned Land (ha)	2,379	234	234
Company Owned Land (ha)	100	4	458
Local Authority Owned Land (ha)	1,555	50	1,163
Food Crops Acreage(ha)	570	217	946
Industrial Crops Acreage (ha)	23	6	178
Oil Seeds Crops Acreage (ha)	72	-	36

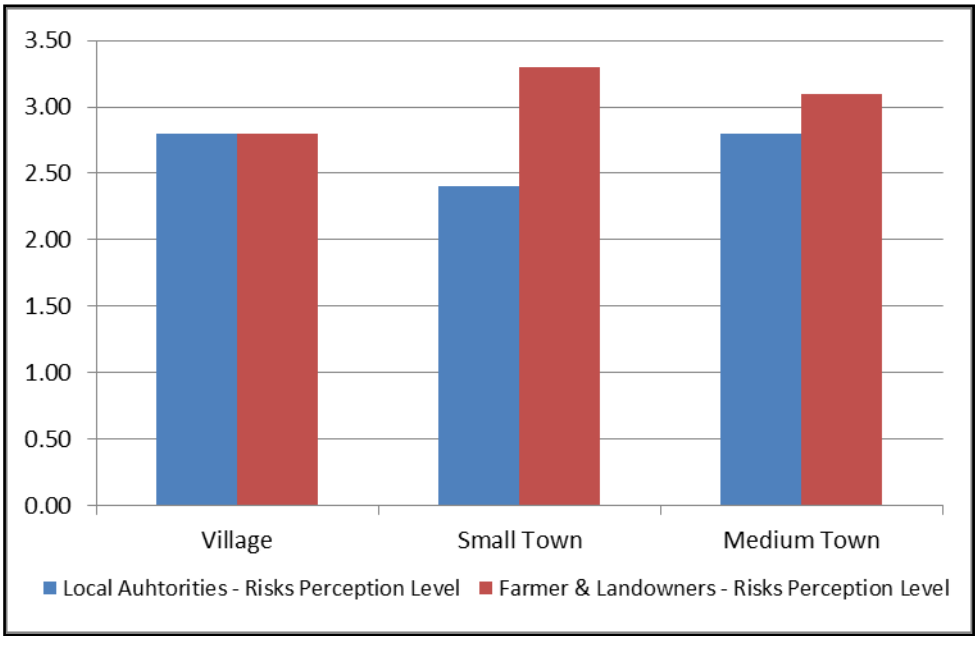

Figure A.5. Potential Risks Perception Levels by Local Stakeholders and Community Type, on a scale 0 to 3.5 (3.5 being the highest)

Looking at the perceived risks levels – Figure 8 – we can have an understanding of how Local Authorities and Farmers see these risks by community type.

While they perceive the risks at same level in villages, there is a clear differential between their perception in small and medium towns. The same perception of risks levels in villages could be attributable to a better understanding of local needs and situation common to small communities where Local Authorities and Farmers could much easily grasp their each other agenda. In small towns, Famers are more away from Local Authorities, having lower level of interactions among them, and such their perception is different. Here, the Local Authorities are more optimistic about risks while farmers are more cautions. The risks levels perception changes again in medium towns where again Local Authorities and Farmers have a different view, but the differential is smaller. This might be mainly due to the distribution of different risks than to a common understanding of the local development agenda.

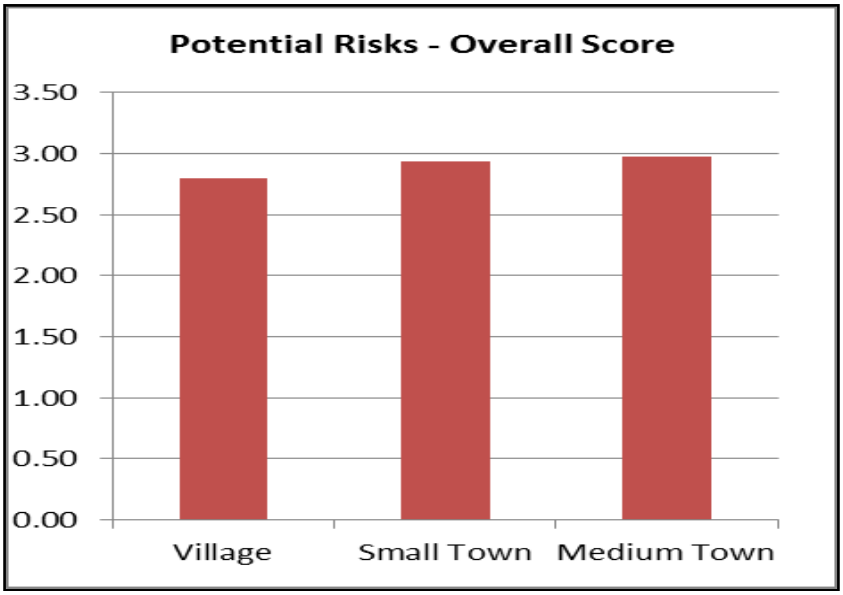

Figure A.6. Potential Risks Perception Levels by community type, on a response scale from 0 to3.5

Overall, the potential risks perception levels – Fig A.9 - are strongly correlated with the level of Camelina production impact – the bigger the impact, the lower the risks. This fact could be useful when choosing the location for future Camelina productions sites.

A4.4. Camelina Crops' Economic Impact

In order to assess and quantify the Camelina crops' economic impact we will focus on payments, employment and procurement spending (Figure A.10) in building the economic model framework.

For our economic impact assessment we assumed an average €1,000 turnover per ha of Camelina. This level is based on historical data from the last 3 years of production. For the average FTE yearly gross income per agricultural worker we assumed €3,000 with another €500 paid by the employer, for a total FTE yearly cost of €3,500.

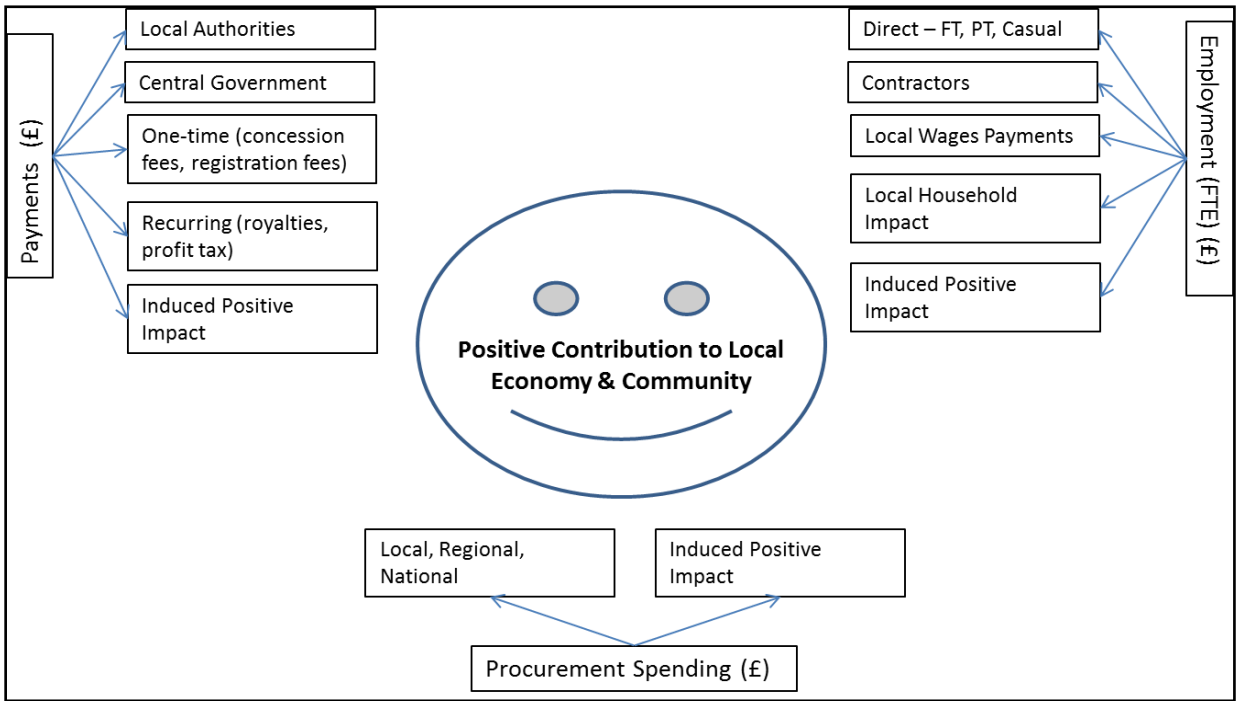

Figure A.7. Assessing and quantifying the economic impact

Note: £ to be read as Euro;

A4.4.1 Camelina Crops' Job Creation Potential

From our data collection, the average FTE per ha of Camelina crop is 0.14 FTE/ha. The Romanian national average is 0.19 FTE/ha, while for cereals/wheat is 0.22 FTE/ha. The current average of FTE/ha for Camelina production highlights once again the Camelina crop's low workforce (and its related costs) requirements.

As per our research focus, for villages, our accomplished estimation is for a potential of around 100ha per village for Camelina crops, which could mean around 14 FTE jobs for local people. Similarly, for small towns we estimate an average potential of 500 ha for Camelina crops per small town, which could mean around 70 FTE jobs for local people. For medium towns our estimation is around 1,000 ha per medium towns for Camelina crops, which will translate to around 140 FTE jobs for local people.

Given the low cost requirements to establish Camelina crops and its potential for job creation, we are confident that Camelina production could be a significant economic diversification for local economies, bringing in important benefits for the local communities.

The Table 24 summarizes the local economy potential growth when taking into consideration only the local wages paid to equivalent FTE, as per our above basic assumptions.

Table A.7. Local Workforce Wage Impact

Ha of Camelina Crops	**100**	**500**	**1,000**	**10,000**
New Jobs Creation Potential	14	70	139	1,390
Potential Yearly Gross Wage Payments	€41,707	€208,537	€417,073	€4,170,732
of which Net Wages	€25,441	€127,207	€254,415	€2,544,146
of which National Work Taxes (Employee)	€11,261	€56,305	€112,610	€1,126,098

of which Income Tax	€5,005	€25,024	€50,049	€500,488
National Work Taxes (Employer)	€6,951	€34,756	€69,512	€695,122
Un-employment Lower Costs	€3,003	€15,015	€30,029	€300,293
Total Local Tax Benefit (potential)	€9,363	€46,816	€93,633	€936,329
Total National Tax Benefit (potential)	€26,270	€131,350	€262,700	€2,627,005

For our estimation, we used data from National Workforce Occupation and Employment Agency:

- total average national work taxes paid by employees – 27%

- total average national work taxes paid by employers – 17% per employee

- income tax – 16%

For unemployment lower costs, we estimated that 20% of the new jobs would be taken by jobless people willing to get back on the job market.

An induced effect has been used when estimating the total tax benefit potential, at local and national level. At local level, this induced effect takes into account that people will spend most of their wages on local economy, including local council provided services, helping the local economy growth. At national level, the induced effect takes into consideration the wage-related taxes that are collected at national level and their spill over effect.

A4.4.2 Services and Material Purchasing for Camelina Crops

All farmers that took part in our field data acquisition are using both local and national contractors.

Camelina farmers purchase, on average, their services locally (90%) and their materials mostly at the national level (74%). Worth highlighting is that farmers from villages source all their services requirements locally – another indication that the Camelina production will have the greatest positive impact in villages and small communities.

Table A.8. Farmers' Services and Material Purchasing for Camelina Production

	Farmer #1	**Farmer #2**	**Farmer #3**	**Farmer #4**	**Farmer #5**	**Farmer #6**
Farmer's location	**Axente Sever**	**Axente Sever**	**Rovinari**	**Rovinari**	**Campina**	**Campina**
Using local contractors	Yes	Yes	Yes	Yes	Yes	Yes
Using national contractors	Yes	Yes	Yes	Yes	Yes	Yes
% of turnover generated using local contractors	95%	95%	80%	90%	75%	90%
% turnover generated using national contractors	5%	5%	20%	10%	25%	10%
% of services purchasing is local	100%	100%	90%	85%	80%	85%
% of services purchasing is national	0%	0%	10%	15%	20%	15%
% of materials purchasing is local	95%	95%	70%	65%	55%	65%
% of materials purchasing is national	5%	5%	30%	35%	45%	35%

Assuming €100 per ha to establish Camelina crops as services and material costs, and a split of 40% - 60% between services' cost and materials' one, the potential benefits are detailed in Table 25. An induced effect multiplicator has been included. The induced effect in this case will be a proxy for the positive impact on involved contractors businesses. The multiplicator value would be 1.11 for local services and materials, and 1.09 for national services and materials.

Table A.9. Services and Materials Impact

Ha of Camelina	**100**	**500**	**1,000**	**10,000**
90% of Services bought locally	€3,600	€18,000	€36,000	€360,000
10% of Services bought nationally	€400	€2,000	€4,000	€40,000
26% of Materials bought locally	€1,560	€7,800	€15,600	€156,000
74% of Materials bought nationally	€4,440	€22,200	€44,400	€444,000
Total Local Services & Materials Impact (potential)	€5,728	€28,638	€57,276	€572,760
Total National Services & Materials Impact (potential)	€5,276	€26,378	€52,756	€527,560

A4.4.3 Quantifying Camelina Crops' Economic Impact

Summing up the above potential economic benefits should result in the below overall impact table – Table 27.

Table A.10. Camelina Crops Economic Impact

Ha of Camelina Crops	**100**	**500**	**1,000**	**10,000**
New Jobs Creation Potential	14	70	139	1,390
Of which Net Wages	€ 25,441	€ 127,207	€ 254,415	€ 2,544,146
Total Local Tax Benefit (potential)	€ 9,363	€ 46,816	€ 93,633	€ 936,329
Total National Tax Benefit (potential)	€ 26,270	€ 131,350	€ 262,700	€ 2,627,005
Total Local Business Impact (potential)	€ 5,728	€ 28,638	€ 57,276	€ 572,760
Total National Business Impact (potential)	€ 5,276	€ 26,378	€ 52,756	€ 527,560
Total Local Economic Impact (potential)	€ 40,532	€ 202,662	€ 405,324	€ 4,053,236
Total National Economic Impact (potential)	€ 31,546	€ 157,728	€ 315,456	€ 3,154,565

There are few things worth mentioning:

- the above impact is annual – meaning that it will appear on an annually basis, each and every year.

- the above economic impact has been forecasted based on the 2013 levels of local and national tax rates on wage and business.

- for the above forecast there was a linear correlation between the Camelina acreage and economic impact. In real life, this correlation might be above 1, meaning that the economic impact will increase faster than the Camelina acreage – most probably by taking into consideration some local or business related economies of scale and of scope.

- on average, the economic benefits could be averaged at around €721 per ha of Camelina crop.

Given the total acreage of contaminated land in Romania (almost 900,000ha) the potential for Camelina production development is huge and might result in an even greater both economic and social impact and country level. Add another approximately 900,000 ha of agriculture grade but un-cultivated land and the potential for further development together with the prospective of social, environmental and economic benefits, one might start realising the scale of transformation the Camelina production could have on local communities in Romania.

A5. Risk Management & Risk Mitigation

In order to understand the risks facing the Camelina production in Romania, this report draws on three perspectives:

- Camelina production compliance with RSB Principles – though mostly an European basic requirement, the RSB Principles set up the scene for a clearer and better understanding of all areas within different types of risks that might occur;

- Local stakeholders interaction – within the RSB Principles as a framework and taken into account the local constraints the report will look at the local stakeholders improvement and advance;

- The matrix of socio-economic impact and local communities benefits – based on first-hand field research of the socio-economic impact at the local communities level to gauge local-specific range of risks.

A5.1 Camelina production compliance with RSB Principles

From our research and based on the current situation, all Camelina production sites in Romania are fully compliant with RSB Principles. Though not necessarily the scope of this report, below is an assessment of this compliance on all 12 RSB Principles.

Table A.1. Camelina production compliance with RSB Principles

Principle 1: Biofuel operations shall follow all applicable laws and regulations.	
Criterion 1. Biofuel operations shall comply with all applicable laws and regulations of the country in which the operation occurs and with relevant international laws and agreements.	Full Compliance for All Camelina Crops
Principle 2: Sustainable biofuel operations shall be planned, implemented, and continuously improved through an open, transparent, and consultative impact assessment and management process and an economic viability analysis.	
Criterion 2a. Biofuel operations shall undertake an impact assessment process to assess impacts and risks and ensure sustainability through the development of effective and efficient implementation, mitigation, monitoring and evaluation plans.	Full Compliance for All Camelina Crops
Criterion 2c. Biofuel operators shall implement a business plan that reflects a commitment to long-term economic viability.	Full Compliance for All Camelina Crops
Principle 3. Biofuels shall contribute to climate change mitigation by significantly reducing lifecycle GHG emissions as compared to fossil fuels.	
Criterion 3c. Biofuel blends shall have on average 50% lower lifecycle greenhouse gas emissions relative to the fossil fuel baseline. Each biofuel in the blend shall have lower lifecycle GHG emissions than the fossil fuel baseline.	Further research
Principle 4. Biofuel operations shall not violate human rights or labour rights, and shall promote decent work and the well-being of workers.	
Criterion 4.a Workers shall enjoy freedom of association, the right to organize, and the right to collectively bargain.	Full Compliance for All Camelina Crops
Criterion 4.b No slave labour or forced labour shall occur.	Full Compliance for All

	Camelina Crops
Criterion 4.c No child labour shall occur, except on family farms and then only when work does not interfere with the child's schooling and does not put his or her health at risk.	Full Compliance for All Camelina Crops
Criterion 4.d Workers shall be free of discrimination of any kind, whether in employment or opportunity, with respect to gender, wages, working conditions, and social benefits.	Full Compliance for All Camelina Crops
Criterion 4e. Workers' wages and working conditions shall respect all applicable laws and international conventions, as well as all relevant collective agreements. Where a government regulated minimum wage is in place in a given country and applies to the specific industry sector, this shall be observed. Where a minimum wage is absent, the wage paid for a particular activity shall be negotiated and agreed on an annual basis with the worker. Men and women shall receive equal remuneration for work of equal value.	Full Compliance for All Camelina Crops
Criterion 4.f Conditions of occupational safety and health for workers shall follow internationally-recognized standards.	Full Compliance for All Camelina Crops
Criterion 4 g. Operators shall implement a mechanism to ensure the human rights and labour rights outlined in this principle apply equally when labour is contracted through third parties.	Full Compliance for All Camelina Crops
Principle 5. In regions of poverty, biofuel operations shall contribute to the social and economic development of local, rural and indigenous people and communities.	
Criterion 5.a In regions of poverty, the socioeconomic status of local stakeholders impacted by biofuel operations shall be improved.	Full Compliance for All Camelina Crops
Principle 6. Biofuel operations shall ensure the human right to adequate food and improve food security in food insecure regions.	
Criterion 6a. Biofuel operations shall assess risks to food security in the region and locality and shall mitigate any negative impacts that result from biofuel operations.	Further research
Principle 7. Biofuel operations shall avoid negative impacts on biodiversity, ecosystems, and conservation values.	
Criterion 7.a Conservation values of local, regional or global importance within the potential or existing area of operation shall be maintained or enhanced.	Full Compliance for All Camelina Crops
Principle 8: Biofuel operations shall implement practices that seek to reverse soil degradation and/or maintain soil health.	
Criterion 8.a Operators shall implement practices to maintain or enhance soil physical, chemical, and biological conditions.	Full Compliance for All Camelina Crops
Principle 9. Biofuel operations shall maintain or enhance the quality and quantity of surface and ground water resources, and respect prior formal or customary water rights.	
Criterion 9.a Biofuel operations shall respect the existing water rights of local and indigenous communities.	Full Compliance for All Camelina Crops
Criterion 9.c Biofuel operations shall not contribute to the depletion of surface or groundwater resources beyond replenishment capacities.	Full Compliance for All Camelina Crops
Principle 10. Air pollution from biofuel operations shall be minimized along the supply chain.	
Criterion 10.a Air pollution emission sources from biofuel operations shall be identified, and air pollutant emissions minimized through an air management plan.	Further research
Principle 11. The use of technologies in biofuel operations shall seek to maximize production efficiency and social and environmental performance, and minimize the risk of damages to the environment and people.	
Criterion 11.a Information on the use of technologies in biofuel operations shall	Further research

be fully available, unless limited by national law or international agreements on intellectual property.	
Criterion 11.d Good practices shall be implemented for the storage, handling, use, and disposal of biofuels and chemicals.	Further research
Principle 12. Biofuel operations shall respect land rights and land use rights.	
Criterion 12.a Existing land rights and land use rights, both formal and informal, shall be assessed, documented, and established. The right to use land for biofuel operations shall be established only when these rights are determined.	Full Compliance for All Camelina Crops

From a risk management point of view, the Camelina production compliance with RSB Principles is very important as it eliminates many of, if not all, structural, legal and regulatory risks for our analysis. Furthermore, it allows us to concentrate on the local-specific risks and the local stakeholders interactions.

A5.2 Local stakeholders interactions

A5.2.1 Analysis of stakeholders

The main driver in setting up the incentives for local stakeholders, increase Camelina production sustainability and lower its risks is to align local directly-involved stakeholders' contributions & opportunities with local & regional policy makers' regulations.

For a better understanding of local circumstances, we designed the framework below (FIG A.11).

On the one hand it is the bottom-up perspective – the local population (with its age, skills, and development structure) being the pool for the local workforce (with its own constraints in terms of job prospects and cost of opportunity) on which the local landowners will rely upon.

On the other hand it is the top-down perspective – the national agricultural strategy (financially and publically driven) setting up the local and regional strategies (in an attempt to maximize the local agricultural context) with impact on local community development, in terms of people, infrastructure, economy and environment.

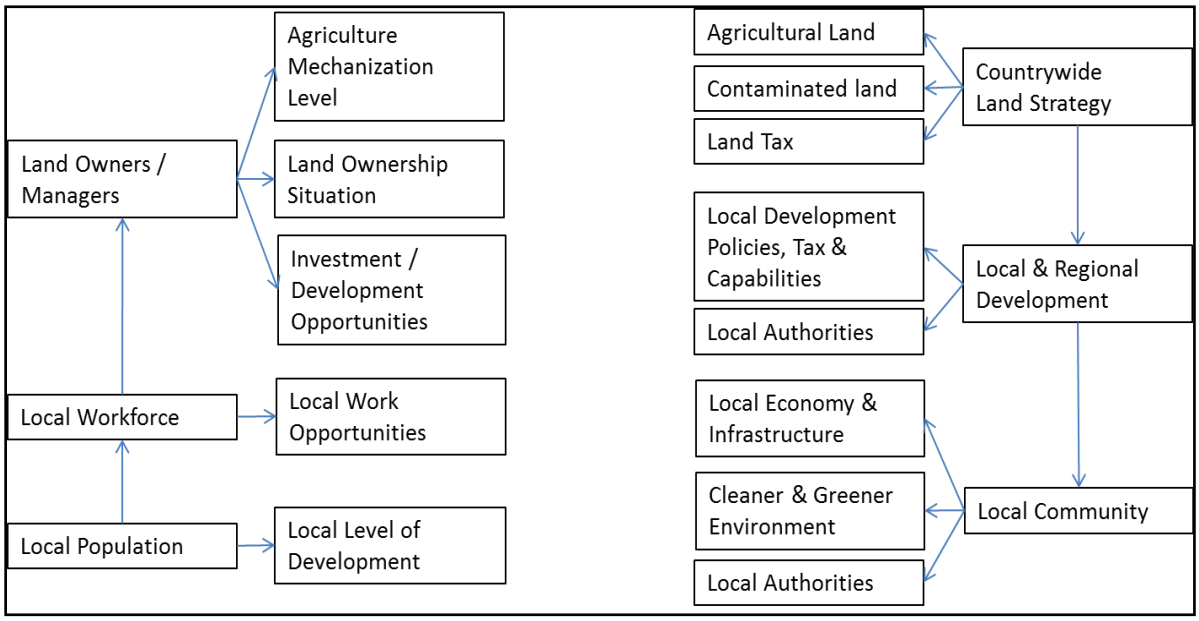

Figure A.1. Align local directly-involved stakeholders' contributions & opportunities with local & regional policy makers' regulations

A5.2.2 Local stakeholders interactions

Furthermore, when looking at the Local Workforce and Farmers/Landowners pair an Incentives/Collaboration Matrix could be drawn, as below:

Table A.2. Farmers/Landowners vs Local Workforce Collaboration Matrix

		Farmers/Landowners	
		Increase employment	Hold on
Local Workforce	Willing to get new job	Huge local benefits	Lost opportunities
	Hold on	Low labour supply	Stalemate

Lost opportunities – from the Farmers/Landowners point of view, it might be that the Local Workforce is too expensive, lacks the necessary skills or there might be other more attractive job opportunities.

Low labour supply – from the Local Workforce point of view, it might be that the agricultural work is too low paid, or they lack the necessary skills, or there might be other more attractive job opportunities.

Stalemate – most probably a better collaboration between Farmers/Landowners and Local Authorities might be very useful in un-locking this position. Given the local situation, a root analysis could be undertaken to uncover the main issues and design the appropriate solutions with both parties mutual benefit in mind.

A good start in improving such a stalemate situation will be that, either Local Authorities design support schemes for Farmers/Landowners and/or for the development of local skills, or the Farmers/Landowners provide support for the development of local skills.

Given the Camelina production process and the skills required, both Local Authorities and Farmers/Landowners should be interested in developing the Local Workforce skills. These skills are easily transferable to other crops production (a great long-term benefit for Farmers/Landowners) and will add to the development of local workforce (an important long-term benefit for local economy) in the long run.

From this quick analysis, there are two drivers in aligning the Local Workforce and the Farmers/Landowners incentives and increase their collaboration:

- An optimal level of work payment;
- Local availability of skills.

Both these two drivers could be addressed within an improved collaboration between Farmers/Landowners and Local Authorities.

Looking now at the Farmers/Landowners and Local Authorities pair, a similar Incentives/Collaboration matrix could be drawn.

Table A.3. Farmers/Landowners vs Local Authorities Collaboration Matrix

		Farmers/Landowners	
		Increase development	Hold on
Local Authorities	Provide support	Huge local benefits	Lost opportunities
	Not supportive	Postponed development	Stalemate

Lost opportunities - from the Farmers/Landowners point of view, it might be that they lack the development funds, or do not have a development strategy.

Postponed development – from the Local Authorities point of view, they are not supportive because they lack the funds to provide support, or they have a different strategy for the development of local economy.

Stalemate – most probably a better collaboration between Farmers/Landowners and Local Authorities might be very useful in un-locking this position. Given the local situation, a root analysis could be undertaken as to uncover the main issues and design the appropriate solution with both parties mutual benefit in mind.

It should be mentioned that, here, by providing support and/or being supportive we meant direct financial support (local grants) or, and probably most important, indirect support – lower local taxes, lower land taxes, and other incentives that could help boost the Farmers/Landowners investment.

A5.3 The Matrix of Socio-Economic Impact and Risk Management

Based on the above analysis of local stakeholders and each community type specific, a Socio-Economic Impact and Risk Management matrix could be drawn.

Table A.4. The Matrix of Socio-Economic Impact and Risk Management

The Matrix of Socio-Economic Impact and Risk Management		**Levels of Local Involvement**		
		Workforce	Landowners	Local Authority
Types of Communities	Village	Huge Positive Impact // Medium Risk	Big Positive Impact // Medium Risk	Big Positive Impact //Low Risk
	Small Town	Big Positive Impact // Low Risk	Positive Impact //Medium Risk	Positive Impact // Medium Risk
	Medium Town	Positive Impact // High Risk	Positive Impact // Medium Risk	Low Positive Impact // Medium Risk

Furthermore, at each community level, the positive impacts and benefits, on the one hand, and the uncertainties on the other, could now be put together for a better understanding of risk mitigation areas.

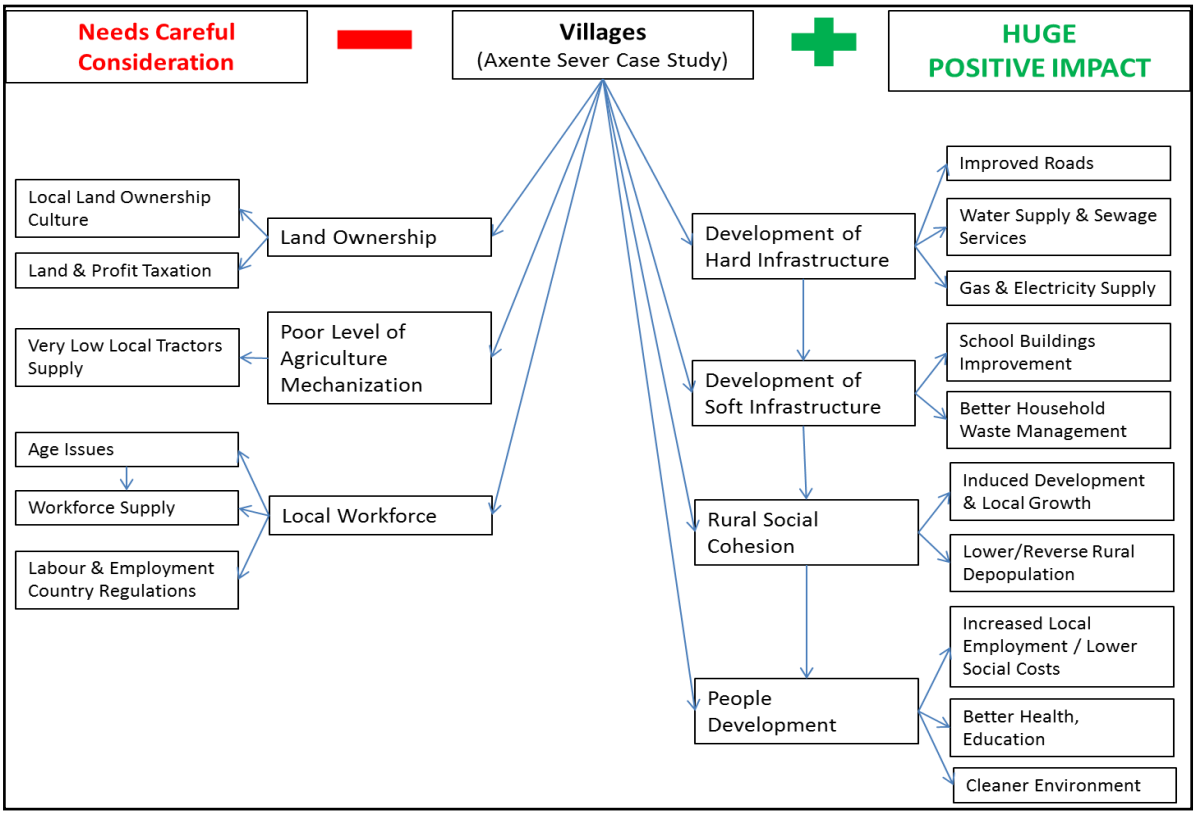

Figure A.22. Village - Huge Positive Impact vs Uncertainties

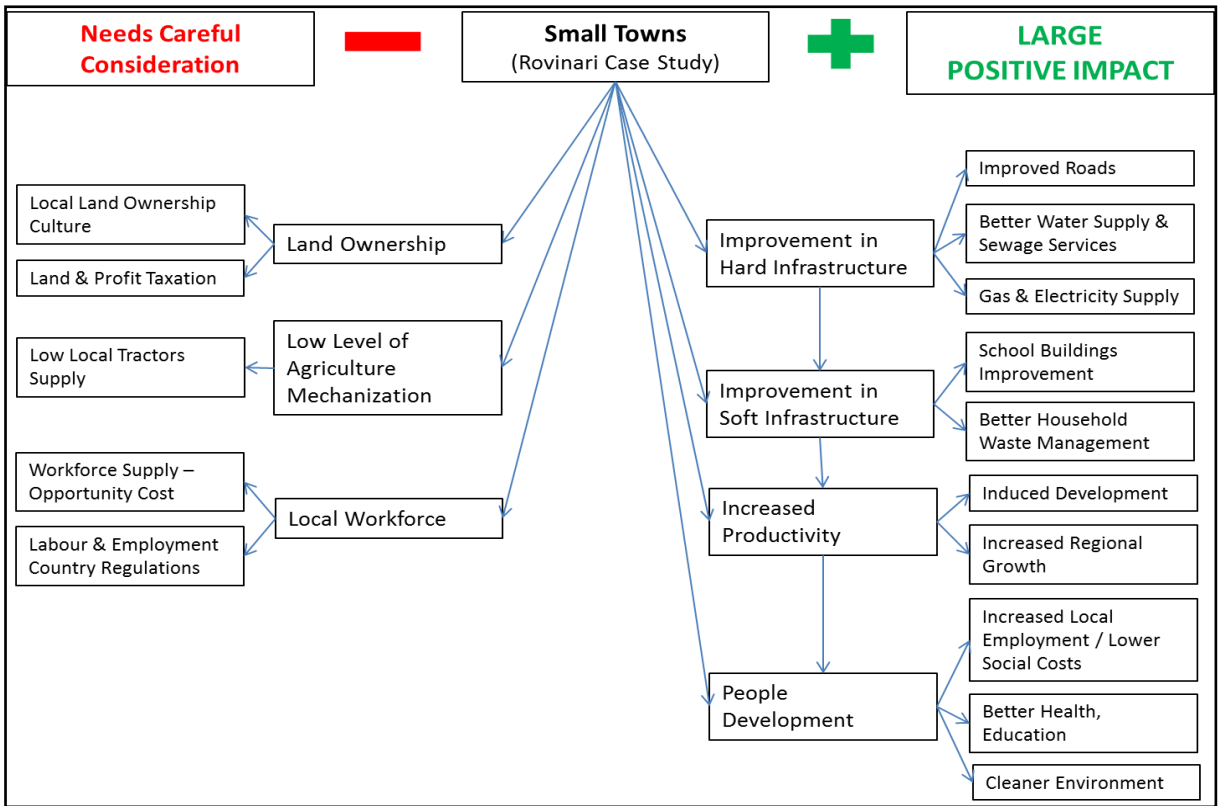

Figure A.33. Small Towns Large Positive Impact vs Uncertainties

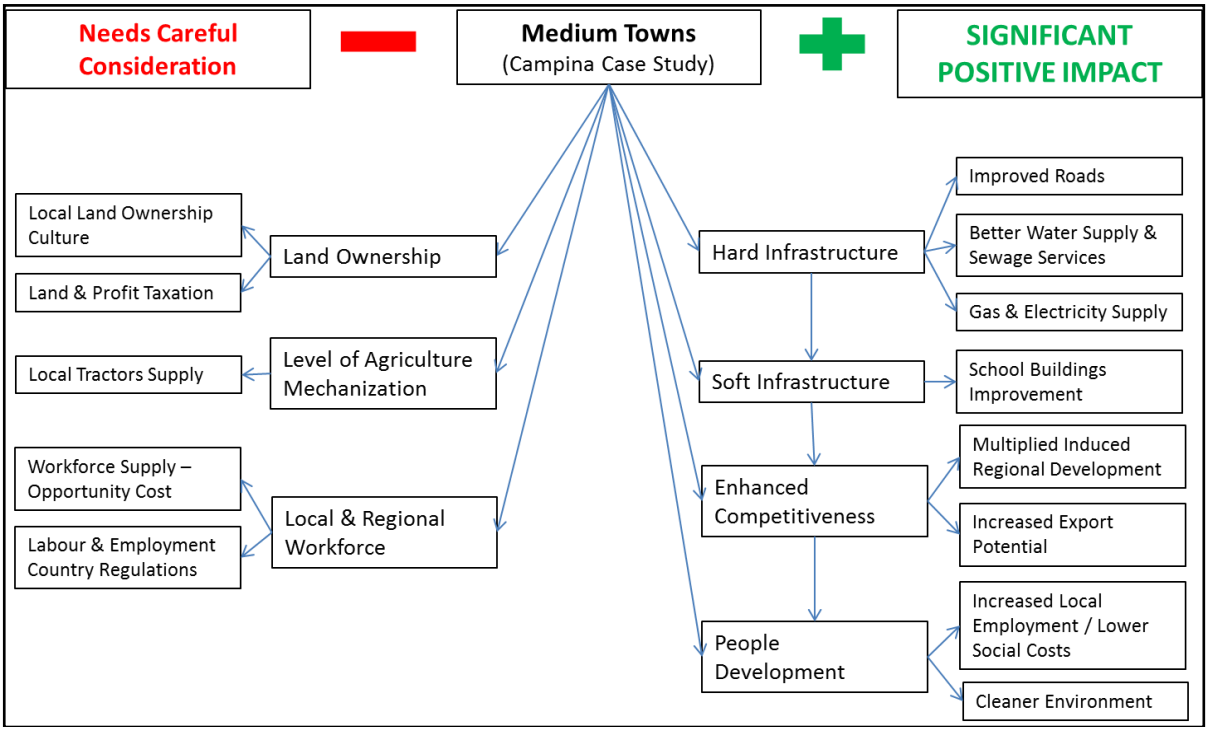

Figure A.44. Medium Towns – Significant Positive Impact vs Uncertainties

Depending on the community size – village, small town or medium town – both the risks associated with and the positive impact of Camelina production need to be assessed, treated and mitigated differently by taking into consideration the local specificities.

Furthermore, in order to ramp up the Camelina production one needs to find the fine balance between local stakeholders - Local Authorities, Farmers, and Local Workforce – their capabilities and incentives and the production development risks associated. While the Local Authorities are very keen in developing Camelina production – to diversify their local economy and increase the job offerings and skills development for the Local Workforce, the Farmers/Landowners will be the one that should make the most of the investment. These Farmers/Landowners will need to actually put the money for initial investment, and they need to nurture a good business relationship with the Local Authorities for the benefit of the business development. Beside the financial investment, the Farmers/Landowners will also need to mitigate the need for local skills and their further development while facing an ageing Local Workforce with low incentives to stay within the community and developing new working skills. It will be beneficial that the Local Workforce will be pulled in with the help of the Local Authorities through local workforce development programmes.

This way, the Local Workforce could become a real facilitator in the development of the working skills with a high impact on the long term development of the local community.

A6. Conclusions & Recommendations

Based on the above matrix and on the data collected, conclusions and recommendation will be drawn, both in terms of SEIA and in terms of Risk Mitigation.

A Risks/Benefits map has been designed - as per example below. Besides having a graphical depiction of each community position on the benefits-risks map (which can be also seen as a sustainability mapping of the Camelina operations) the tool will also be very helpful to see how these communities will evolve over time (by re-doing the socio-economic impact assessment over time).

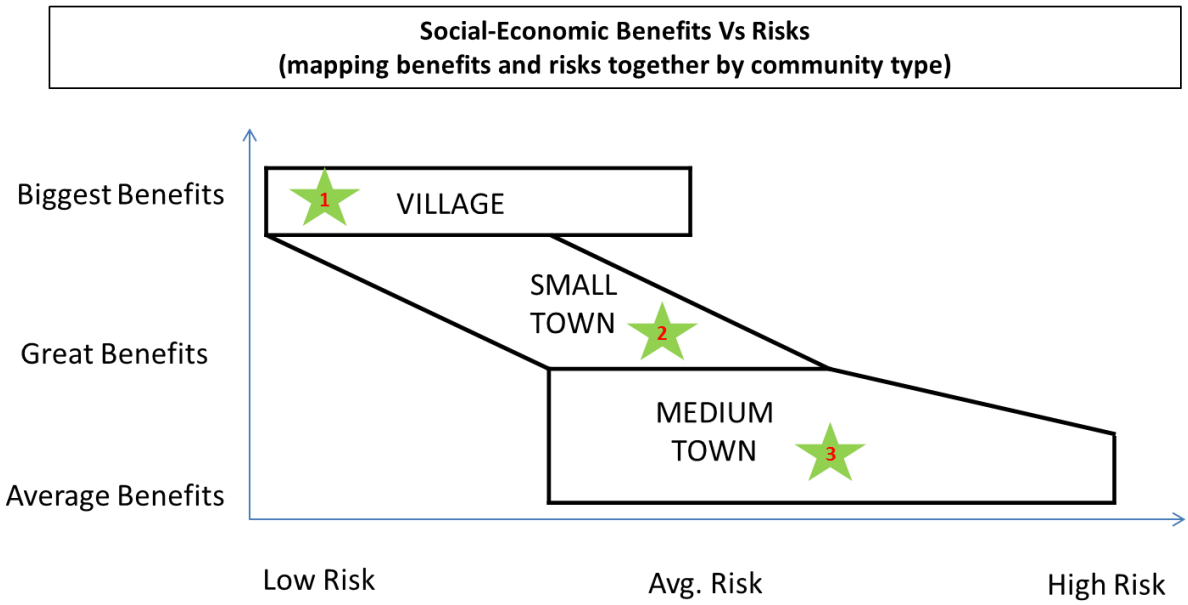

Figure A.1. Social Economic Benefits vs Risks - mapping by Community Type

Time and again, all the involved stakeholders – Local Authorities, Farmers/Landowners and Local Workforce - in Camelina production in Romania are very keen on the development and can easily identify and perceive the great potential benefits. While there are still risks associated with this development, there is nothing that cannot be mitigated at the local level and each community representatives reckoned these risks are low in comparison with the potentially achieved benefits, both for the medium and long term.

While it will be hard to quantify, in monetary units, the social impact of the Camelina production, and keeping in mind that the research did not touch the environmental impact (when developing Camelina on contaminated land and returning this land to productive capacity, or at least start yield social and economic benefits from it) it should be highlighted that, on average, Camelina production will have at least a € 721 economic impact per each ha of crop, while creating local jobs, improving local life and helping the development of local communities.

Last but not least, this research should constitute the foundation to make further recommendations on Camelina production development and its positive socio-economic impact on local communities, beyond ITAKA scope.

This research should become the foundation for further studies on:

1.Socio-Economic Impact Analysis

a. Midstream SEIA – analysis for midstream (refinery) part of the Camelina Value Chain
    i. We recommend to be done further down the Camelina Value Chain
    ii. We recommend to be done from at least two points of view – using an already in use refinery site (Neste) and potentially a new one (Steaua Romana)
b. End-user SEIA – analysis for Airline Companies
    i. We recommend to be done as to take into account the GHG and carbon tax impact and implications for the selected Airline Companies
c. Logistics SEIA – throughout the whole Camelina Value Chain as to integrate all activities
d. SEIA Robustness - Integration (all activities along Camelina Value Chain) and Refinement (for use in different countries)

2. Economic Development Framework

e. Camelina Crop Business Model & Economics – we recommend to further develop, test and refine an economic model for Camelina Crops for and from the point of view of Farmers and Local Authorities
f. Midstream Business Model & Economics – we recommend to further develop, test and refine an economic model for midstream (conversion) activities for and from the point of view of refinery business
g. End-user Business Model & Economics – we recommend to further develop, test and refine an economic model for end-users (airlines) activities for and from the point of view of selected airlines
h. Supply Chain Integration Model
    i. As a preparation for full-scale implementation and development
    ii. It should include GHG Economics
        1. Carbon-tax benefits for Airlines
        2. Environmental Benefits

3. Camelina Biofuels GHG LCA (Life Cycle Assessment)

As there are few studies in this area to date, developing a GHG LCA framework will further enhance our understanding of the Camelina Value Chain benefits. If further research, it will be conducted with colleagues involved in LCA assessment.

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Case Study B. Socio Economic Impact Assessment of Camelina Production in Spain

The aim of this Case Study B is to assess the socio-economic benefits of Camelina production in Spain.

Thus, background information on sustainability value chain of Camelina production with focus on socio-economic aspects related to Spain is given. Also, a framework of a socio-economic impact assessment (SEIA) is designed and analysed. Every element of this SEIA is illustrated and the need of data explained. The role of a SEIA framework is to give information to whom and where the benefits (i.e. economic and social) of cultivating Camelina will belong to, as well as the real challenges related to cultivating Camelina in Spain. These challenges are linked mainly to rural communities (i.e. farmers' villages).

In order to achieve the proposed aim, an assessment of the current agricultural situation in Spain is conducted, and three case studies are investigated, representing different communities of small villages. Also, the potential socio-economic impact of Camelina production in the selected regions is mentioned, and analysis conducted.

An extensive socio-economic questionnaire (bi-lingual English and Spanish) has been designed, which was used for gathering field data from farmers and authorities. However, the data of the Spanish case-study are scarce, being mainly related to farmers' feedback to questionnaires and interviews performed for data collection. Unfortunately, the authorities did not have any reaction to our approach (except vice mayor of Minaya), though several attempts were made, as explained in the present report. Association of Spanish farmers could have been involved at a later stage (as suggested by representative from the Ministry of Industry, Energy and Tourism-late October 2014), but this action could only add some additional information to initial findings, and could not reflect authorities' opinion.

The data gathered are composed by some statistical and qualitative data, based on questionnaire and interviews with farmers indicated by Camelina Company Espania (CE), a member of the ITAKA Consortium. Additionally, some quantitative data were also gathered, following the initial meeting with farmers. The questionnaire is included in annexes to this report.

The present Report presents, as background information, the principles of sustainable agriculture, as well as the economic and environmental aspects of biomass to biofuels. Current situation of agricultural and land usage in Spain is further exposed, with focus on drivers, farmland ownership, land use and labour related to this sector. The management practices of Spanish farmers are additionally described, with details of type of tenure, farm structure, mechanisation, gender issue and impact on production. The complex role of agricultural policy is uncovered with explanation of land policy and taxation, as well as existing policy at farm level. Sustainability aspects are also presented.

The second part of the report presents four villages as preliminary case-studies, Minaya, El Pozo de Guadalajara, Chiloeches- Guadalajara and San Martin de Pusa. Some statistical data are presented, structure of population, unemployment, and existing services, apart from agriculture status.

Socio Economic Impact Assessment (SEIA) framework is designed, illustrating each element. Further, field data required for SEIA is presented and analysed. The conclusion underline the need for additional data which were not obtained due to lack of engagement from local authorities. Also, existing gaps in research are identified and some recommendations given for further investigation, in order to implement initial findings in different circumstances.

Recommendation for further research would be the implementation of the designed Framework at a selected village, but also at regional and country level. A permanent refinement of SEIA Framework will be needed, according to local circumstances. This Framework may be adopted to accommodate different conditions.

B1. Literature Review

B1.1. Overview

Based on literature review and investigating several world-wide case-studies, good examples exist targeting both biofuel production for export and stationery energy generation for increasing local energy access. These projects offer a way to hedge the risks of biofuels' investment, while contributing to local development not only through creation of jobs but also through provision of benefits in terms of environment (e.g. reducing deforestation, land degradation, GHG emissions), economy (e.g. giving the opportunity to develop new businesses or adopt production practices that would be impossible without modern and cheap forms of energy) and society (e.g. reducing indoor air pollution as well as time spent for collecting wood, increasing quality of life).

Biomass utilisation, bioenergy technologies, their market share, and research interests in these issues vary considerably between different countries. Nevertheless, in most of the countries socio-economic benefits of bioenergy use can clearly be identified as a significant driving force in increasing the share of bioenergy in the total energy supply. In most countries, regional employment created and economic gains are probably the two most important issues regarding biomass use for energy production.

Many countries worldwide are increasingly engaging in the promotion of biomass production for industrial uses such as biofuels and bioproducts (chemicals, bioplastics, etc.). Until today, mainly biofuels were supported by European policies, but support for bioproducts is still lacking behind. Thus, also the public sustainability debate concentrated on biofuels, but so far not on bioproducts. Driven by the strong public debate on sustainability aspects, biofuels are confronted with many environmental and socio-economic impacts. For instance, social impacts, which can be both positive and negative, include property rights, labour conditions, social welfare, economic wealth, poverty reduction, etc. In order to address these sustainability aspects of biomass production for industrial uses, different national and international efforts towards certification systems have been evolving, including the European Renewable Energy Directive (RED). However, besides many efforts on environmental aspects, there is a general lack of socio-economic considerations. This gap is addressed by the EU-FP7 Global-Bio-Pact project (2012) in a comprehensive approach involving partners from Europe, Latin America, Africa, and Asia. The main aim of the Global-Bio-Pact project is the improvement and harmonisation of global sustainability certification systems for biomass production, conversion systems and trade in order to prevent negative socio-economic impacts. Thereby, emphasis is placed on an assessment of the socio-economic impacts of raw material production and a variety of biomass conversion chains.

Situation in other regions

The 2000s witnessed the rapid expansion of biofuel plantations in the global South in the context of a growing trend of crop plantation expansion. This trend has been spurred by policies in the European Union, United States, Brazil, and other countries favouring the use of biofuels in the transport sector to enhance energy security and reduce carbon emissions, as well as by the desire of governments in developing countries to harness the stimulus that new commercial investments provide to the agricultural sector and to national economies. Despite these potential benefits, a number of concerns have been raised about the local social and environmental impacts of biofuel feedstock expansion. Debates took place through a synthesis of findings from case studies in six biofuel producer countries of Asia, Africa, and Latin America, and papers were produced (German, *et al*, 2011) exploring the implications of the land-use changes observed in these case studies for the climate mitigation potential of biofuels. The implications for governing the environmental impacts of biofuel feedstock production were also explored, protecting the rights of customary land users, and enabling smallholder-inclusive business models. Some analysis suggests that better

governance of the sector's impacts is not the exclusive preserve of unitary sets of actors, but instead requires concerted and coordinated efforts by governments of producer and consumer countries, investors, civil society, and the financial sector to better capture the sector's potential while minimizing its social and environmental costs.

The ITAKA project examines the use of Camelina biofuel in aviation sector. This new biofuel will help airlines reduce their carbon emissions and fulfil the EU-ETS requirement. Thus, IATA is committed to ambitious high-level emissions reduction goals:

- Fuel efficiency improvement of 1.5% p.a. in average between 2009 and 2020;
- Carbon-neutral growth from 2020;
- 50% net emissions reduction in 2050 compared to 2005.

Fuel efficiency measures are not sufficient to reach the two latter goals, as low-carbon fuels are needed in addition. Sustainable biofuels ("biojet fuels") are the only low-carbon fuels available for aviation in the short to mid-term. Sustainable production of sufficient amounts of feedstock at affordable prices is key to deploy the use of biojet fuels at a commercial scale.

"Sustainable alternative jet fuels" means fuels from renewable sources (in the foreseeable future mostly from feedstock of vegetable or animal origin from algae or from waste material meeting the specifications for use in jet aircraft as a drop-in fuel and meeting recognized sustainability standards, such as EU-RED, US-RFS2 or RSB, and in particular the greenhouse gas reduction requirements.

Literature review shows that sustainable biofuels have the potential to reduce aviation's carbon footprint by up to 80% depending on the methodology of production and land use. More than 1500 passenger flights have been flown across the world, including Europe, using a mix of biofuels with fossil jet fuel. Airlines that have supported biofuel flights include KLM, Lufthansa, Finnair, Interjet, AeroMexico, Thomson and many others.

Different types of feedstock have been investigated for aviation biofuels. Non-food crops grown in a manner that minimizes impact on food crops or water use are a promising category. While technical parameters of the fuel appear to be achievable, the major challenge remains the production of large quantities of sustainably-produced biofuels at a commercially competitive cost for widespread adoption.

B1.2. Sustainable agriculture- principles

An important element on conducting this assessment was to understand the principle of sustainable agriculture. Sustainable agriculture is the act of farming using principles of ecology, the study of relationships between organisms and their environment. The phrase was reportedly coined by Australian agricultural scientist Gordon McClymont (McClymont, 1975). It has been defined as "an integrated system of plant and animal production practices having a site-specific application that will last over the long term:

- Satisfy human food and fibre needs;
- Enhance environmental quality and the natural resource base upon which the agricultural economy depends;
- Make the most efficient use of non-renewable resources and on-farm resources and integrate, where appropriate, natural biological cycles and controls;
- Sustain the economic viability of farm operations;
- Enhance the quality of life for farmers and society as a whole.

- In order to have the most socio-economic benefits to rural communities, Camelina needs to be part of a sustainable agriculture system.

B1.3. Economic considerations

Profitability and efficiency

The first criterion for long-term viability of a production system utilizing resources to produce a marketable output is that it shows economic profitability: producers will only be willing to pursue biofuel production if it is economically profitable. Key factors that can affect profitability include alternative competitive uses of the feedstock and energy prices.

Another key factor that makes this economic assessment less clear-cut is the prevalence of subsidies that sustain the biofuel production in most producing countries, especially in industrialized economies. The economic profitability of biofuels has been invariably attributed to government subsidies or mandates, the only exception being Brazil's sugar cane ethanol.

Overall, economic profitability, and hence long-term viability for biofuels, is a moving target. It depends on cost-reducing technological improvements and relative price competitiveness (with alternative uses of feedstock). Competition with alternative uses of feedstock may also be localized and highly determined by the presence or absence of policy incentives or disincentives.

Economic Equity

The concept of intra-generational equity, referring to fairness in allocation of resources between simultaneous competing interests, has received relatively less attention than inter-generational equity (between present and future generations). It implies social and economic justice, quality of life, democracy, public participation and empowerment; the incidence and magnitude of unsustainable practices originate from power inequality. It is in this context that the environmental limits of supporting ecosystems are defined.

The growing global demand for liquid biofuels and the attendant environmental and socio-economic transformations might have different impacts on men and women in the same household as well as male- and female-headed households, as regards their access to and control of land and other productive assets, their level of participation in decision-making, employment opportunities and conditions, and their food security. Both the nature and the magnitude of these impacts will depend on the specific technology and on the socio-economic and policy context.

Competition with food

One of the key drivers determining long term economic viability of biofuels is competition with food. This is because biofuel production (through the use of biomass) may compete with food for the same resources, notably land, labour and water. Food security is a key developmental goal and the potential conflict with energy security can play out at many levels including national and even regional. Which takes priority and to what extent food security could impede large-scale biofuel development depend on the overall balance between size of population, projected growth, availability of land (or its scarcity)as well as its suitability for food crops versus energy crops only.

Important: in order to avoid 'biofuel vs food competition', Camelina needs to be cultivated on marginal, degraded, uncultivated land, or may generate additional yields. Thus, the concept of additionally vs. substitution is illustrated. The Romanian Camelina Value Chain project (Dimitriu, 2012) is a very good example.

B1.4. Economic sustainability assessment

Cost-benefits analyses (CBA)

Cost-benefit analysis (CBA) is a standard economic tool applied to evaluate a project's financial and economic profitability, a prerequisite for its viability. Typically, in CBA, a net present value (NPV) is calculated, taking into account the expected in- and out-flows and factors such as time and risk preferences of affected stakeholders. If the NPV is positive, the project should be carried out unless capital is a significant constraint. CBA is a useful tool to estimate direct values of a project, but it requires that all costs and benefits are expressed in monetary terms. For intangible impacts, or products that are currently not traded on the market (health, risk, access to markets etc.), methods based on revealed preferences or stated preferences can be applied (e.g. by taking expenditures for safety equipment as proxy for the value of a "bad" such as air pollution, or by asking stakeholders about their willingness to pay for a certain "good" like electricity).

For the specific case of biofuels, CBA differs from straight financial or commercial calculation in that it also attempts to quantify cost and benefits that do not necessarily have a market price. These are often called external costs or external benefits, and in this case, the relevant ones are:

- Environmental benefits;
- Employment benefits;
- Security of supply benefits.

Environmental benefits of the various biofuel types and their alternatives have been estimated largely through the quantification of their life cycle GHG emission values, which is driven principally by the "price of carbon," given that it would be inappropriate to attribute a higher benefit than the cost at which similar reductions in emission gases can be achieved.

B1.5. Environmental sustainability of biomass-biofuels

Energy balance

One important motivation for bioenergy policies is to increase energy security. Fossil fuels are finite and prices are expected to rise substantially in the future. Renewable bioenergy is seen as a way to diversify the energy sources. The contribution of any biofuel to energy supply depends both on the energy content of the biofuel and on the fossil energy going into its production. This includes energy required to cultivate (fertilizers, pesticides, irrigation technology, tillage) and harvest the feedstock, to process the feedstock into biofuel, and to transport the feedstock and the resulting biofuel through the various phases of production and distribution.

Life cycle assessments

In order to determine whether a biomass biofuel system results in a net reduction in GHG emissions or an improved energy balance (input-output energy ratio), a Life-Cycle Assessment (LCA) is commonly used. According to ISO 14040, an LCA is a "compilation and evaluation of the inputs, outputs and the potential environmental impacts of a product system throughout its life cycle." In an LCA, all input and output data in all phases of the product's life cycle including biomass production, feedstock storage, feedstock transportation, biofuel production, biofuel transportation and final use are required. Also, all outputs are accounted for including gases (leaked or captured) and by-products.

B2. Current situation in Spain

B2.1. Agriculture and Land Usage

Viewed in terms of land mass, Spain is one of the largest countries of Western Europe, and it ranks second in terms of its elevation, after Switzerland. A large part of the country is semiarid, with temperatures that range from extremely cold in the winter to scorching in the summer. Rainfall, which is often inadequate, tends to be concentrated in two generally brief periods during the year. Summer droughts occur frequently.

20.6 million of Spain's 50.5 million hectares of land, or about 40 percent, is suitable for cultivation. The soil is generally of poor quality, and about 10 percent of the land can be considered excellent. The roughness of the terrain has been an obstacle to agricultural mechanization and to other technological improvements. Furthermore, years of neglect have created a serious land erosion problem, most notably in the dry plains of Castilla-La Mancha.

Compared with other West European countries, the proportion of land devoted to agricultural purposes in Spain is low, due to landscape and climate. In the 2000s, about 5 million hectares were devoted to permanent crops, mainly orchards, olive groves, and vineyards. Another 5 million lay fallow each year because of inadequate rainfall. Permanent meadows and pastureland occupied 13.9 million hectares. Forests and scrub woodland accounted for 11.9 million hectares, and the balance was wasteland or was taken up by populated and industrial areas.

Agricultural land (% of land area) in Spain was last measured at 55,49 in 2009, according to European Commission, DG AGRI (European Commission, 2010). Agricultural land refers to the share of land area that is arable, under permanent crops, and under permanent pastures. Arable land includes land defined by the FAO as land under temporary crops (double-cropped areas are counted once), temporary meadows for mowing or for pasture, land under market or kitchen gardens, and land temporarily fallow. Land abandoned as a result of shifting cultivation is excluded. Land under permanent crops is land cultivated with crops that occupy the land for long periods and need not be replanted after each harvest, such as cocoa, coffee, and rubber.

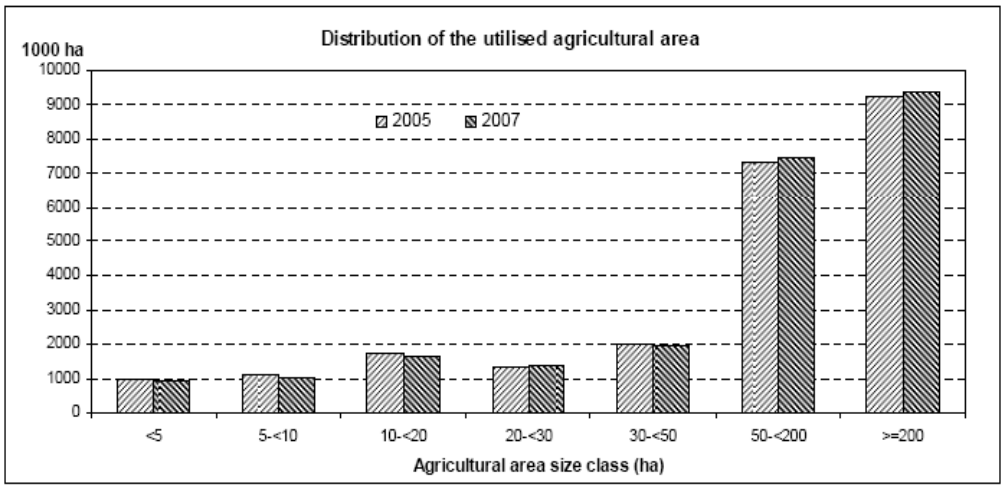


Figure B.1. Distribution of the utilized agricultural area, Spain, 2005 and 2007 (EUROSTAT, 2009)

The Spanish National Institute of Statistics (INE) in collaboration with their Provincial Offices and the Regional Statistical Offices of the Basque Country and Catalonia, implemented the survey on the structure of agricultural holdings in Spain.

B2.1.1. Abandonment of agricultural land: an overview of drivers and consequences

Several independently published studies highlighted the fact that the abandonment of agricultural land is a phenomenon mostly driven by socio-economic factors such as immigration into areas where new economic opportunities are offered to rural people. Ecological drivers such as elevation and land mismanagement leading to soil erosion are of secondary importance.

Some studies (Benayas, *et al*., 2009) identified the major problems related to abandonment of agricultural land and quantified their relative importance. In order of decreasing importance, they were biodiversity loss, increase of fire frequency and intensity, soil erosion and desertification, loss of cultural and/or aesthetic values, reduction of landscape diversity and reduction of water provision. The impacts of these problems were not equally relevant in all regions of the world. The abandonment of agricultural land may also benefit humans. The benefits include passive re vegetation and active reforestation, water regulation, soil recovery, nutrient cycling and increased biodiversity and wilderness. In a world that is becoming less natural and more intensively exploited by humans, the study suggests that farmland must be viewed in a context of multi-functionality to take advantage of ecosystem goods and services, at the global scale, the abandonment of agricultural land is mostly positive for humans and there is a need for the implementation of policies based on the payments for environmental services that encourage human societies to reconcile agricultural use, nature conservation and ecological restoration.

B2.1.2. Farmland ownership

The primary forms of property holding in Spain have been large estates (*latifundios*) and tiny land plots (*minifundios*). In large measure, this was still true in the 1980s. The agrarian census of 1982 found that 50.9 percent of the country's farmland was held in properties of 200 or more hectares, although farms of this size made up only 1.1 percent of the country's 2.3 million farms. At the other end of the scale, the census showed that 61.8 percent of Spain's farms had fewer than 5 hectares of land. These farms accounted for 5.2 percent of the country's farmland. Just under 25 percent of all farms consisted of less than 1 hectare of land, and they accounted for 0.5 percent of all farmland. *Minifundios* were particularly numerous in the north and the northwest. Latifundios were mainly concentrated in the south, in Castilla-La Mancha, Extremadura, Valencia, and Andalusia.

B2.1.3. Labour related to agriculture sector in Spain

Agricultural census in Spain

Farm Structure Survey (FSS) of 2010 collects information on the structural characteristics of the agricultural holdings (land use, livestock and labour force) and is carried out by all European Union Member States every 10 years as an Agricultural census. In Spain, the present analysis of the farm structure includes a comparison with the previous (2000) Agricultural census. Although the reference years of the Agricultural census in Spain were 1999 and 2009 respectively, the common designation is Agricultural census 2000 and 2010. Some data from Agricultural census in 2010 are provided in Table B1, below:

Table B.1. Farm structure, key indicators, Spain, 2010 (inspired from EUROSTAT, 2010)

Spain	2010
Number of holdings	989 800
Total UAA (Ha)	23 752 690

Livestock (LSU)	14 830 940
Number of persons working on farms (regular labour force	2 227 020
Average area per holdings (ha)	24.0
UAA per inhabitant (ha/person)	0.53

B2.1.4. Land use

It is recalled that the Utilised Agricultural Area (UAA) is the total area taken up by arable land, permanent grassland and meadow, permanent crops and kitchen gardens used by the holding, regardless of the type of tenure or of whether it is used as a part of common land. It has been outlined that in absolute terms, the UAA decreased by more than 2.4 million hectares after the year 2000 (-9.2%), currently making up 23.7 million hectares. According to the 2010 Agricultural census data, this general decline did not change the structure of the land use in Spain; the respective shares of the area occupied by arable land, permanent grassland and meadow, permanent crops and kitchen gardens remained almost the same as in 2000. Accordingly, arable land is still the most important category of land in the total UAA, having a share of more than 47% in both reference years. Additional information is provided in figures and tables below:

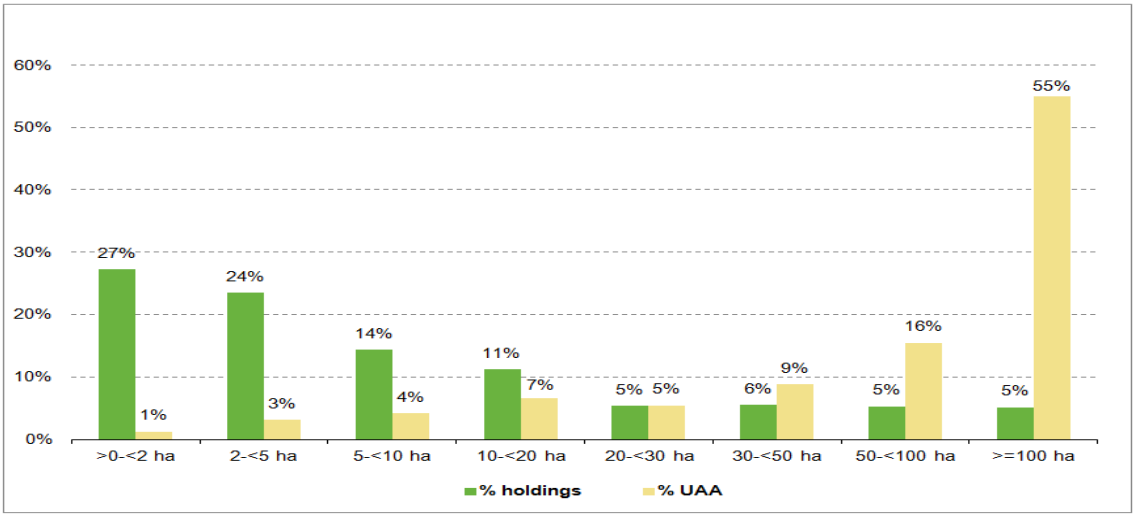


Figure B.2. Number of holdings and Utilized Agriculture Area by size classes of AA in Spain (EUROSTAT, 2010)

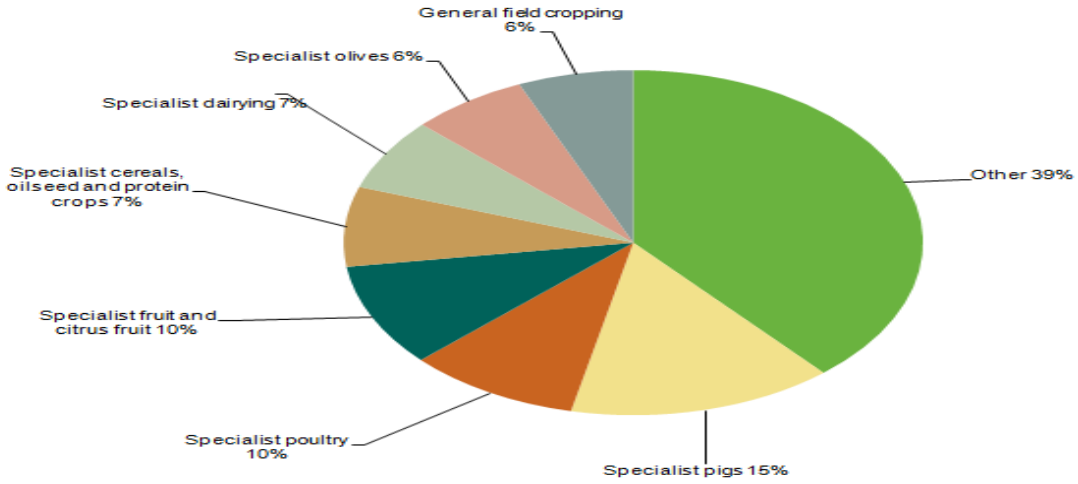


Figure B.3. Main type of farming -Spain 2010 (EUROSTAT, 2011)[2]

Table B.2. Economic size of the farm (Ha) by class of SO (standard output) Spain (inspired from EUROSTAT, 2010)

Standard output	**Standard output in holdings 2007**	**Standard output in holdings 2010**	**Change (%)**
Total	**33 362 703 080**	**34 173 074 930**	**2.4**
0<2 000	253 306 680	224 769 840	-11.3
2 000 -< 4 000	496 709 210	475 782 880	-4.2
4 000-< 8 000	1 046 896 850	934 755 250	-10.7
8 000-< 15 000	1 498 244 030	1 376 813 910	-8.1
….	…	…	…
50 000 -< 100 000	4 629 430 380	4 775 620 360	3.2
100 000-<250 000	6 296 685 240	6 539 291 200	3.9
250 000-<5000 000	4 454 021 300	4 816 134 150	8.1
>=500 000	9 599 920 929	10 094 272 670	5.1

[2] The graph is taken from *Agricultural census in Spain_* EUROSTAT- Statistics explained.

Under 'other' is vegetables, vineyard, etc.

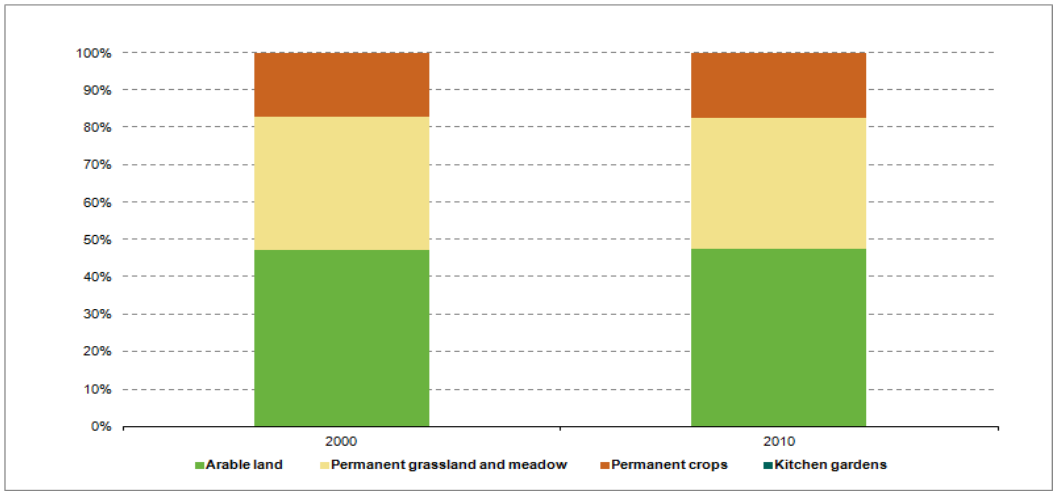


Figure B.4. Utilised Agricultural Area by land use categories Spain 2010 (after: EUROSTAT, 2011)

Table B.3. Utilised Agricultural Area by land use categories Spain 2010 (inspired from EUROSTAT, 2011)

	2010 Ha	**2010 % of UAA**
Land use	**23 752 690**	**100.0**
Arable land	11 286 010	47.5
- cereals	6 291 820	26.5
- sugar beet	48 580	0.2
- fodder roots and brassica	17 550	0.1
- industrial crops (total)	900 440	3.8
- other crops on arable land	0	0.0
- fallow land (total)	2 663 960	11.2
…	…	…
Permanent grassland and meadow	8 377 390	35.3
Permanent crops	4 086 240	17.2

B2.1.5. Arable land

In Spain, arable land, i.e. land worked (ploughed or tilled) regularly, generally under a system of crop rotation, decreased by 8.7 % between 2000 and 2010. This decrease could mainly be attributed to the main sub categories of arable land, i.e. cereals (-10 %) and industrial crops (-21 %). Other sub categories show higher relative decreases, but these were far less important in absolute terms (see Table 3).

The total number of agricultural holdings with arable land also registered a decrease, from 663 530 holdings in 2000 to 463 420 in 2010 (-30 %) . Overall, the number of farms with less than 10 ha of arable land decreased by more than 40 %. The number of holdings with arable land increased only

for the farms with more than 100 hectares; 51 190 of such farms were registered in 2010, 2 100 more than in 2000.

B2.1.6. Permanent crops

In 2010 the area under permanent crops represented 17 % of the UAA, the same share it had in 2000. Still, a decrease of 8% of the area under permanent crops was observed in 2010 when compared to 2000, as well as a decrease of -28% in the number of agricultural holdings. The most important permanent crops, olive plantations and vineyards, registered a noticeable reduction in the number of farms (-19.5 % and -43.1 % respectively).

B2.1.7. Labour force

In 2010, 2.2 million persons were employed in Spanish agricultural holdings, a decrease of 7.1 % compared to 2000 (see Table 6). If the annual work unit (AWU) is used, this decrease doubles reaching 15.5 %. Indeed, in absolute terms the labour force fell from 852 720 AWU in 2000 to 720 860 AWU in 2010. The decrease in the AWU directly employed in the agricultural sector amounted to 17.5 %. This decrease concerned both the regular labour force (-15.5%) and the direct labour force employed on a non-regular basis (-25.3 %). Especially the latter is noticeable, as Spain long featured a labour force employed on a non-regular basis among the highest in Europe.

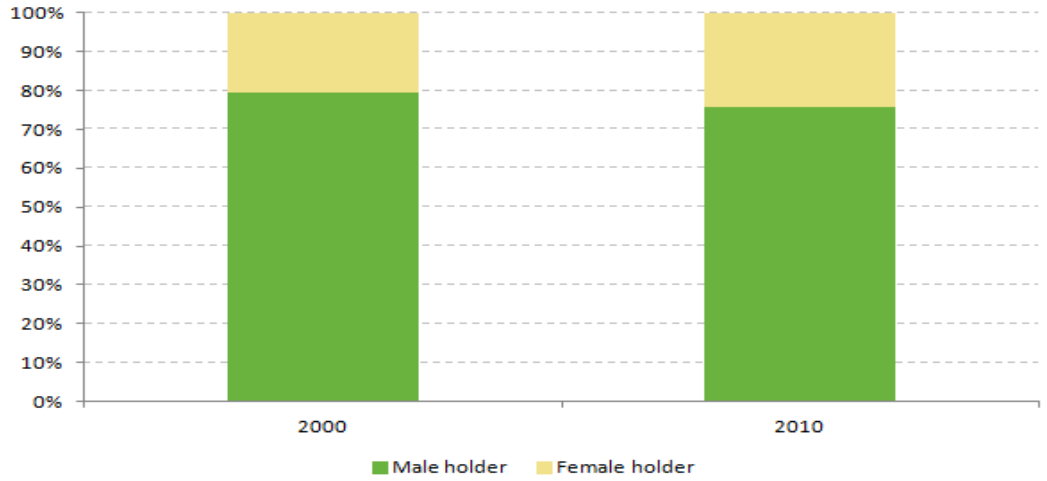


Figure B.5. Sole holders by gender (%), Spain, 2000 and 2010 (EUROSTAT FSS, 2000 and 2010)

B2.2. Management practices

This section presents several approaches to agriculture practices, including Spanish agriculture competitiveness, farm structure as well as policy aspects on land use and taxation**.**

B2.2.1. Type of tenure

In 2010, on average 61 % of the UAA – corresponding to roughly 14.5 million hectares – was owned by the farmers who actually worked on that land in Spain (see Table 7). This percentage varied within the various territories ranging from 48 % in Castilla y León (where holdings are

largest on average – see Table 2) to 78 % in Comunidad Valenciana (where holdings are among the smallest).

The shared-farming agricultural area, which is agricultural area utilised in partnership by the landlord and the sharecropper under a written or oral share-farming contract, or area utilised under other modes of tenure, was relatively small. In 2010 it accounted for the 7.2% of the national UAA, with noticeable regional differences: shared farming concerned about 19 % of the UAA in La Rioja, whereas less than 5% were concerned in Comunidad Valenciana.

B2.2.2. Irrigation

Among all EU Member States, irrigation reveals of the highest importance for Spain. Large parts of Spain's surface are subject to a semi-arid climate with recurring droughts and strong seasonal variety of rainfall. Mountain ranges close to the coasts and soil characteristics make natural water endowments unequally distributed. Over the years, groundwater abstractions have risen and some aquifers appear overexploited. Efforts are being undertaken to improve irrigation techniques.

Between 2000 and 2010, the total irrigable area increased by 3.2 %, from 3 478 050 to 3 587 770 ha: this represents 15 % of the total UAA in Spain. However, the irrigated area – which does not include kitchen gardens and any area under glass – decreased by 5.9 % between 2000 and 2010. However, when analysing data on irrigation, it should be kept in mind that the extent of the irrigated area varied over the years according to weather conditions. In terms of the type of crops, in 2010 those with the largest share of irrigation water were cereals (excluding maize and rise) with 630 350 ha of irrigated area, corresponding to a share of 20.7% in the total. Olive plantations were the second most irrigated crop (15.8 %), followed by maize (grain and green – 10.3%).

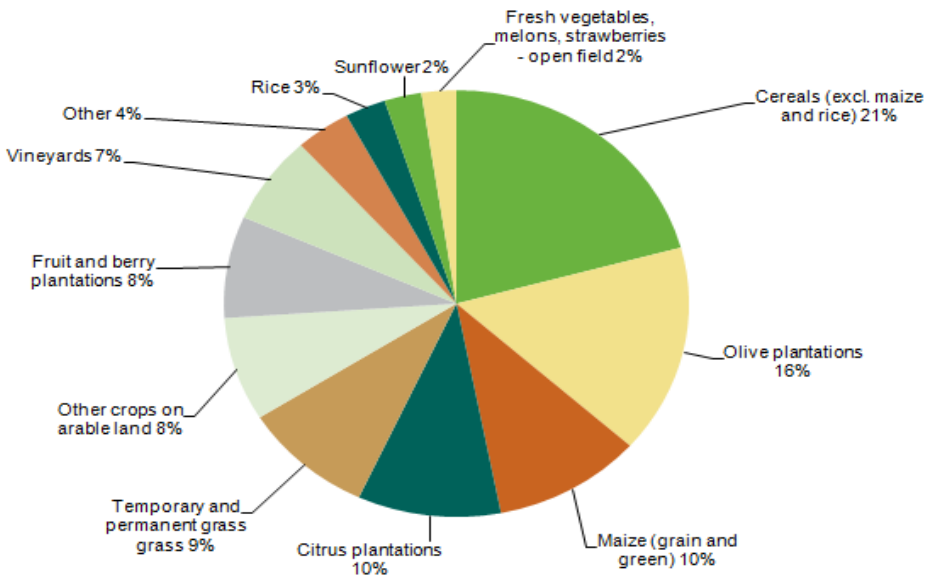


Figure B.6. Irrigated area by type of crops in Spain (EUROSTAT, 2011)

B2.2.3. Spanish agriculture competitiveness

European Commission Rural development policy aims to improve competitiveness in agriculture and forestry, improve the environment and the countryside, improve the quality of life in rural areas and encourage the diversification of rural economies.

As agriculture has been modernised and the importance of industry and services within the economy has increased, so agriculture has become much less important as a source of jobs. Consequently, increasing emphasis is placed on the role farmers can play in rural development, including forestry, biodiversity and the diversification of the rural economy, in order to create alternative jobs and environmental protection in rural areas.

B2.2.4. Farm structure in Spain

Rape and turnip plantations tripled between 2005 and 2007.

In 2007, about 939 500 agricultural holdings in Spain had an economic size of at least one European Size Unit (ESU)[3], compared to 959 000 in 2005 (a 2 % reduction in the number of holdings of at least 1 ESU).

These farms made use of 23.87 million hectares (ha) of utilised agricultural area (UAA), (0.5 % more than in 2005), which makes the average size of a holding in Spain 25.4 ha (compared with 24.8 ha in 2005). These holdings employed 931 700 annual work units (AWUs), the equivalent of 931 700 people working full time, a decrease of 1.8 % since 2005. The average area per AWU is 25.6 ha (around 0.6 ha more than in 2005). The farms contained 14.33 million livestock units (LSU) in 2007, 0.4 % less than in 2005. The distribution of livestock by farm size is shown in Table 4 and Graph 3.

Amongst the 939, 500 agricultural holdings in 2010:

- 11 % of the holdings specialised in cereals, oil seed and protein crops;
- 7 % specialised in various permanent crops combined;

B2.2.5. Gender issue

Amongst the sole holders (2007):

- 28 % were women;
- 60 % were aged 55 or more and 5 % were younger than 35 years; and
- 26 % had another gainful activity in 2007.

In Spain in 2010, its owners farmed 68 % of the agricultural area. The family labour force represents 64 % of the total labour force - a 3 % decrease from 2007 to 2010. There was a noticeable increase in the area used for rape and turnip (multiplied by 3), sunflower and other oilseed or fibre plants (+18 %).

The labour force by size of farms, family related, gender and age is presented in the next table.

Table B.4. Labour force by size of the farms, Spain (inspired by EUROSTAT, 2007)

[3] European size unit, abbreviated as ESU, is a standard gross margin of EUR 1 200 that is used to express the economic size of an agricultural holding or farm

Size of the farms		Agriculture area (ha)				All farms	Livestock (LSU*)			
		<20	20-<50	50-<100	>=100		0	>0-<50	50-<100	>=100
Total labour force										
1000 annual work units		550.4	149.7	84.2	147.4	931.7	556.4	252.7	45.6	76.9
…		…	…	…	…	…	…	…	…	…
Sole/main holders	**1000**	**713.2**	**98.7**	**41.9**	**36.4**	**888.1**	**636.9**	**213.3**	**21.0**	**17.1**
- Women	(%)	29.3	24.9	15.8	15.9	27.6	25.7	35.2	17.8	17.4
- Distribution by age	(%)									
- Under 35 years		4.2	7.0	6.5	8.1	4.8	4.6	4.3	11.7	8.6
- From 35 to 44 years		12.7	17.4	18.5	22.5	13.9	13.3	13.6	26.1	24.4
- From 45 to 54 years		21.0	23.5	25.4	23.2	21.6	21.1	21.4	29.7	30.2
- From 55 to 64 years		24.	26.5	30.4	26.8	25.1	24.4	27.4	23.0	24.2
- 65 years and over		37.7	25.6	19.2	19.4	34.7	36.7	33.3	8.5	12.7
- Part-time: - under 50%	(%)	68.3	44.8	37.7	33.8	62.9	75.0	35.4	10.2	18.1
- 50% and over	(%)	14.9	18.7	20.3	26.9	16.0	13.4	23.6	13.1	22.2
- With another gainful activity[1]	(%)	28.6	18.0	16.7	9.3	25.8	29.9	17.7	7.2	7.7
- As a main occupation		24.7	13.5	10.9	4.5	21.6	258	13.5	2.9	3.1
- As subsidiary occupation		3.9	4.4	5.8	4.9	**4.1**	4.1	4.2	4.2	4.5
…		…	…	…	…	…	…	…	…	…

*LSU = Livestock Unit.

1 Only holders who are farm managers

B2.2.6. Gender impact

One of the most evident effects of economic restructuring processes in rural areas is the need to create in situ employment alternatives to agriculture. Farm tourism is a valuable alternative for women, which both allows the combination of domestic responsibilities with tourism work and represents an income source that supports continued small-scale farming and conservation of the countryside environment. Women's perceptions of the built and natural environments are changing in response to these activities.

B2.2.7. Mechanisation of agriculture

20.6 million of Spain's 50.5 million hectares of land, or about 40 percent, is suitable for cultivation. The soil is generally of poor quality, and about 10 percent of the land can be considered excellent. The roughness of the terrain has been an obstacle to agricultural mechanization and to other technological improvements. Furthermore, years of neglect have created a serious land erosion problem, most notably in the dry plains of Castilla-La Mancha.

Though only about 17 percent of Spain's cultivated land was irrigated, it was estimated to be the source of between 40 and 45 percent of the gross value of crop production and of 50 percent of the

value of agricultural exports. To make up for the shortage of domestic feed grains, Spain became – in 2010- one of the world's largest importers of soybeans (which can help Camelina cultivation as well, being from brassica family), and it developed a modern oilseed-crushing industry of such high productivity that surplus soybean oil became one of Spain's most important agricultural export commodities. To limit the impact of this production on the important, labour-intensive, olive oil industry, which provided work for many field hands in southern Spain, a domestic tax system was established that maintained a two-to-one olive oil-soybean oil price ratio.

B2.2.8. The complex role of agricultural policy

Agriculture is inherently multifunctional. It jointly produces more than food, fibre or oil, having a profound impact on many elements of economies and ecosystems. Agriculture also produces positive externalities, and though there is no comprehensive valuation framework, the public benefits needs to be assessed, per household, or some arable and pasture land. These external costs and benefits raise important policy questions at EU level, including Spain. In particular, should farmers receive public support for the multiple public benefits they produce? Should those that pollute have to pay for restoring the environment and human health?

Policy options available for encouraging behavioural changes are of three types: 1) advisory and institutional measures 2) regulatory and legal measures, and 3) economic instruments.

Three of the most promising options for discouraging negative externalities and encouraging positive ones are: (1) environmental taxes; (2) subsidy and incentive reform; and (3) institutional and participatory mechanisms. The greatest challenge, however, will be to find ways to integrate such policy tools into effective packages that will increase the supply of desired environmental and social goods whilst ensuring farmers' livelihoods remain sustainable.

B2.2.9. Land policy and taxation

Land administration systems, and particularly their core cadastral components, are an important infrastructure, which facilitates the implementation of land use policies. While most land administration systems traditionally have a primary objective of supporting the operation of land markets, they are increasingly evolving into a broader land information infrastructure which supports economic development, environmental management and social. Policy related to landownership rely on some form of land administration infrastructure which permits the complex range of rights, restrictions and responsibilities in land to be identified, mapped and managed as a basis for policy formulation and implementation. As a result, there is an increasing interest in the concept of land administration infrastructures and their core cadastres, in the principles and policies concerned with establishing such infrastructures and in “best practices”.

B2.2.10. Land use policy at farm level

A basic analysis that examines land policy in Spain, shows some declining power of landowners, and signals the arrival of a post-feudal structure in world agriculture. Thus, although there are substantial cultural and customary differences in the ways in which agricultural leases have developed, three broad systems can be delineated. These are characterised as: the `feudal’ system, in which landowners remain dominant; a neo-feudal system which, while underwriting private landowning, attempts to combine commercial agriculture with the maintenance of an open and vibrant lease sector; and a post-feudal system, based on improving the financial and technical efficiency of the farming industry.

However, what is important is the overall policy objectives established for the agricultural sector. In addition, that government assumes a pivotal role in supporting both landowners and tenants.

B2.2.11. Agricultural sustainability from a societal view: *a proposed analysis of Spanish citizens*

Sustainable agriculture refers to farming systems with economic, social, and environmental viability that must respond to citizens' interests and concerns. However, European citizens are not satisfied with the Common Agricultural Policy (CAP) due to misinterpretation of their preferences. Because of this, the European agricultural model's long-term viability is being questioned, especially after the European Commission's CAP proposals in 2011, (COM(2011) 627 final/2).

As part of this report, it is important to examine Spanish agriculture's potential sustainability with regard to citizens' preferences. Thus, it is important to identify and quantify Spanish citizens' preferences for farming. Second, socio-demographic features and opinions that determine a preference towards agriculture needs to be studied. It is important that the main results indicate that agricultural economic, environmental, and social functions are equally important, even though the CAP prioritizes the economic ones.

B2.2.12. Camelina crops advantages

Camelina (Camelina sativa L.) is a promising and sustainable alternative energy crop that belongs to the Brassicaceae (mustard) family. Camelina sativa oil contains around 40% fatty acids, of which only a small percentage are saturated. Camelina sativa derived biokerosene used in aviation has shown 84% reduction in greenhouse gas emissions during its life cycle, compared to petroleum kerosene. It has the potential of becoming the renewable fuel of choice for air navigation in the future.

Other possible bio-based products from Camelina include bio-lubricants and animal adjuvant feed. Most recently, the jet fuel market has emerged as a potential business opportunity for Camelina oil and, therefore, Camelina producers.

Camelina plant (Camelina sativa) is an annual crop, it grows to a height of approximately 60- 100 cm and the Camelina seeds contain around 35-45% oil.

Apart from oil obtain through extraction; Camelina meal/Camelina cake is used as high protein animal adjuvant feed. Camelina is suitable to be used as an oilseed rotational crop with traditional crops and more important, it has a good potential for cultivation on marginal, uncultivated and contaminated land (www.camelinacompany.es/).

Important to keep in mind for new farmers and everybody interested in cultivating Camelina:

- Camelina is a hardy crop, draught tolerant and cold resistant;
- Camelina can be grown with commercial machinery and moderate fertilization;
- Camelina is an oil crop which enables to reduce fallow acreage and improve cereal rotation.

B2.3. Support for Camelina by Spanish Authorities

Existing support for Camelina cultivation from is illustrated below, based on information received from CCE_Camelina Company Espana (March 2015):

1. Additional CAP subsidy to those farmers that grow Camelina (up to 40 €/ha) – approved in December 2014

2. Support at European level for the inclusion of Camelina meal in the EU Catalogue for Animal Feed
3. Authorization by the Spanish Ministry of Agriculture to employ broad leaf herbicides in Camelina plantations – approved in November 2014
4. Authorization for the production of Camelina planting seed following ISTA certificate
5. Camelina trials in collaboration with the region of Castilla La Mancha – (Junta de Comunidades de Castilla La Mancha) JCCM (CCElargest production pole) – trials in 2013/2014/2015
6. Camelina trials in collaboration with the region of Aragón – (Dirección General de Aragón) DGA (our second largest production pole) – trials in 2013/2014/2015
    - Inclusion of Camelina as a PAC crop (accountable for subsidies) – Cathegory 36
    - Creation of a Camelina agro- insurance – Line 309

B3. Selected Case Studies

B3.1. General overview

In order to select the appropriate case-studies, additional information on Spanish agricultural and Land Use, as well as low farm stability and viability is needed.

Agriculture and Land Use

Compared with other West European countries, the proportion of land devoted to agricultural purposes in Spain is low. The primary forms of property holding in Spain have been large estates (latifundios) and tiny land plots (minifundios). Several agrarian censuses found that 50.9 percent of the country's farmland was held in properties of 200 or more hectares, although farms of this size made up only 1.1 percent of the country's 2.3 million farms

Owners of farmland today are a varied group. We divide them into two major categories: those who farm their land (owner-operators) and those who do not (non-farming landowners). Non-farming landowners are made up of private, institutional and public landowners. These include farm inheritors, educational institutions, conservation organizations and municipalities.

Low farm stability and viability

Low farm stability and viability is estimated through several drivers on 'low farm income' ,'lack of investments on the farm' ,'farm-holder's age', 'farm manager qualifications', 'low farm size', and 'commitments taken by farmers in specific management scheme'.

Investments on the farm could additionally be a relevant indicator of the farm dynamism, its adaptation capacity and forward-looking strategy. New investments are a signal of a medium/long term strategy and can be a proxy of the willingness to continue farm activity, while low level of investment might be indicating a farming activity in decline.

The assessment of Camelina production on the selected farms can indicate the impact and if farmers have a strategy for a viable farm, etc.

The agricultural sector is characterized by household farms and the productive activity is highly influenced by the life cycle of the farmer and of his/her family. Some studies (Kristensen *et al*., 2004) highlighted the relationship between farmer's age and landscape changes. In particular, other factors being constant, farmland extensification and abandonment are more likely to occur when the farmer is old and close to retirement. The number of farmers nearing retiring age may reflect the expected transition of the land and its structure in a period of 10 years.

Low farm size

The size of a farm refers to its Utilized Agricultural Area (UAA). In general, larger farms can benefit from lower production costs, are more suitable for most of the competitive agricultural practices (use of machinery or a better efficiency in the use of inputs), they are more frequently related to innovation and usually more competitive and viable in economic terms.

Agricultural census in Spain

Some important indicators are illustrated below, based on data from Census, 2011.

Table B.1. Key Indicators: Spain (Census, 2011)

Spain	2000	2010	Change (%)
Number of holdings	1 287 420	989 800	-23.1
Total UAA(ha)	26 158 410	23 752 690	-9.2
Livestock (LSU)	14 994 220	14 830 940	-1.1
Numbers of persons working on farms (Regular labour Force)	2 439 040	2 227 020	-8.7
Average area per holdings	20.3	24.0	18.1
UAA per inhabitant (ha/person)	0.66	0.52	-21.1

The assessment on socio-economic benefits of camelina production in Spain needs to be integrated in a larger perspective, at country and EU level. That is why, the information provided above will be considered for a second step assessment.

B3.2. Designated locations

Based on the general background presented so far, and indication from CCE (Camelina Company Espana), four locations were identified, but assessed only three, due to lack of data (engagement for farmers & authorities). The selected locations and administrative data are presented below:

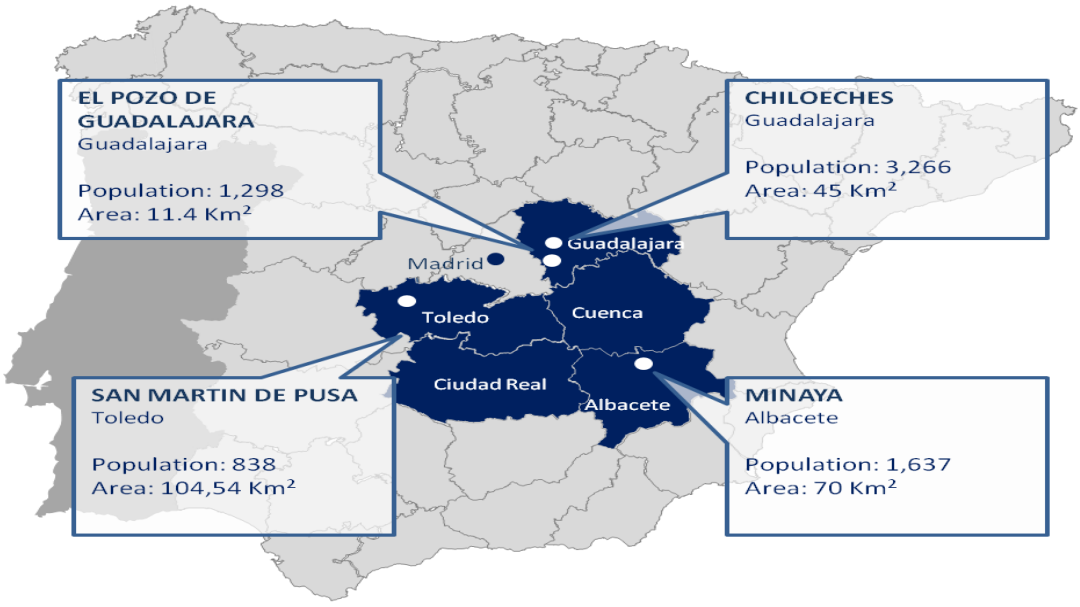


Figure B.1. Spanish map with selected case-studies

B3.2.1. Minaya (Albacete)

Minaya is a village of Arab origin, situated in the far North of the province of Albacete, in the Autonomous Region of Castilla-La Mancha. After a small increase of population during the prosperous first years of the 21st century, a decrease of about 5% was experienced since 2008, reaching a population of 1683 in 2012 (source: INE). The total area of the village is about 70 km2, thus having a population density of 24 inhab/km2.

Minaya is located at an altitude of about 725 m above sea level on the Spanish Southern platform ("meseta sur"), a vast flat terrain in the inlands of Spain.

Figure B.2. Minaya (Albacete) (source: Google Earth)

The climate in this area is markedly continental and rather extreme, with very cold winters and hot summers. Temperature difference between day and night is usually big (≥ 20ºC) and precipitation is low (300-400 mm/year) and mainly concentrated in spring and autumn. An average of more than 2700 hours of sun per year is found.

The main source of employment is agriculture, especially of cereals, wine yards and saffron. A solar energy park was installed in Minaya, with a total capacity of 2.2 MW. At present no information is available on the impact of this installation on Minaya.

In 2006 the nearby highway AP-36 ("Madrid-Levante") was opened and was expected to provide additional income to the village. However, due to the economic downturn in Spain the use of this toll-road was scarce and traffic volume has dropped almost 30% since its inauguration.

The climate in this area is markedly continental and rather extreme, with very cold winters and hot summers. Temperature difference between day and night is usually big (≥ 20ºC) and precipitation is low (300-400 mm/year) and mainly concentrated in spring and autumn. An average of more than 2700 hours of sun per year is found.

The main source of employment is agriculture, especially of cereals, wine yards and saffron. A solar energy park was installed in Minaya, with a total capacity of 2.2 MW. At present, no information is available on the impact of this installation on Minaya.

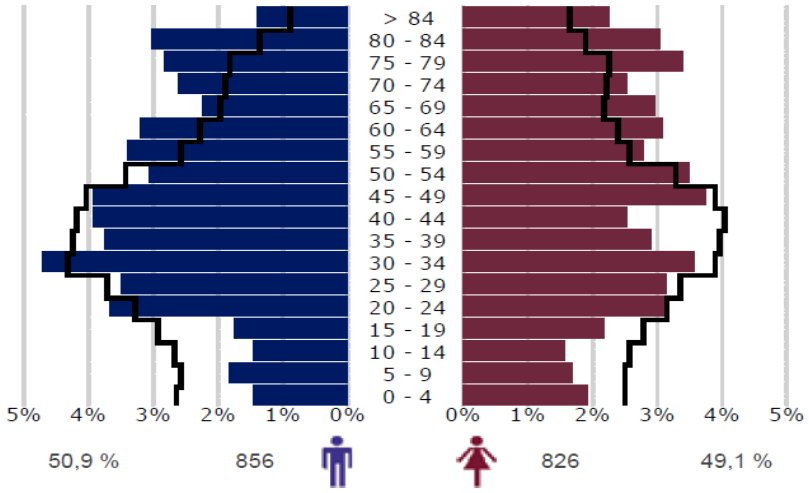


Figure B.3. Structure of population (Census 2011)

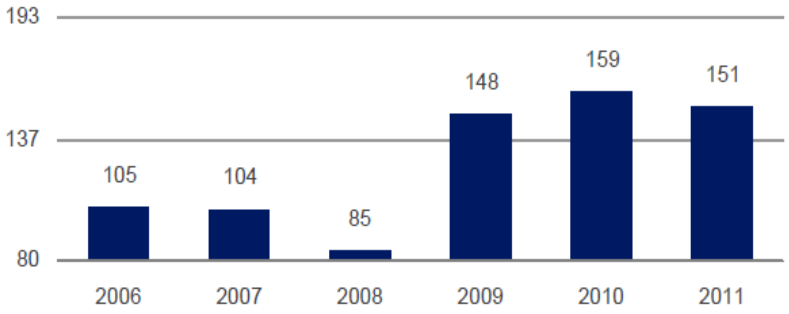


Figure B.4. Unemployment (151 = 13.9% of employable population) (Census 2011)

Table B.2. Minaya- field data

MINAYA				
Agriculture land (ha)	Total Agricultural Land		5,737.79	
	Contaminated soil		-	
	Quality of Arable land		5,504.99	
Type of Crops (ha)	Food Crops Acreage		3,776.95	
	Industrial Crops Acreage		119.38	
	Oilseeds Crops Acreage		20.53	
Local agricultural land	Ownership		ha	people
		Family owned	348	132
		Company owned	1,210	4
		State owned	-	-
		Cooperatives	890	3
		Others	157	1

Minaya has no heavy industry around, so no contaminated soil.

After a small increase of population during the prosperous first years of the 21st century, a decrease of about 5% was experienced since 2008, reaching a population of 1683 in 2012 (source: *INE*). The total area of the village is about 70 km^2, thus having a population density of 24 inhab/km^2.

Table B.3. Minaya Population by Age-group and sex[4]

Total	**under 20 yrs**	**20-60 yrs**	**over 60 yrs**
1637	228	885	524
	13.93%	54.06%	32.01%
Masculine	**under 20 yrs**	**20-60 yrs**	**over 60 yrs**
838	98	494	246
	11.69%	58.95%	29.36%
51.19%	42.98%	55.82%	46.95%
Feminine	**under 20 yrs**	**20-60 yrs**	**over 60 yrs**
799	113	408	278
	14.14%	51.06%	34.79%
48.81%	49.56%	46.10%	53.05%

How to read it: There are 838 males in Minaya, of which 98 (11.69%) under the age of 20yrs, or 49.56% of total under 20yrs population.

Important information for SEA framework is related to quality of life of involved community: household infrastructure, education, local infrastructure, necessary for mobility.

Table B.4. Households and Households' Equipment[5]

# of Households	**People per Household**	**Water Supply**	**Sewage**	**Electricity**	**Central Heating**	**Kitchen**	**In-house Bathroom**
1147	1.43	61.03%	61.03%	n/a	n/a	n/a	n/a

How to read it: there are 61.03% of Households with central water supply.

[4] Padrón Municipal 2013, España

[5] Censo de Viviendas de 2011, España

Table B.5. Level of Schooling[6]

University		High School & Vocational		Primary & Secondary School		None	
People	%	People	%	People	%	People	%
n/a	-	n/a	-	n/a	-	n/a	-

Table B.6. Current Local Infrastructure[7]

Central Water Supply	Community Sewage Availability	Gas Supply	Landlines Phones Availability	Electricity Supply	Cable TV	Internet Availability	Roads Total (mi)	Modern Roads (mi)	Primary Schools
Yes	Yes	--	Yes	Yes	Yes	Yes	--	--	1

To complete the above overview on Minaya Local Infrastructure, it should also be mentioned that there are, within the village:

- 1 Nursery
- 1 Library
- 1 Medical GP
- 1 Vet
- no Police station

Taking into account the general information about the Minaya village, and looking at the above data from the Spain Census 2011, one could easily sketch the quintessential image of the small Spanish village.

People & Households

Only 54% of village population is of working age, and over 30% of village population is over 60yrs old. Due to warm climate, central heating is not common in small villages, so Minaya is such example. Almost everybody has a modern bathroom (defined as a toilet & bathtub within/inside the house).

Work & Employment

Minaya is a village located in a touristic area, so 1 hostel has been recorded and some small manufacture industry, but no factories, or large workshops. The village has also 3 banks, so there are few employment opportunities for the villagers, besides agriculture or own land working

As per the official data, unemployment in Minaya is 20% (September 2014), below National average unemployment rate which by February 2014 reached 25,6%, but has raised by 6% since 2011.

[6] No data available

[7] Information source by phone on 22 April 2014 to Local Authority (Ayuntamiento de Minaya)

Local Infrastructure

Roads are good, modernised, there is a central water supply and community sewage and waste management systems;

Local Unemployment Rate

As per the official data, unemployment in Minaya is 20% (September 2014), *below* National average unemployment rate which by February 2014 reached 25,6%, but has raised by 6% since 2011.

B3.2.2. El Pozo de Guadalajara

El Pozo de Guadalajara is a small village, situated in the South-West of the province of Guadalajara, in the Autonomous Region of Castilla-La Mancha. Due to the "construction boom" the population has more than tripled in the first decade of the 21st century, growing from 400 in 1996 to 1329 in 2012 (source: *INE*).

It is located at an altitude of about 890m above sea level on the Spanish Southern platform ("meseta sur"), a vast flat terrain in the inlands of Spain. It is located between the valleys of the Henares and Tajuña rivers.

Figure B.5. El Pozo de Guadalajara (Guadalajara) (source: Google Earth)

The climate in this area is markedly continental and rather extreme, with cold and windy winters and hot summers. Temperature difference between day and night is usually big (≥ 15ºC) and precipitation is low (~400 mm/year) and mainly concentrated in spring and autumn. An average of more than 2700 hours of sun per year is found.

The services sector is the main source of employment in the village, followed by agriculture, especially of cereals. Before the crisis in 2008 the construction industry was another important source of employment in the region. Very few are left of the autochthonous oak forests that used to cover the area.

Table B.7. Type of Land

EL POZO DE GUADALAJARA				
Agriculture land (ha)	Total Agricultural Land			987.79
	Contaminated Soil			-
	Quality of Arable land			986.76
Type of Crops (ha)	Food Crops Acreage			686.70
	Industrial Crops Acreage			96.12
	Oilseeds Crops Acreage			6.76
Local agricultural land	Ownership		Ha	persons
		Family owned	961	15
		Company owned	28	4

The total area of the village is only 11.4 km^2, thus having a population density of around 116 inhab/km^2.

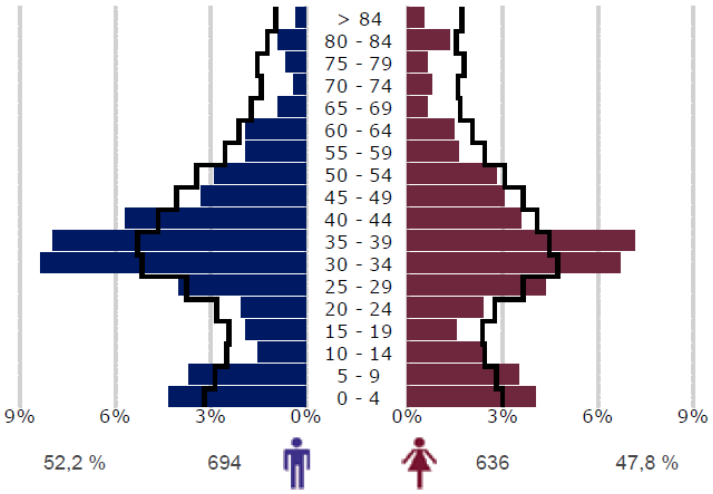


Figure B.6. Structure of population (Census 2011)

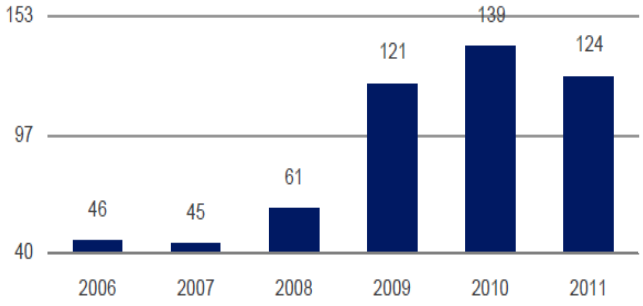


Figure B.7. Unemployment (124 = 12.6% of employable population) (Census 2011)

Table B.8. El Pozo de Guadalajara Population by Age-group and sex[8]

Total	**under 20 yrs**	**20-60 yrs**	**over 60 yrs**
1298	335	830	133
	25.81%	63.94%	10.25%
Masculine	**under 20 yrs**	**20-60 yrs**	**over 60 yrs**
675	155	450	70
	22.96%	66.67%	10.37%
52.00%	46.27%	54.22%	52.63%
Feminine	**under 20 yrs**	**20-60 yrs**	**over 60 yrs**
623	165	395	63
	26.48%	63.40%	10.11%
48.00%	49.25%	47.59%	47.37%

How to read it: There are 675 males in El Pozo de Guadalajara, of which 155 (22.96%) under the age of 20yrs, or 46.27% of total under 20yrs population.

Table B.9. Households and Households' Equipment[9]

# of Households	**People per Household**	**Water Supply**	**Sewage**	**Electricity**	**Central Heating**	**In-house Bathroom**
722	1.8	73.27%	73.27%	100%	--%	100%

How to read it: there are 73.27% of Households with central water supply.

Table B.10. Level of Schooling[10]

University		**High School & Vocational**		**Primary & Secondary School**		**None**	
People	%	People	%	People	%	People	%
0	0	--	--%	--	--%	--	--%

[8] Padrón Municipal 2013, España

[9] Censo de Viviendas de 2011, España

[10] No data available

Table B.11. Current Local Infrastructure[11]

Central Water Supply	Community Sewage Availability	Gas Supply	Landlines Phones Availability	Electricity Supply	Cable TV	Internet Availability	Roads Total (mi)	Modern Roads (mi)	Primary Schools
Yes	Yes	Yes	Yes	Yes	Yes	Yes	n/a	n/a	1

For Secondary School, pupils go to Chiloeches. To complete the above overview on El Pozo de Guadalajara Local Infrastructure, it should also be mentioned that there are, within the village:

- 1 Nursery
- 1 Library
- 1 Medical GP ; for emergencies to Guadalajara
- no Vet
- no Police station

Taking into account the general information about the El Pozo de Guadalajara village, and looking at the above data from the Spain Census 2011, one could see the approach of a small Spanish village.

People & Households

Over 63% of village population is of working age and around 10% of village population is over 60yrs old. Due to warm climate, central heating is not common in small villages, so El Poso is such example. Almost everybody has a modern bathroom (defined as a toilet & bathtub within/inside the house).

Work & Employment

There are very few employment opportunities besides services (retail, bars), agriculture or own land working. This is due also because lack of local industrial workshops or factories.

As per the official data, unemployment in El Pozo de Guadalajara is 16%, *below* National Average Unemployment rate which by February 2014 reached 25,6%

Local Infrastructure

The roads are in good shape and there is central water supply, a community sewage and a waste management system in place. The access to general health service is provided by a GP, and for emergencies they go to Guadalajara

Local Unemployment Rate

The local unemployment rate at the end of February, 2014[12], was 16% - 131 people out of the 830 working age inhabitants of the El Pozo de Guadalajara.

[11] Information source by phone on 22 April to Local Authority (Ayuntamiento de El Pozo de Guadalajara)

[12] Ministerio de Trabajo- SEPE- 2013-2014, Spain

B3.2.3. Chiloeches – Guadalajara

Chiloeches is a small village, situated in the South-West of the province of Guadalajara, in the Autonomous Region of Castilla-La Mancha, not far from El Pozo de Guadalajara.

It is located at an altitude of about 800 m above sea level on the Spanish Southern platform ("meseta sur"), although it is surrounded by hills of up to 150 m high (with respect to the village), with mainly oak trees.

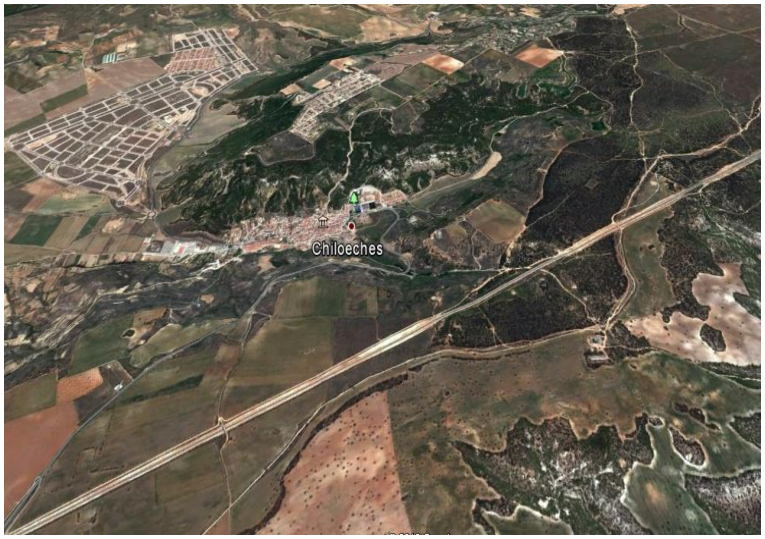


Figure B.8. Chiloeches (Guadalajara) (source: Google Earth)

The climate in this area is markedly continental and rather extreme, with very cold and windy winters and hot summers. Temperature difference between day and night is usually big (≥ 15ºC) and precipitation is low (~400 mm/year) and mainly concentrated in spring and autumn. An average of more than 2700 hours of sun per year is found.

The services sector is the main source of employment in the village, followed by the manufacturing industry. Agriculture is only a rather marginal source of employment. Before the crisis in 2008 the construction industry was another important source of employment in the region.

Table B.12. Type of Land

CHILOECHES				
Agriculture land (ha)	Total Agricultural Land		2,826.86	
	Contaminated soil		-	
	Quality of Arable land		2,746.41	
Type of Crops (ha)	Food Crops Acreage		1,334.76	
	Industrial Crops Acreage		86.75	
	Oilseeds Crops Acreage		509.46	
Local agricultural land	Ownership		ha	people
		Family owned	1,286	49

		Company owned	104	3
		State owned	-	-
		Others	500	1

Since the year 2000 its population has been growing at a rate of about 20% per year, growing from 1137 in 1996 to 3179 in 2012 (source: *INE*). The total area of the village is just over 45 km^2, thus having a population density of around 70 inhab/km^2.

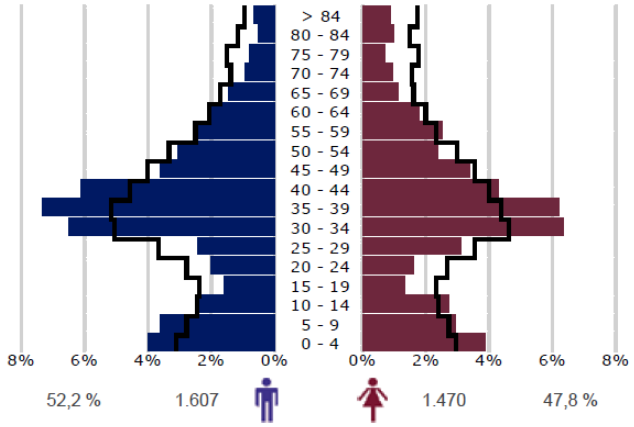


Figure B.9. Structure of population (Census 2011)

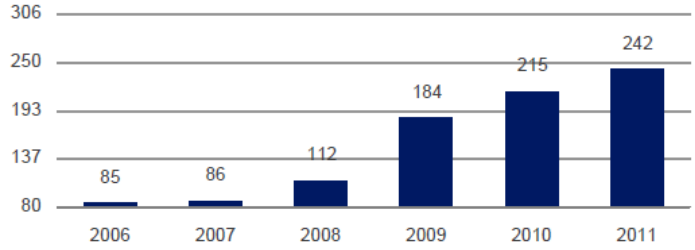


Figure B.10. Unemployment (242 = 11.1% of employable population) (Census 2011)

Table B.13. Chiloeches Population by Age-group and sex[13]

Total	**under 20 yrs**	**20-60 yrs**	**over 60 yrs**
3266	811	2013	441
	24.83%	61.64%	13.50%
Masculine	**under 20 yrs**	**20-60 yrs**	**over 60 yrs**
1700	402	1082	216

13 Padrón Municipal 2013, España

	23.65%	63.65%	12.71%
52.05%	49.57%	53.75%	48.98%
Feminine	**under 20 yrs**	**20-60 yrs**	**over 60 yrs**
1565	386	954	225
	24.66%	60.96%	14.38%
47.92%	47.60%	47.39%	51.02%

How to read it: There are 1700 males in Chiloeches, of which 402 (23.65%) under the age of 20yrs, or 49.57% of total under 20yrs population.

Table B.14. Households and Households' Equipment[14]

# of Households	People per Household	Water Supply	Sewage	Electricity	Central Heating	In-house Bathroom
1757	1.86	68.87%	68.87%	~ 85%	?	~ 68%

How to read it: there are 68.87% of Households with central water supply.

Table B.15. Level of Schooling[15]

University		High School & Vocational		Primary & Secondary School		None	
People	%	People	%	People	%	People	%
n/a		n/a				0	0

Table B.16. Current Local Infrastructure[16]

Central Water Supply	Community Sewage Availability	Gas Supply	Landlines Phones Availability	Electricity Supply	Cable TV	Internet Availability	Roads Total (mi)	Modern Roads (mi)	Primary Schools	Secondary school
Yes	Yes	Yes	Yes	Yes	Yes	Yes	-?	-?	1	1

To complete the above overview on Chiloeches Local Infrastructure, it should also be mentioned that there are, within the village:

-1 Nursery

[14] Censo de Viviendas de 2011, España

[15] No data available

[16] Information source by phone on 22 April to Local Authority (Ayuntamiento de Chiloeches)

-1 Library

-3 Medical GP (ambulatory service)

-no Vet

-no Police station (source: by phone on 22 April'14 from Local Authority)

Chiloeches village is the largest site in the present research. The data collected was from statistics and by phone from Local Authority representatives, (i.e. no name disclosed).

People & Households

- almost all population has secondary education;
- only 54% of village population is of working age;
- over 30% of village population is over 60yrs old;
- warm climate, no need/tradition for central heating.

Work & Employment

The village has some employment opportunities besides agriculture or villagers working their own land, through existing local industrial workshops

Local Infrastructure

The village has a modern infrastructure, with existing central water supply and community sewage and waste management system in place.

Local Unemployment Rate

The local unemployment rate at the end of February, 2014[17], was 16% - 313 people out of the 2,013 working age inhabitants of Chiloeches.

B3.2.4. San Martín de Pusa

San Martín de Pusa is a municipality located in the province of Toledo, Castile-La Mancha, Spain. According to the 2013 census (INE), the municipality has a population of 825 inhabitants.

San Martín de Pusa is a small town with a historical castle, thus attraction for tourists and services associated with the tourism industry.

17 Ministerio de Trabajo- SEPE- 20.11-2013, Spain

Figure B.11. San Martin de Pusa (Toledo) (source: Google Earth)

Table B.17. Type of Land

SAN MARTIN DE PUSA				
Agriculture land (ha)	Total Agricultural Land		7,323.60	
	Contaminated soil		-	
	Quality of Arable land		6,482.45	
Type of Crops (ha)	Food Crops Acreage		2,727.82	
	Industrial Crops Acreage		13,46	
	Oilseeds Crops Acreage		1,701.72	
Local agricultural land	Ownership		ha	people
		Family owned	4,268	147
		Company owned	3,055	12

Table B.18. San Martín de Pusa Population by Age-group and sex[18]

Total	**under 20 yrs**	**20-60 yrs**	**over 60 yrs**
838	133	402	303
	15.87%	47.97%	36.16%
Masculine	**under 20 yrs**	**20-60 yrs**	**over 60 yrs**
446	65	232	149
	14.57%	52.02%	33.41%

18 Instituto Nacional de Estadística - Padrón Municipal 2013, España

53.22%	48.87%	57.71%	49.17%
Feminine	**under 20 yrs**	**20-60 yrs**	**over 60 yrs**
392	56	182	154
	14.29%	46.43%	39.29%
46.78%	42.11%	45.27%	50.83%

How to read it: There are 446 males in San Martín de Pusa, of which 65 (14.57%) under the age of 20yrs, or 48.87% of total under 20yrs population.

Table B.19. Households and Households' Equipment[19]

# of Households	People per Household	Water Supply	Sewage	Electricity	Central Heating	In-house Bathroom
650	1.29	50.92%	50.92%	90%	-	~ 50%

How to read it: there are 50.97% of Households with central water supply.

Table B.20. Level of Schooling[20]

University		High School & Vocational		Primary & Secondary School		None	
People	%	People	%	People	%	People	%
n/a							

Table B.21. Current Local Infrastructure[21]

Central Water Supply	Community Sewage Availability	Gas Supply	Landlines Phones Availability	Electricity Supply	Cable TV	Internet Availability	Roads Total (mi)	Modern Roads (mi)	Primary Schools
Yes	Yes	No	Yes	Yes	Yes	Yes	--	--	1

To complete the above overview on San Martín de Pusa Local Infrastructure, it should also be mentioned that there are, within the village:

- 0 Nursery
- 0 Library
- 1 Medical GP

19 Censo de Viviendas de 2011, España

20 No available data

21 Information source by phone on 22 April to Local Authority (Ayuntamiento de San Martín de Pusa)

- 0 Vet
- 0 Police station

San Martin de Pusa is a very small village, with less opportunities for business development, except some touristic attraction. Thus, opportunity for camelina production is small, so the village was not selected as case studies to assess SEIA.

People & Households

Less than 50% of village population is of working age, over 36% being over 60yrs old.

Work & Employment

As per the official data, unemployment in San Martín de Pusa is 21%, slightly *below* National average unemployment rate which by February 2014 reached 25,6%.

Local Infrastructure

The village has good road infrastructure, central water supply and community sewage and waste management systems.

Local Unemployment Rate

The local unemployment rate at the end of February, 2014[22], was 21% - 84 people out of the 402 working age inhabitants of San Martín de Pusa.

22 Ministerio de Trabajo- SEPE- 2014-, Spain

B4. Data collection

B4.1. Additional data sources

Apart from the statistical data presented above, additional data related to camelina production was collected from farmers and landowners, according to table below.

Table B.1. Farmers involved in the Spanish case-study on camelina production_2012/2013

Farmer	Location	Farmer or Landowner	Total Agricultural Acreage (ha)	Agricultural system	Cereal Average Productivity (Ton/ha)	Other crops	2012/2013 Camelina Acreage (ha)
Farmer 1	Minaya (Albacete)	Landowner and farmer	200	Minimal tilling	2	Fallow land, wheat, lentils, peas	17.9
Farmer 2	El Poso de Guadalajara	Landowner and farmer	750	Minimal tilling	2.2	Vetch	95
Farmer 3	San Martin De Pusa (Toledo)	Landowner and farmer	600	Conventional	2	Fallow land	14.9
Farmer 4	Chiloeches (Guadalajara)	Landowner, Rents land and farmer	700	No tilling	3	Peas + Beans+ Rapeseed	28.33

Note: names could not be disclosed due to confidential information

Table B.27. Information on farmers' willingness to engage in camelina

Farmers	Location	2012/2013 Camelina acreage (ha)	Type	2013/2014 Camelina acreage (ha)	Status	Background Fertilization (kg/ha)	Type
Farmer 1	Minaya (Albacete)	17.9	UMOSTART PERFECT (11:49:0)	40	Rotational/ Previous crop peas	Does not apply fertilizer	N/A
Farmer 2	El Poso de Guadalajara	95	Duramon	75	Rotational/ Previous crop Cereal	50	NPK 12:30:08
Farmer 3	San Martin De Pusa (Toledo)	14.9	Yaramila Activa (20:7:10)	34	Previous crop fallow	Does not apply fertilizer	N/A
Farmer 4	Chiloeches (Guadalajara)	28.33	Microgranulate	24	Rotational/ Previous crop Cereal	60	NPK 19:19:05

Table B.38. Farmers' expected income for Camelina, equal to barley cultivation

Farmers	Location	Barley average (kg/ha) - Spanish crop insurance data	Barley price in Spain (€/Tm)	Scenario - Equal to barley income
Farmer 1	Minaya (Albacete)	2000	169	338
Farmer 2	El Poso de Guadalajara	2200	169	372
Farmer 3	San Martin De Pusa (Toledo)	1700	169	287
Farmer 4	Chiloeches (Guadalajara)	2700	169	456
Average	-	**2150**	**169**	**363**

Source: CCE, March 2015

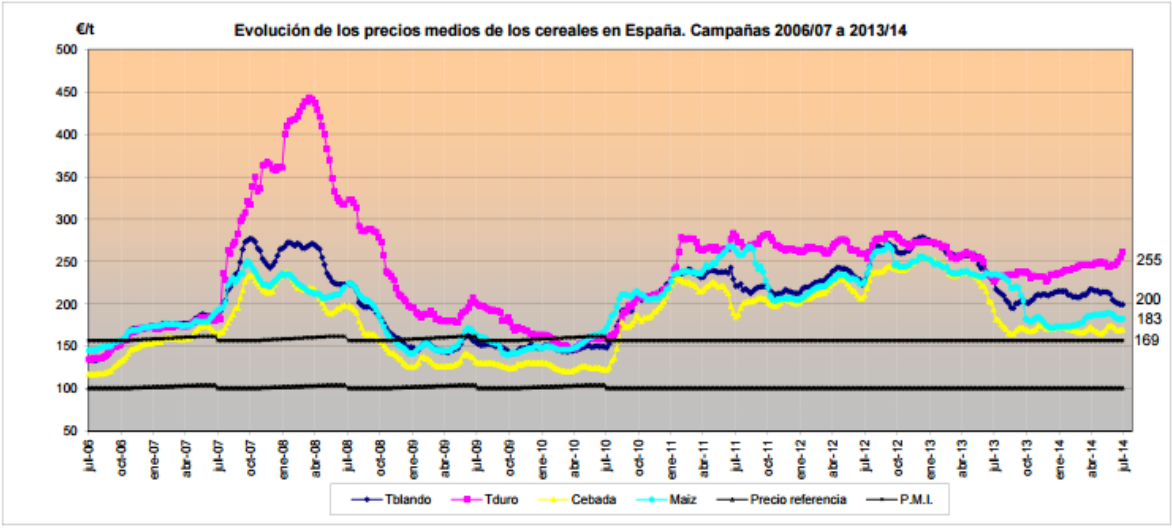
The methodology for such calculation is assuming that farmers will be willing to produce Camelina if they get at least the same incomes as barley, since today's Camelina costs are equal or lower to those of barley.

The calculation is then, per region, to multiply the average barley productivity in Tn/ha by the average barley price in €/Tm (this is a national figure).

The price average has been taken from the Ministry of Agriculture, and reflects the average of barley in Spain for the past 7 years (www.magrama.es).

The productivity has been taken from the Agro -insurance company in Spain (www.agroseguro.es), for each region.

As you will see, the result is an average of 363 €/ha, ranging from 287 to 456 €/ha.



Fuente: Subdirección Gral. de Estadísticas. MAGRAMA
Elaboración: Subdirección Gral. de Cultivos Herbáceos e Industriales. MAGRAMA

Figure B.1. Cereal price evolution in period 2006/07 compared to 2013/14

Additional to the desk survey data, further field data were gathered from farmers, as part of the *Framework for a semi-structural survey for social-economic benefits* in Annex 2. The pictures bellow illustrate the chosen case-studies.

B4.2. Fields with Camelina in Spain - pre-selected case-studies

The pictures presented below illustrate the status of different fields of Camelina during spring of 2013, mainly in March and April. Apart from spring Camelina, the autumn variety is also presented.

Photos presenting Camelina harvested are taken from several locations.

Figure B.2. 2013/03/13 Chiloeches (Guadalajara)

Figure B.3. 2013/03/13 Chiloeches (Guadalajara)

Figure B.4. 2013/04/22 Alpera (Albacete)

Figure B.5. 2012/12/17 Albacete (Albacete)

Figure B.6. 2012/12/17 Albacete (Albacete)

Figure B.7. 2013/06/27 Sipán (Huesca)

Figure B.8. 2013/05/31 Atanzón (Guadalajara)

Figure B.9. 2013/01/30 Miguelturra (Ciudad Real)

Figure B.10. 2013/06/19 Anchuelo (Madrid)

Figure B.11. 2013/07/06 Villanueva de la Torre (Guadalajara)

Figure B.12. 2013/07/06 Villanueva de la Torre (Guadalajara)

B5. Socio-Economic Impact Assessment (SEIA) Framework

There are several definitions of SEIA, all mentioning the methodology or tool needed to be involved in assessing the socio-economic aspect of a planned development and its predicted impact. Spain SEIA is focusing on finding the right Framework and practice to assess the possible impact of Camelina production on communities, represented by Spanish villages.

Possible definition*: Socio-economic Impact Assessment is a useful tool to help understand the potential range of impacts of a proposed change (i.e. Camelina production), and the likely responses of those impacted on if the change occurs*.

The specific aim of a SEIA will depend on the nature of the project.

The goal might simply be to develop a thorough understanding of the socio-economic setting. A SEIA can be conducted in such a way that it backs the participatory planning and management.

B5.1. Prerequisite to design a SEIA

Before designing a SEIA structure, it is important to examine the need for such framework. Conducting a socio-economic impact assessment is important for several reasons related to rural area, having in mind jobs, the need for increased quality of life, economy diversification, etc.

Overall, SEIA is used to prepare the community, including residents and local officials, of the impact and magnitude of the proposed development on the community's social and economic well-being.

The present assessment conducted with data on Camelina feedstock development in Spain needs to have an approach that exclude local authorities due to their unwillingness to get involved in Camelina data survey. Thus, members of a selected community may be interviewed regarding the importance of a certain investment, as Camelina feedstock in that particular area.

SEIA for Spain will be designed having in mind six steps approach: *scoping, outlining baseline conditions, predicting impacts, identifying mitigation, evaluating significance, applying mitigation & monitoring.* The implementation as a repetitive exercise is expected to be reduced, due to lack of relevant data related to the Spanish case.

SEIA can help communities avoid creating inequities among community groups (i.e. low income groups; minority) as well as encourage the positive impacts associated with the development.

The impact assessment delivers guesses of expected changes in demographics, housing, public services, all related to the community quality of life that will result from the proposed development.

Also important, the socio- economic assessment provides a chance for diverse community values to be integrated into the decision-making process. These two pillars (changes and community values) will provide information on whether *to alter or change a proposed development*. For instance, *development* for the selected Spanish case-studies may constitute a major change in the category and intensity of use on a parcel of land, as in a village, development often means conversion of productive agricultural land (i.e. Minaya case-study). Depending on the village chosen, the social impact on the community may affect one group of citizens more considerable than another (e.g. farmers, the elderly, low income or minority groups).

B5.2. SEIA Framework Structure

The SEIA framework will help understand better the impacts of a certain investment, the benefits associated with it, risks, gaps, etc. The proposed framework for SEIA Spain, has several pillars and its elements are illustrated below:

1) Existing local regulations and stakeholders involved:
   - At local and regional level;
   - Contributions & Opportunities.
2) Consider local ownership and involvement; population;
   - Investment and development (mechanization, fertilizers, etc.);
   - Type of land: agricultural, marginal/contaminated, and uncultivated.
3) Tax policy at local- regional, national and EU level
4) Assess the impact.
5) Selected villages and consideration:
   - Select villages and farmers involved based on criteria:
     - Positive;
     - Negative;
     - Impact;
     - Risk.
   - Describe the rural aspect, including infrastructure, income, work-force, employability, education, health, etc.

Assessing and quantifying socio-economic Impact at local level; represent benefits vs risk:

- Social opportunities for better vs risk;
- Economic opportunities for employability, payments, etc.

Designing SEIA pillars will require coordination with available data and SEIA framework to be adjusted during implementation. That is why, the survey questions are essential to be designed in a way that the essential information is captured.

Often, assessing community perceptions about development requires the use of methods capable of revealing complex and unpredictable, volatile community values.

In designing SEIA framework there are two phases of socio-economic impact assessment that need to be considered:

Defining the scope of the Socio-Economic Impact Assessment

1) Identifying and Evaluating Development Impacts;
   A. Quantitative Changes
   B. Community Perceptions
2) Identifying socio-economic priorities.

The most reliable sources of information about community concerns and needs are residents and community leaders. Surveys and interviews are two excellent methods for identifying priority social and economic goals of the community.

The development impacts associated with a new development will vary depending on the proposed project's type, size, location, socio-economic characteristics of the community. As such it is important to be familiar with both the project characteristics and the social and economic resources of the community.

B5.3. SEIA Framework Elements

In identifying SEIA Framework elements, it is important to follow some guidelines, as a starting point. For this report, a combination of EPFL & Mackenzie Valley Environmental Impact Review Board Guidelines (www.mveirb.nt.ca) were used.

The aim of this particular SEIA in Spain was to identify a planning tool that outlines the Community expectations for assessing socio-economic and cultural impacts due to Camelina production in selected villages.

Local Community Social Analysis – Three Levels of Involvement

In assessing local community social aspects, there are three levels of evaluation: impact on workforce, on landowners/farmers, and the impact on Local Authorities / Local Leaders.

The economic impact evaluation, as well as the risk management & risk mitigation need to be performed when there are available data on selected community.

That is why, after designing a SEIA framework, the next step is data gathering, based on qualitative and qualitative approach. A field questionnaire and interviews with farmers will deliver the needed data for a successful SEIA implementation. Fig 32 below illustrates the SEIA Framework for Spain.

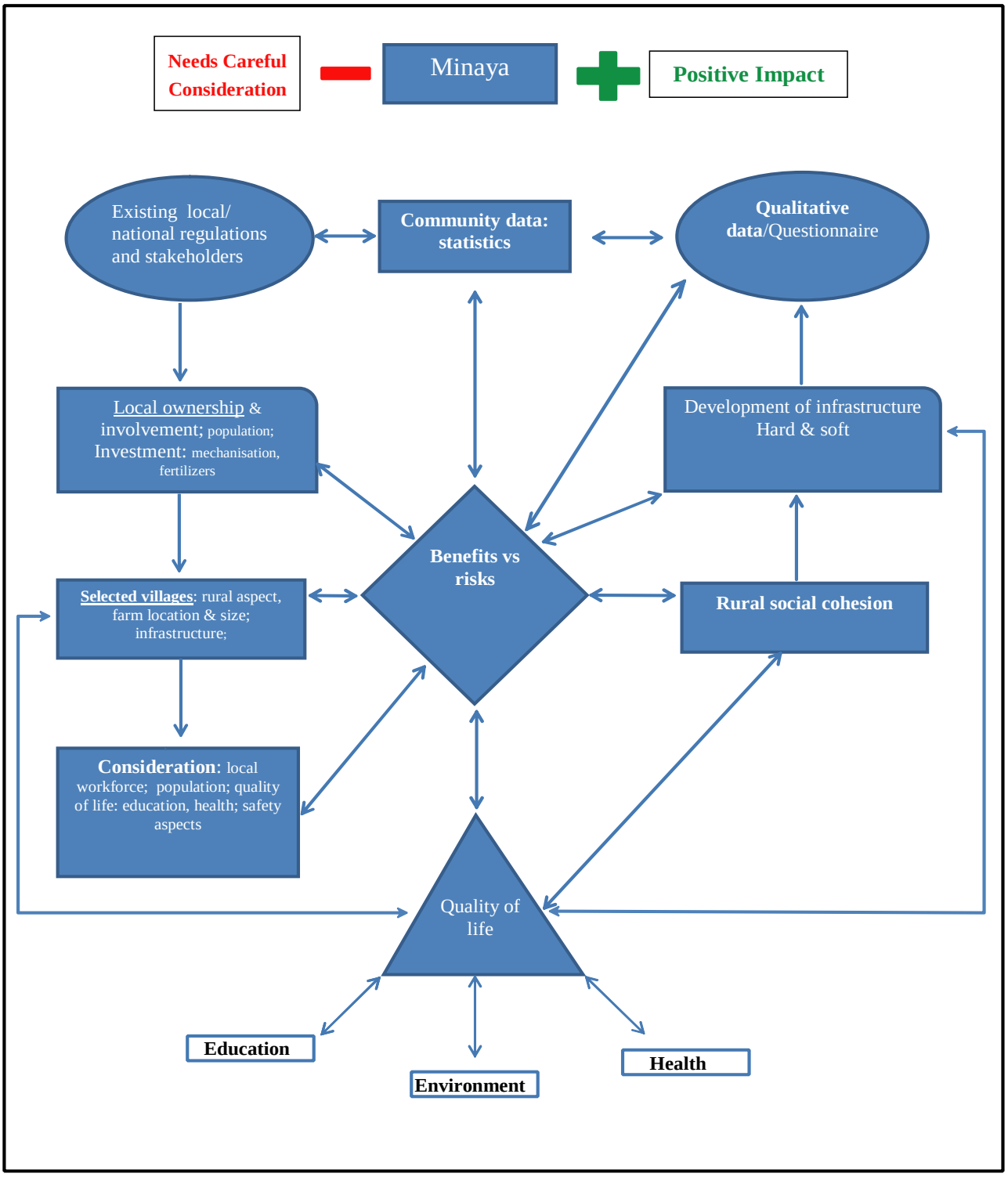


Figure B.1. SEIA Framework

The farmers selected from the interview were from the following villages:

- 1 farmer from Minaya Albacete
- 2 farmers from El Pozo de Guadalajara

- 1 farmer from Chiloeches – Guadalajara

These farmers had two interviews round planned. The initial data was analysed for the second progress report (i.e. March 2014). Based on this analysis, another interview was envisaged by mid-April'14, for an in-depth data collection, followed by a developed analysis, which lead to a successful strategic approach to SEIA. The idea is that this analysis should be an example that can be used for some other topics, not only for a Camelina value chain leading to biofuel production. As the future developments will take place, we need a tool to assess the socio-economic impact and furthermore, the bio-fuel production sustainability and its risk mitigation, if needed.

It is important to demonstrate what information stays behind the pillars of the initially designed SEIA. Consequently, Minaya was selected as case-study, to validate the logic of SEIA structure.

Community data: statistics

The statistics related to community data will involve: structure of population (sex, age, available workforce), agriculture land (ha); type of crops (ha); the ownership of agricultural land (family owned; company or state owned, etc.).

Minaya has no heavy industry around, so no contaminated soil was recorded.

Important information for SEA framework is related to the standard of living of involved community: household infrastructure, education, local infrastructure, necessary for mobility.

Households and households' equipment will consist of: water supply, sewage, electricity, central heating, kitchen, in-house bathroom, etc.

Other data: *Level of schooling*: primary, secondary, university, etc. Information on level of education is necessary to identify existing skilled work-force or identify the need.

Existing local/ national regulations and stakeholders

Land policy in Spain is examined, considering the impact of land tenure as an influential factor in developing Camelina production. That is why, landowners and independent farmers, will be interviewed differently from agriculture workers, and separate questionnaire need to be developed for these stakeholders.

Land policy and taxation is linked directly to farm structure in Spain and labour related to agriculture.

The situation of abandonment of agricultural land constitutes needs to be examined with respect of its drivers and possible consequences.

Utilised Agricultural Area (UAA)/ *Arable land* is another aspect that needs to be examined as part of SEIA framework considering local and national regulations.

Existing policies and incentives related to alternative energy sources needs to be examined, as well as current regulatory frameworks to admit investments in the sector.

The main stakeholders for Camelina production will be landowners/farmers, workers, local authorities and community members who can benefit from an investment such as Camelina feedstock production.

Social inclusion involving people from minority ethnic groups and low income groups, may be considered as a possible project for selected case-studies, knowing at present in Spain there are workers from several European countries (especially from C-E Europe), as well as from N-Africa.

Selected villages: rural aspect, infrastructure

SEIA framework requires certain case-studies to be developed and implemented. In this case, the role is played by selected villages, representative for a certain rural area. The selection criteria involve information on agriculture and land use, farm stability and viability, farm size, experience with Camelina; population, infrastructure, etc.

Based on the general background presented so far, and indication from CCE (Camelina Company Espana), an ITAKA partner, fourth locations were identified, but assessed only three, due to lack of data (engagement of farmers & authorities in SEIA exercise).

Consideration: aspects illustrating community quality of life need to be assessed accordingly. Information on population is required, age and sex, skills, which leads to existing workforce, need for jobs, employability, etc. Other aspects regarding education and health need to be recorded to identify possible needs for projects that can be partially sponsored through local taxes generated by Camelina production in the region. Existing police station will indicate the level of safety linked to selected village, aspect which involves the level of quality of life.

Qualitative data/questionnaires

SEIA Questionnaire has been designed in order to collect to types of data:

- primary data, comprising statistics, obtained from local and national authorities, and

- secondary data obtained via questionnaire and interviews from the stakeholders involved in Camelina feedstock and associated supply chain.

The SEIA Questionnaire had 4 parts, each part having its own structure, sections and several dimensions. The same Questionnaire developed initially for the SEIA exercise in Romania was also used in Spain.

Part 1 – *Primary data* – 5 sections and over 20 dimensions, provided data on

- local people, households, local economy, local infrastructure, available agricultural land;

Part 2, 3 and 4 of the Questionnaire were filled in with *secondary data* on:

- local authorities, farmers/landowners and workforce. The number of questions vary, but all have an open-end and multiple choices.

Each section has an open comments segment to help the interviewer in recording any comments/ data s/he considers essential. This section also invites the interviewee to talk open about the topic in discussion, or related ones.

Based on the above considerations and example of questions, please see Annex 1 and Annex 2.

Development of infrastructure: *hard & soft*

This pillar refers to investments in *hard infrastructure*, meaning new road networks or bridges in the selected rural area. The action will contribute to improved trade logistics, reduction in in-land commute time and will identify some infrastructure projects to be executed. The main driver for investment in hard infrastructure is an anticipated economic grow. Can Camelina feedstock production lead to this growth? SEIA is an answer to this question.

The *soft infrastructure* means Information and Communications Technology/ICT: TV, mobiles, computers, internet access, etc. The ICT sector has the potential to actively contribute to human development, social inclusion and economic development.

Rural social cohesion

This pillar refers to the ned of a strong social cohesion in a rural area. Religious communities may be an important source of bridging and bonding social capital that have varying implications for perceptions of social cohesion in rural area. Spain is a strong catholic country, and church is a strong part of a rural community. The social integration of new immigrant groups (mainly from poor countries) is an important element of social cohesion. The village pub is identified as key to rural cohesion. Projects in this area are needed to involve possible actors in activities and systems to help manage the social issues related to interrelation. A more active, cultural participation is needed in Spain rural area (Gonzales, 2008). Existing local library may increase the social cohesion status.

Benefits vs risks

This pillar will explain the expected benefits of a desired outcome, Camelina production, versus associated risk, owing to this feedstock accommodation in Spanish rural area. Can someone invest responsible in biofuels? Is a green investment, like Camelina feedstock risky for the Spain rural communities? An analysis of benefits vs risk will answer to the most important part of SEIA.

Important part of this analysis will refer to investigating if Camelina, a second-generation feedstock can be grown or produced without negatively impacting food supplies, water or land use.

Quality of life: *education*, *environment, health*

Quality of life (QoL) is the general well-being of individuals and societies, illustrated by a wide range of contexts, including education, healthcare, politics and employment.

Quality of life should not be confused with the notion of standard living, which is founded primarily on revenue or income. SEIA for Spain considers the features of education and health by recording statistical and qualitative data related to the status of these sectors: medical - GP, hospital, nursery, vet, police station, and library.

Environmental aspects are indirectly linked to air quality due to increased traffic, based on infrastructure development. Facilities associated to waste management are also recorded.

B6. Discussion

SEIA framework will be analysed and assessed from two perspectives: social aspects and economic impact.

B6.1. Social Impact Analysis

B6.1.1. Local Community Social Analysis – Three Levels of Involvement

In assessing local community social aspects, there are three levels of evaluation: impact (or influence) on workforce, on landowners/farmers, and the impact on Local Authorities / Local Communities. If authorities will not engage in SEIA exercise, community members may be interviewed regarding the perceived needs for development in their local area. The economic impact evaluation, as well as the risk management & risk mitigation need to be performed when available data on selected community are gathered and structured. That is why, after designing a SEIA framework, next step is data gathering, based on qualitative and qualitative approach.

A field questionnaire and interviews with farmers will deliver the needed data for a successful SEIA implementation.

However, a basic survey on selected community is needed before designing a SEIA framework. These data will help the researcher think of a first approach to SEIA structure and pillars.

B6.1.2. Impact on workforce

The available workforce in the selected Spain case-studies could not be clearly identified, due to the fact that the selected villages were indicated by CCE and the farmers involved were not clearly linked to community life of those villages. An illustrative case is Minaya, where the vice-Mayor , accepted to be interviewed. The outcome revealed a lack of communication between the farmer and local authorities, since the vice-Mayor did not even know about Camelina crops in his village.

It is expected, though, that Camelina production will bring benefits to local community, as any other crop in the region.

By offering more job chances, Camelina feedstock will act as a promoter on local community , being also an mechanism for local economy expansion.

The availability of local and skilled workforce and their willingness to take the jobs related to Camelina production is keystone. Even a semi-skilled worker could consider engaging in Camelina production, as basic knowledge needed is of a usual farmer or agronomist.

To get a better understanding of the local availability of (semi)-skilled workforce and their willingness to work on Camelina farming, the researcher designed different questions for Farmers_F (25 questions in total) and for Workforce_W (9) – illustrated in SEIA Questionnaire – Annex 2.

Below, some illustrative questions related to impact on workforce:

Farmers/landowners questionnaire:

> ***F2.*** *Para el año 2014, ¿el cultivo de Camelina ocupará la misma superficie, mayor superficie o menor superficie?[**For 2014, the Camelina crop will be on the same area, bigger area, smaller area?]***
>
> ***F8****.Cuantos empleados utiliza al año para el cultivo de Camelina?*

[How many FTE [full time employee) employees do you use over the year for Camelina crop?]

F9. *Le resulta fácil encontrar empleados cualificados cuando lo necesita?*

(How easy is to find skilled employees when needed?)

F11. *Tiene algún programa de formación en el puesto de trabajo para sus empleados?*

(Do you have any on-the-job training programmes for your employees?)

F15. *Existe alguna iniciativa local para apoyar a las empresas agrícolas?*

(Are there any local initiatives to support local agricultural companies?)

F21. *Está utilizando contratistas locales o nacionales?*

(Are you using local and/or national contractors?)

Workforce questions helping assess the impact on workforce:

W2. *Está contratado a tiempo parcial o a tiempo completo?*

(Are you employed part-time or full-time?)

W4. *Por favor, facilite detalles de su jornada de trabajo – qué realiza, que podría hacerse mejor…?*

(Please provide details about your working day – what are you doing, what could be done better, etc?)

W6*. Si surgiera la oportunidad, estaría interesado en trabajar en el futuro en el cultivo de Camelina?* ***(Having the opportunity, would you be interested in future work on Camelina crop?)***

Camelina production on workforce is related mainly to social aspects, jobs creation in the local area.

B6.1.3. The impact on Farmers/Landowners

The farmers are the main important stakeholder in Camelina production and its associated value/supply chain. In Spain, most of the selected farmers were also landowners, so their motivation of being involved in SEIA exercise is directly connected to the new crop, Camelina and its associated benefits.

Camelina crop is an attractive crop as it did not require too much costly input, as explained previously, at 2.2.12 (Camelina crop advantages). This feedstock can be worked with low specialisation agricultural mechanization and has a low lifespan, around 90 days, making it very interesting for crop rotation. Spain does not have polluted land, so the selected trials were involved in rotational crop. It is expected that Camelina crop, used as a rotational crop, will bring a lot of benefits to farmers and to land as well, improving yield on the land: wheat-camelina-wheat will increase wheat productivity up to 26% (Anibal, CCE).

Farmers/Landowners motivation in Camelina production is strong and different from workforce's. Their commitment can be translated in real economic interests, which will cover the economic pillars of SEIA

To recognise Farmers' incentive and commitment to Camelina feedstock production, specific questions have been designed (see Case-Study B Annex 1 &): the questions are addressed to Farmers/Landowners and Local Authorities/Members of Local Community/NGOs.

Questionnaire:

F1. *Desde cuándo cultiva Camelina?* ***(Since when do you plant Camelina?)***

F2. Para el año 2014, ¿el cultivo de Camelina ocupará la misma superficie, mayor superficie o menor superficie?**(For 2014, the Camelina crop will be on the same area, bigger area, smaller area?)**

F4. *Tiene otros cultivos?****(Do you have other crops?)***

F5. *Qué porcentaje de su terreno agrícola está destinado al cultivo de Camelina?*

(What percentage of your agricultural land is dedicated to Camelina crops?)

F6. *Camelina es un cultivo en rotación, o es el cultivo principal?*

(Is Camelina a rotation crop or the main one?)

F12. *Considera que el cultivo de Camelina es beneficioso para el desarrollo agrícola de su zona?* ***(Do you consider Camelina crops as beneficial for your area agricultural development?)***

A2. *Considera que el cultivo de Camelina es o puede ser beneficioso para el desarrollo agrícola de su zona?****(Do you consider Camelina crops as beneficial for your area agricultural development?)***

A5. *Existe alguna iniciativa local para apoyar a las empresas agrícolas* ***(Are there any local initiatives to support local agricultural companies?)***

B6.1.4. The impact on Local Community/Local Authorities/NGOs

The local authorities, a secondary stakeholder to Camelina production may have a crucial influence in Camelian feedstock development, considering Spain rural areas. They can also encourage the entire Camelina value chain, if they discover benefits for local community.

This statement is true for Romania, but for Spain it may be irrelevant, since local authorities did not know about Camelina production (Minaya) or were not interested at all in any possible Camelina investment in their village (El Pozo de Guadalajara). However, while this account is relevant for specific villages, at national level one can record support for Camelina from Spain authorities, mostly at national level (see above: 2.2.13 *Support for Camelina by Spanish Authorities*).

A back up plan to Spanish local authorities' lack of involvement in SEIA exercise is community consultation, a process that may also help understand local needs and perspectives. If this *community representative stakeholder* identifies an economic potential derived from Camelina, it can turn into a powerful and important local stakeholder. This economic aspect can be translated through opportunities for employment (thus releasing funds from local budgets allocated for social assistance), as well as occasions for economy diversification.

How can local authority turn into an important actor in Camelina production:

- by offering more chances for employment, the Camelina production will act as a promoter of local community life;

- the Camelina crops could help local authorities put the uncultivated land to better use.

- local economy will befit in terms of increased tax collected;

- it will lower social costs, due to unemployment decreased rate;

- it will contribute to local economy diversification;

- local services will be used more, which leads to an indirect effect;

- it may contribute to social cohesion and slow migration from rural to urban areas.

A part of the questions designed for local authority involvement (to help and support camelina feedstock) are illustrated below (Annex 1/part 2):

A1. *Tiene conocimiento de cultivos de Camelina cerca de su localidad?* ***(Are you aware about Camelina crops near your town/village)***

A3. *En qué aspectos considera que el cultivo de Camelina puede impactar positivamente y aportar más beneficios a la comunidad local?* ***(In which area do you think Camelina crops will bring the most benefits and positive impact for local community?);***

- Improve local living conditions
- Provide local employment
- Improve local infrastructure development
- Improve local agricultural land utilisation
- Increase local economy diversification
- Reverse rural/local depopulation

A4. ¿Cuál de los proyectos de desarrollo local podría beneficiarse más de los ingresos generados por los cultivos de Camelina en su presupuesto? **(Which of the local development projects could benefit the most from Camelina crop-generated income for your local budget?**):

- Building/improving schools
- Building/improving local roads
- Improving local health services supply

A5/F15. ¿ Existe alguna iniciativa local para apoyar a las empresas agrícolas **(Are there any local initiatives to support local agricultural companies?)**

B6.1.5. Risk Management & Risk Mitigation

The initial designed SEIA framework has considered risk management and mitigation as the core of the entire assessment. It is important to identify possible risk associated with Camelina production, as mitigation plans need to be developed: workforce migration, ageing population, lack of available land, etc.

To understand possible risks associated to Camelina production, pertinent questions are presented in Annex 1, some being illustrated below:

A6/F16. Cuáles son los riesgos principales para el aumento futuro del cultivo de Camelina? **(What are the main risks for future increasing in Camelina crops?):**

- local aging local population
- urban migration
- Low income for agricultural workers
- Land availability
- Low agricultural mechanization level.

F9. *Le resulta fácil encontrar empleados cualificados cuando lo necesita?****(How easy is to find skilled employees when needed?)***

F19. *Qué impuestos locales está abonando por sus trabajadores de Camelina?* ***(What local taxes are you paying for Camelina employees?)***

W3. *Qué porcentaje de los ingresos de su unidad familiar proviene del trabajo agrícola?****(What percentage of your family income is derived from agriculture work?)***

B6.2. Economic Impact Assessment

In order to build a comprehensive economic assessment of the impact of Camelina production, fourth pillars were considered to be assessed, as illustrated below:

- Outgoings/cost paid to the public sector and/or local authorities : license fees, rental fees, concession fees, r profit taxes, registration fees, stamp duties, environmental levies;

- Overall employment: direct, indirect and induced employment.

The case-study selected involved only direct employment, farmers selected by CCE to take part in this exercise.

- Evaluate induced impact: Camelina, when a rotational crop (particularly after wheat), is increasing wheat productivity to up to 25%, this crop could become the crop-of-choice for very large land areas around the country;

- Contribution to the local / regional economy.

Unfortunately, there were not enough data to illustrate Camelina production contribution to local economy, at Spanish village level. Better said, not enough data to develop a business model, but enough data to answer to task requirements: develop a SEIA methodology an design a SEIA framework.

B6.3. SEIA Field Questionnaire

The SEIA Questionnaire has been designed in order to collect primary and secondary data.

It is worth mentioning that SEIA questionnaire for Spain was similar to the one conducted in Romania, but refined to local and cultural specificities (mainly via translation).

Primary data – data that is usually publicly available and could be easily obtained from local authorities and/or from national authorities (Census, 2011); Demographic Census Project 2011, Instituto Nacional de Estadistica).

Secondary data – data that could be obtained by using questionnaire and interviewing local people involved in the Camelina production.

The SEIA Questionnaire had 4 parts:

Part 1 – Primary data – local land involved; local people; households; infrastructure; local economy;

Part 2 – Secondary data – Local Authorities – with 8 questions (open-end and multiple-choices);

Part 3 – Secondary data – Farmers – with 25 questions (open-end and multiple-choices);

Part 4 – Secondary data – Workforce – with 9 questions (open-end and multiple-choices).

After collecting primary and secondary data, a statistical analysis needs to be performed.

The main purpose of this analysis is to support the understanding of impacts, benefits & associated risks regarding Camelina production in Spain.

B6.4. SEIA Field Data Analysis

Camelina Company Espana (CCE), our ITAKA partner, provided data regarding the farmers & landowners involved in SEIA exercise, and assisted us during the first interview. MMU researcher organised the data analysis and interpretation. Thus, primary and secondary data were gathered, but some of them were scarce, for some reasons that will be explained during the analysis.

General consideration

The socio-economic impact assessment starts with a framework and field data. The kind of data needed to be completed after talking to farmers/landowners, workforce and local authorities, are exposed in Annex 1 (Case Study B), as questionnaire. Also, some interviews needed to take place with main stakeholders (i.e. farmers & local authorities), from each of the selected villages. Some preliminary data needed to be collected as part of field data.

Field data

The designed questionnaire (Annex 1) could be completed in less than half an hour. Data is relevant for each community and the scope was to involve all relevant stakeholders from selected case-study. However, the results obtained are far beyond the expectation, as some participants found questionnaire too long and for others, the engagement was at a minimal level, answering only to basic questions: their interest in Camelina and willingness to get engage the second year in the cultivation of this feedstock.

Indeed, the designed sample questionnaire intended to be large enough to capture local specificities. Only for Minaya, participation recorded the entire range of stakeholders.

The questionnaire aimed at delivering statistical significant sample at regional and national level, but this aim was not achieved. Significant data related to the economic impact could not be found, so the analysis of this aspect of SEIA is lacking. The backup plan would be to engage the members of local communities (i.e. representatives of local services and small scale economies), so, in the end, data gathered could be enriched. Also, other sources for statistical data related to selected villages need to be discovered, as, although, there is a link related to a selected village, information displayed is missing: i.e. from Wikipedia: Minaya is a municipality in Albacete, Castile-la Mancha, Spain. Additional sources were supposed to be looked into at this point, but the researcher considered the initial information is enough to design a SEIA framework.

At the same time, the questionnaire was designed to be small enough to keep the research cost at low level. But this created difficulties in finding some primary relevant data. It seemed Spanish farmers/local authorities are tired with surveys.

The most important representative of the stakeholder community was considered the landowner/farmer. He is supposed to be interested in diversifying the feedstock, so investing in Camelina may be a good, promising solution.

A targeted stakeholder was local authority, since their engagement with local community is over a couple of years.

Regrettably, only Minaya was engaged in a full data collection exercise, as illustrated in the table below:

Table B.1. Information on interviews samples

Villages	Farmers/ Landowners	Local workforce	Local Authorities	Local Community members	Total Interviews
Minaya Albacete	1	1	1	1	4
El Pozo de Guadalajara	2	1	-	-	3
Chiloeches	1	1	-	-	2
CCE	-	-	-	1	1
				Total interviews	10

In general terms, and if the questionnaire is intended to study the impact of growing Camelina in Spain, the researcher did not see the usefulness of the questions related to taxes, unless a specific objective was chased. Experience say farmers are very receptive to these issues.

As a suggestion, we would propose (for future research) to send the questionnaire to farmer organizations (UPA, COAG, ASAJA, Agrifood Cooperatives) rather than local authorities (perhaps in a second phase if specific matters of their concern are needed).

An issue of concern was existing matters of agricultural nature that could be in favour, or limit the introducing of Camelina crops in Spain, such as:

- Technical elements: specific knowledge required, equipment availability, etc.

- Economic elements: expected benefits, institutional 'interests' related to alternative energy source, etc.

- Obstacles: soil type, lack of suitable machinery, required investment, etc.

The above mentioned aspects were clarified through the interviews and the outcome was positive: Camelina has potential to grow in Spain and there is interest in cultivating this feedstock. These results were further discussed with our colleagues from CCE, who showed the support for this crop from Spanish authorities (see. 2.3. Support for Camelina from Spanish Authorities).

The expected socio-economic benefits by farmers, associated with the introduction of Camelina at a larger scale are related to employment, rural development and business opportunities through diversification of local economy. Spanish farmers expect to gain a revenue similar to barley (Fig. 20, average of 363 €/ha).

Interviews & interviewees

The designed interviews are divided in 3 parts, according to targeted stakeholder:

- Local Authority/NGO/community Representative;
- Farmer/Landowner;
- Workforce.

The interview technique will help researcher analyse some of stakeholders' opinion regarding Camelina, independently, but also at intra-community level.

The targeted number of people taking part in the interview exercise should be minimum 4 per village, the ideal number would be 8, with 2 persons per category of stakeholder.

Field data analysis

The analysis of field data regarding economic aspect was conducted only for 1 case-study, Minaya. The lack of involvement of local authorities/community members from El Pozo de Guadalajara and Chiloeches made the set of data incomplete, which lead to a broad analysis in terms of economic impact. However, all three case-studies were involved in the assessment, described above. The respondent rate was 80% for farmers, 60% for workforce and 20% from local authorities.

Community Development

Population and workforce expansion

The population is expanding and aging.

Table B.2. Workforce overview reported to population; case-study Minaya

Population and workforce	**Minaya Albacete**
Total Population	1637
Women	799
Men	838
Under 20	228
Between 21-60	885
Over 60	524
Percentage of Over 60 out of all population	32.01**%**
Employees	728
Entrepreneurs	8
Employed by SOE	214
% of Employees with SOE (State-Owned Enterprise)	**29.38 %**
Employed by POE (Privately-Owned Enterprise)	385
% of employees with POE	**23.52%**
Work Force Occupation (Employment)	36.59%
Unemployment Last 3mths	n/a
Unemployment Last 12mths	186
% of Total Unemployment	11.36%
Average Monthly Income per Person Last 3mths (After tax, €)	€ 780
Average Gross Yearly Income per Person Last 3mths	€10,200
Average Monthly Income per Person Last 12mths (After tax,€)	€ 820
Average Gross Yearly Income per Person Last 12mths	€ 9,840

Note: data on Minaya were collected on 24th April 2014, during the interview with a member from Minaya Local Authority.

The population and workforce information for a community is a strong indicator in understanding several aspects:

1. The unemployment rate gives indication of existing local workforce willing to work. Camelina production developed locally means job opportunities, with a positive impact of community as a whole.
2. The impact on local economy is perceived more like an opportunity for economic diversification.

Households

The data on Household profile gives information on areas where the Local Authority should focus their extra budget obtained from Camelina production. Looking at Minaya status, very little investment is needed in households, but additional money may buy extra services, increase quality of life, etc. so this is an additional reason to existing local workforce willingness to find a job. Camelina feedstock production may provide this opportunity.

Table B.3. Households overview

Households	**Minaya Albacete**
Households	1147
Houses	1020
Apartments	127
Own a Car	-
% of Households Owning a Car	**-**
House Appliances (TV & Washing Machine & Gas/Electric Oven)	1106
% of Households Owning Three House Appliances (TV & Washing Machine & Gas/Electric Oven)	**96.43%**
Access Water Supply	1147
% of Households with Access to Water Supply	**100%**
Access Sewage Supply	1147
% of Households with Access to Sewage Supply	**100%**
Access Gas/Heating Supply	1050
% of Households with Access to Gas/Heating Supply	91.54%

Infrastructure

Projects related to infrastructure development in Minaya relate mainly to soft infrastructure, health, public safety, emergency services and education. Investment in Camelina will bring more money to local budget, helping the implementation of these projects, contributing to a low workforce mobility.

Improving local health infrastructure and its facilities and attracting more qualified medical personnel, may be also a project related to infrastructure.

Improving local sewage/waste services supply will lead to better quality of life and an environmental friendly community.

B6.5. Camelina Production Impacts

The Positive Impacts

The positive impact of Camelina feedstock development will be mostly visible in improving living conditions through jobs creation, diversifying local economy, improving local infrastructure (hard and soft), associated services (water, gas, waste management, etc.

Improving the utilisation of local agricultural land and crops diversification will lead to diversification of labour skills and will bring additional workforce in that rural community.

The analyses of data gathered shows the need to better disseminate the positive aspects of Camelina feedstock to Spanish stakeholders, particularly those from rural areas.

Negative impact

Data analysis shows few possible negative impacts, mostly associated to poor farming, congestion in rural areas, due to traffic, impact of air quality.

B6.6. Potential Risks

Camelina feedstock production does not have more risks than a normal feedstock. Ageing population is an essential risk at community level. Lack of available local workforce can also be considered a risk, particularly having in mind a possible migration of local workforce from villages to cities, for a secure and better paid job.

Lack of available land dedicated to Camelina may also be perceived as a risk, but a minor one, since Camelina can grow in a rotational system and in almost all type of soil.

A potential risk, however, may come from lack of support for Camelina growers from industry and local/national authority.

B6.7. Risk Management & Risk Mitigation

As explained above, the associated risks to Camelina production are small, but mitigation measures need, however, to be put in place.

An important aspect is related to stakeholders' interaction, and their ability to underline local constraints. Therefore, the mitigation plan needs to be developed based on knowing very well the reality of chosen rural area, identifying the main stakeholders and assessing the implication of the entire value chain, not only feedstock impact generation.

Sustainability aspects

Sustainability aspects and compliance with RSB principles is a 'must' for Camelina production in Spain. The selected case-studies are involved in doing business with CCE, so no additional enquiries were necessary.

However, from a risk management point of view, the Camelina production compliance with RSB Principles is very significant as it removes many of, if not all, structural, legal and regulatory risks

related to this analysis. Furthermore, it allows us to concentrate on the local-specific risks and the local stakeholders interactions.

Sustainability is an important aspect for crops, particularly in Europe. Camelina ranks higher than many other crops developing oilseed that could be used to produce biofuel, in a number of sustainability categories:

- It isn't a traditional food crop, this aspect helping to avoid the food versus fuel debate.

- It is drought tolerant and has natural resistance to several diseases, which reduces the need for insecticides and fungicides.

- It requires less nitrogen (and other fertilizers) and less water than other brassica crops.

Farmers & landowners involved in this trial possess the required knowledge to define sustainability of Camelina production.

B6.8. Local stakeholders' interactions

An important aspect regarding the socio-economic impact of any development is linked to stake-holders' interaction, their attitudes and behaviour. Stakeholders' interface in the Spain SEIA case-study is difficult to be assessed, due to little data on their common opinions. We can analyse their views on separate basis, but for a real interaction, a possible 'on farm participatory' research may help.

Thus, it is important to find the fine balance between local stakeholders - Local Authorities, Farmers/Landowners, and Local Workforce. It is also significant to devote attention to the potential impacts of development on vulnerable segments of the human population. This aspect was not considered during data collection, but a vulnerable segment in rural community may be considered old population and un-skilled residents.

A good interaction between stakeholders involved in Camelina production would be their common interest in community development:

- to identify opportunities and benefits for all parties involved;
- to involve existing local workforce in Camelina production initiatives;
- to meet the expectations of local workforce (i.e. salary), thus avoiding migration from village to town;
- to get involved in community activities and interact regarding proposed projects, new services, training opportunities, etc..

What is expected from Spanish Local Authorities is more engagement in programmes related to new crops, like Camelina, as they should be responsible to develop local skills, by providing support for unemployed.

B6.9. Lesson learned and limits of present study

The analysis of data collected show limitation in designing the SEIA Framework. Several attempts were taken in designing SEIA pillars, but based on existing data, some aspects related to economic assessment that could lead to impact evaluation were disregarded. Here, tax policy, royalties, profits, can be revealed. They are not mentioned in Fig 32 on SEIA for Spain, but need to be considered in future, if this Framework will be developed and considered for implementation and a business model developed.

Also, the Questionnaire should be shorter, better focused, 'approachable', and better adjusted to participant background.

The involvement of an expert in social sciences will help design better social survey material.

The aim of the social survey was to engage with stakeholders' and assess their interest in Camelina, bearing in mind its importance for biofuel production. It wold be useful to d share with local stakeholders the information regarding Camelina meal and crude glycerine (Moriel, *et al*., 2011), known to be suitable replacements for conventional corn-soybean meal supplements. This will add to motivation for investment in Camelina.

B7. Conclusions & Follow up

SEIA for Spain had a more general approach, weighing both socio and economic factors equally. It shows who should be involved in the process, what data are needed, how important existing regulations are, the link between benefits vs risks and community main challenges: rural social-cohesion, soft and hard infrastructure, etc. This framework identifies environment as part of quality of life, together with benefits related to education and health

The results show a positive impact on socio-economics. However, how true are these results, knowing that SEIA for biofuel is at the beginning as research and this study had a low input in terms of data collection and stakeholders' involvement?

The Farmers/Landowners will be the ones that should make the most of the investment, but research needs to go on, to clarify several unknowns. The present SEIA exercise was isolated, related to ITAKA project which has an end. The existence of a Camelina value chain, with firm contracts in place will better motivate the involved stakeholders and will inspire local authorities to design programmes on developing skills for agriculture labour.

In conclusion, it is important to underline the need for additional data if SEIA Framework is implemented. Also extra data from primary sources will be necessary to adjust and implement the designed Framework.

Recommendation for further research would be the implementation of the designed Framework at a selected village, but also at regional and country level. A permanent refinement of SEIA Framework will be needed. This Framework may be adopted to accommodate different circumstances.

SEIA is not a survey, but a research which is linked to local and cultural aspects, and needs to be tackled responsible from the beginning.

Research on SEIA needs to be developed further, as this type of exploration is new, but essential in assessing farmers' implication in biofuel production.

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4. Results

Following collection of primary and secondary data, a statistical analysis was carried out to provide an understanding of, and mapping of the positive social and economic impacts and benefits of Camelina cultivation, as well as to identify associated risks that could be later mitigated.

The analysis revealed different impacts depending on type of stakeholder involved in Camelina feedstock production:

1. impacts upon landowners and farmers;
2. impacts upon workforce;
3. impacts upon local authorities / local communities /NGOs.

Impacts (social, economic and combined) were in some cases perceived and in others, deduced from data analysis.

Main findings of the survey: farmers (respondent ratio 80% in Spain & 100% in Romania) are interested in Camelina as a rotational crop, beneficial in rotation to wheat. Workers (respondent ratio 60% in Spain, 90% in Romania) have a neutral approach: any type of crop seems to be the same.

Local Authorities seem to be less interested in Spain than in Romania (strongly motivated to bring business in the area), but it is hard to draw a statement of Spanish lack of involvement, due to inconclusive data.

The assessment of the socio-economic impact perception reveals that the social aspect is perceived more than the economic one: Camelina has the potential for creating jobs in rural areas, may contribute to social cohesion, etc. It is the economic benefits which remain unknown to all stake- holders (general observation).

What are the positive impacts?

The Social Dimension

The results of the study demonstrate that the social benefits of biofuel production (i.e. Camelina feedstock) can be broken down into those relating to an increased employment and standard of living for the local workforce and those that contribute to increased social cohesion and stability for rural communities. The former being of greater significance in Romania and the latter aspect being more important in Spain, where the local workforce comprised a number of different nationalities, some of them being seasonal workers[23].

Macroeconomic Effects

The use of indigenous resources implies that much of the expenditure on energy provision is retained locally and is re-circulated within the local/regional economy giving rise to the development of secondary industries and associated services. The increased use of biofuels, which exhibits both a broad geographical distribution, and diversity of feedstock, could secure long-run access to energy supplies at relatively constant costs for the foreseeable future. Camelina can

[23] workers helping with several works during the summer time, including cereals; during autumn they go back to their countries

be used for the transport sector in general, for cosmetics (oil) and as animal feed (Camelina cake). If Camelina is grown on contaminated land, a special assessment needs to be conducted. Research on selected sites from Romania shows heavy metals do not get into oil, but some of them do get into Camelina cake, invalidating its use for animal feed. Nevertheless, the type of contaminated site should be previously researched, to evaluate how the oil and cake will be used. Currently (2014), there are 28 Romanian farmers involved in ITAKA, most of them using Camelina as rotational crop.

Supply Side Effects

Supply side effects are likely to differ in kind and will depend upon the development (i.e. especially in Romania), but generally such 'economies of speculation' relate to changes and improvements in local/regional productivity, enhanced competitiveness, as well as any investment in resources to accommodate any inward migration that may result from the development.

What are the negative impacts?

According to the results of this study, and mainly from perceptions assessed via interviews, the negative impacts of Camelina feedstock production are anticipated to include: an adverse impact upon existing farming activities, biodiversity losses and congestion on local roads and in communities due to increased traffic. However, these views were countered by respondents who saw improvements in agricultural output, particularly in Romania.

In addition, given that proposals for development of a Camelina value chain need to comply with sustainability criteria detailed in the RSB Principles, these negative aspects are likely to be avoided, diminished or mitigated. For example:

- Principle 6 of the RSB states that: *Biofuel operations shall ensure the human right to adequate food and improve food security in food insecure regions; it* has Criterion 6a which states that: *Biofuel operations shall assess risks to food security in the region and locality and shall mitigate any negative impacts that result from biofuel operations.*
- Principle 7 states: *Biofuel operations shall avoid negative impacts on biodiversity, ecosystems, and conservation values.*

Sustainable rural development has a basic rule, which says that an advantageous economic development needs to be based on sustainable principles regarding all natural components: air, water, soil, biodiversity, forests and underground resources. These issues play an important role in community life and representatives of rural communities from both countries who were interviewed for this study expressed strong conservation values and beliefs.

The above mentioned impacts seem to be felt mostly in the economic areas, related to job creation and employment opportunities, as well as opportunities for economy diversification.

Furthermore, at each community level, the positive impacts and benefits, on one hand, and the uncertainties on the other, could now be put together (due to SEIA process) for a better understanding of risk mitigation areas.

Expected impacts on main population groupings

The Impact on Workforce

For rural areas, Camelina production has the potential to provide significant (direct and indirect) employment opportunities for local people, both those looking for work and those looking for employment improvement.

By increasing the area cultivated, Camelina feedstock will help reduce unemployment in the area, freeing at the same time funds from local budgets which otherwise will be allocated for social assistance. This aspect is particularly important in Romania. For Spain, it was identified that funds released in this way could be redirected to local infrastructure development projects and diversifying services, thereby creating additional employment.

The Impact on Farmers/Landowners

The Camelina crop is an attractive feedstock as it does not require significant or costly agricultural input (e.g. fertilizers) and requires low specialisation agricultural machinery. Given the low agricultural mechanization level in Romania, this crop will be attractive not only for big farmers but also for small local agricultural companies and small family-owned businesses.

Camelina crop has a short growing season – around 85-100 days – making it very attractive for crop rotation. The rotation process brings benefits, not only in terms of increased profitability by improving the yield on the land, but also by permitting two crops on same land within a year depending on the climatic conditions. Spain used only a crop rotational process with Camelina grown in what would otherwise be a fallow period, while Romania used both crop rotation and 2 years in row Camelina crop on contaminated land.

The impact on Local Community/Local Authorities

By promoting and helping expand Camelina crop production, the local economy will benefit in terms of new jobs, an increase in local tax collected, economic diversification (as farmers source materials and services locally) and the development of better services, as people have more to spend locally. Local Authorities see additional benefits in promoting rural development and reducing urban migration. Strengthening social-cohesion and local employment is seen as a major benefit, particularly for Romania which is suffering not only from the workforce moving from rural to urban areas, but also from their country to Western Europe in search for job opportunities and better quality of life. Camelina feedstock production can also lower social costs due to job opportunities for people on social support.

Differences between the findings in Romania and Spain

The main outcome of the Baseline Study showed that local socio-economic impacts are diverse and will differ according to such factors as the nature of local economic organization, social profiles, local culture and aspirations. Furthermore, consideration should be given to the duration of the impacts, and only then can a tentative evaluation of the wider effects pertaining to some, or all, of the other factors be attempted.

For both countries the economic factor, showing development, seemed to be more important than the social aspects. But the need for more jobs, creating an alternative for local economy was more evident in Romania than in Spain. All Romanian stakeholders involved in the SEIA exercise wanted to contribute to the study, most of them hoping that Camelina feedstock production would start in their region soon.

Romania

An important secondary benefit generated by this feedstock is related to its use on abandoned and contaminated soil. Camelina cultivation may also improve soil quality and productivity as factor of soil remediation, this constituting the second benefit.

The potential for cultivation on contaminated and polluted soil could be one of the most important induced positive impacts of Camelina feedstock production. Given the current situation in Romania, where around 900,000 ha of land are contaminated and polluted, and taking into account recent research (Young, R. and M. Potschin, 2010) showing a high resilience of the plant to these soils, Camelina could become the crop-of-choice for very large land areas around the country (see deliverable D 5.7).

Furthermore, there are around 960,000 ha of uncultivated agricultural grade land in Romania which when coupled with the relative ease of farming may well suggest that Camelina could become a catalyst for the owners of this land to start bringing it back into useful production. However, the barriers currently preventing this surface being cultivated need to be assessed, not being such assessment part of the present study.

There is considerable potential to undertake a more comprehensive assessment of the potential economic benefits of extensive Camelina cultivation across Romania, using data on local and national taxation, local economic development, local employment and job creation potential. This is outside the scope of the immediate ITAKA task, but the tool developed in this research could be further refines to facilitate an economic study.

Spain

The results presented from Spain do not provide such a comparable picture because of the quantity and quality of data collected, the reasons for this being discussed elsewhere in this report. Nevertheless, results obtained apparently show that the social and economic situation in Spain is very different from Romania in respect of the potential for Camelina feedstock production. Local Authorities representative in the study area (represented by Minaya), expressed an interest in Camelina as an opportunity for economic diversification, social cohesion, opportunity to reduce migration. Unemployment did not appear to be a significant problem in rural areas investigated during the Baseline Study. The farmers interviewed in Spain, however, mentioned the financial benefits of an increase of cereal production if cultivated after Camelina.

Synthesis

One important requirement when assessing socio-economic benefits is to find the appropriate balance between the needs and aspirations of different stakeholders (local authorities, farmers and landowners, the local workforce and NGOs), taking account of their capabilities and incentives, the potential benefits that accrue to each, and the potential risks of investing in Camelina feedstock production.

It is important to reiterate that the SEIA conducted in Romania and Spain was an initial exercise, the aim being to design a Framework and explain how it works, so the results obtained during the application of the SEIA framework tested need to be understood as preliminary. This Framework would now need to be refined with additional data and record perceptions and comments received from stakeholders involved.

The results from both countries indicate perceptions of a net positive socio-economic impact, however further investigation would be required to fully confirm this given that this approach to SEIA is in its infancy and from the failures of the methodology observed during its application in Spain.

Local authorities' representatives were very keen to see development of Camelina production, to diversify their local economy, increase income from taxation, reduce social spending, and increase the job offerings and skills development for the local workforce. Farmers and landowners while expressing some reservations, also saw potential benefits, however it is noteworthy that they would have to make the most of the investment required, and they need to nurture a good business relationship with the local authorities for the benefit of business development. Beside the financial investment, the farmers and landowners would also need to secure the necessary workforce, promote local skills development and provide adequate incentives to encourage people to stay within the (ageing) community.

Engagement of the local workforce is seen to be a key to sustaining rural communities, both in terms of their willingness to develop the necessary skills to support Camelina feedstock production, and in terms of their interest in remaining in these local communities. In this regard, local authorities, farmers and land owners need to work together to support local workforce development programmes. In Romania, local authorities (LA) representatives from Axente Sever, Copsa Mica and Rovinari were very interested in developing their local economy, seeing Camelina production is a good option. In short: there is a strong local will to engage (mainly for economic reasons), but this needs to be coordinated with existing local knowledge for better results. Local institute (FUNDULEA) has a Romanian variety of Camelina (Camelia) which needs to be tested accordingly, on large surfaces; so far, only CCE brought seeds to Romania, which are reportedly from US. However, in Spain the methodology failed to engage local authorities (from the targeted sampled, only Minaya authorities accepted an invitation to get involved in the SEIA exercise). This proves the methodology needs to be tested for further samples, trials, including using other feedstock. Considering that only in Spain did the project actually succeeded and produced Camelina oil, the less engagement of Spanish local authorities requests further research. This facet proves SEIA particular performance: it needs to be refined continue with additional data.

In Table 1, a synthesis is presented, of the main findings from the studies undertaken in Romania and Spain. This Table illustrates also the structure of the Questionnaire used to gather secondary data from local authorities, farmers/landowners, and workforce. It is important to mention that, as indicated before, the results for Spain are limited due to the interview engagements failure.

Table 41. Main findings related to stakeholders' responses in Romania and Spain

Question	**Stakeholder**	**Romania** synthesis responses	**Spain** synthesis responses
Are you aware about Camelina crops near your town/village	Local Authority (LA)	Yes! Everybody is aware	*No idea what Camelina is*/Minaya, the only LA involved
Do you consider Camelina crops as beneficial for your area agricultural development?	LA	Yes	Yes
In which area do you think Camelina crops will bring the most benefits and positive impact for local community: -Improve local living conditions;	LA	3 most important 1)Improve local agricultural land utilisation 2) Provide local employment 3) Reverse rural/local	3 most important 1) Increase local economy 2) Improve local living conditions 3) Provide local employment

-Increase local economy; -Provide local employment; -Improve local infrastructure development; -Improve local agricultural land utilisation; -Increase local economy diversification; -Reverse rural/local depopulation Obs. Please rate each of them from 1(low) to 5 (high)	…… ……. Farmers/Landowners F/L	depopulation …… 1) Improve local agricultural land utilisation 2) Provide local employment 3) Improve local living conditions	…… …….. 1) Improve local agricultural land utilisation 2) Improve local living conditions 3) Provde local employment
How easy is to find skilled employees when needed?	F/L	Easy; Camelina is like any other cereals, so unskilled may be trained by us, farmers	Programmes for developing skills may be useful; for workforce from other countries mainly
For 2014, the Camelina crop will be on the same area, bigger area, smaller area?	F/L	80% bigger area	60% bigger area
What are the main risks for future increasing in Camelina crops? -Aging local population -Urban migration -Low income for agricultural workers -Land availability -Low agricultural mechanization level	F/L	2 most important -Aging local population -Low income for agricultural workers	2 most important -Low income for agricultural workers -urban migration
Which of the local development projects could benefit the most from Camelina crop-generated income for your local budget -Building/improving local roads -Building/improving schools -Improving local health services supply -Improving local heating/cooking gas supply -Improving local running water supply -Improving local sewage/waste services supply	LA	3 most important -Building/improving local roads -Improving local running water supply - Improving local heating/cooking gas supply	3 most important -Improving local health services supply - Improving local sewage/waste services supply - Building/improving schools
What percentage of your household income is derived from agriculture work?	Workforce (WF)	90%	60%

The relevance of these findings

The findings of the Baseline Survey show a clear interest in promoting Camelina production amongst three groups of stakeholders, local authorities, farmers and landowners and the local workforce, in both countries. However, there are several differences between the two countries:

Romanian Stakeholders:

- Are primarily concerned about economic security, so job creation is seen as essential and risks associated to Camelina production are almost ignored. This is reflected in the SEIA report which demonstrates that Romanian respondents identified mitigation options for all identified risks.
- Social aspects are perceived mainly through employment opportunities with job creation being perceived as being directly linked to improved quality of life.
- Agricultural land utilisation was of concern, including contaminated land, however there is recognition of the benefits and opportunities of growing Camelina on poor quality and contaminated lands.
- The ageing population, which will translate in lack of local workforce, was seen as a challenge but the opportunities of creating local employment and therefore reducing rural to urban migration of young people was sees as an opportunity.
- Local authorities welcome Camelina feedstock production, seeing direct benefits in terms of opportunities for improved local infrastructure: roads, water, and sewage.
- The potential workforce needed to support Camelina production is generally local and their current income is mainly from agricultural activities.

Spanish Stakeholders:

- Consider Camelina feedstock production like any other crop.
- Perceive increased quality of life and social aspects associated with changes to crop production as having a higher priority over simple economic development issues.
- Perceive improved services for local people as an important element of economic development arising from increased Camelina feedstock production.
- View greater social cohesion essential for community development, particularly in respect of the fact that increased Camelina production could result in a greater influx of foreign workers[24].
- Local authorities did not seem to be aware of the potential social and economic benefits of increased Camelina feedstock production, but in general terms welcomed any opportunity for economic diversification (Minaya).

It is important to state that the survey was limited to just 4 villages, which is a small number to draw any firm conclusion regarding the involvement of Local Authorities. Because of this we have asked local expert in Camelina (CCE) to illustrate the support (if any) from policy maker or community leaders to Camelina production. The information from CCE on this topic can be found in Annex B. In summary, Camelina is supported by the Spanish Ministry of Agriculture, which issued an authorization to employ broad leaf herbicides, used in Camelina plantations (Sept. 2014), as well as by several regional governments who are partners with CCE in Camelina plantations (Castilla La Mancha, Aragón).

[24] Statement of Vice-Mayor from Minaya: the village does not have enough workers

5. Difficulties and lessons learned

Adaptation of selected mix method approach

While in Romania, this method proved easy to be implemented, in Spain problems with data availability emerged due to failures on the engagement of stakeholders (local authorities and local farmers).

The selected method needed to be adjusted or modified to local situation in some cases. When the targeted local authorities representatives from Spain were not willing to engage in SEIA exercise, back up questions were prepared to engage representatives from the study communities, given that they also have knowledge of existing infrastructure needs, level of education, health services, etc. In this situation, the semi-structured interview proved a better option, the researcher being able to capture the perception of respondent(s) regarding possible interests, advantages or risks associated to Camelina production.

Survey strengths/weakness

The questionnaire was carefully designed to provide specific questions for each stakeholder group (farmers, landowners, workforce, local authorities, NGOs). While responses provided a quantitative estimate of stakeholders' opinions, it proved susceptible to differing interpretation where the specific wording of questions was translated from English to Romanian and Spanish, as the same questionnaire was used in both countries. The survey also provided only a static snapshot of a changing stakeholder opinion, which made it difficult to interpret when analysing SEIA data.

The specific objective of the questionnaire, that influenced its formulation, was to gather information and perceptions regarding developments linked to potential Camelina production. The questions had to identify what was important and special about the community being studied, how the respondents define quality of life (jobs, infrastructure, access to health and education services, socialising, etc.), what economic development meant in rural areas, etc., all of which would likely differ between Spain and Romania.

Questionnaires were backed up by interview, in order to better identify and evaluate development impacts, as transformation can cause changes in several community characteristics including demographics, employment and income, housing, public services, markets, etc.

The strength of the interview is given by the facility to be face-to-face with key individuals or stakeholders, the interviewer anticipating reactions, capturing perceptions, gaining individual support. The main disadvantage is the required time and need for proper interviewing skills.

Basic information on demographics, employment and other socio-economic indicators were provided from census bureau and Office for National Statistics for both countries. Alternative sources (i.e. technical reports, internet) were also used.

Measuring perception about social well-being

SEIA is also important to assess changes in a community's social well-being that results from development. This type of social change is more problematic to quantify than changes in the economic environment, because the assessment relies on the perceptions of residents about the proposed development. This part of survey was better covered through interview, when participants were asked to make explicit their perceptions and attitudes about the anticipated changes in the social environment when Camelina production will be a reality, not a project.

The most challenging part of this task was the collection of socio-economic data, as part of Baseline Survey. Romanian stakeholders engaged positively with the study, providing their unpaid time, both out of curiosity and in the hope of securing investment in Camelina feedstock production at a later stage following completion of the ITAKA project. For the Spanish stakeholders, used to such social surveys, the SEIA exercise did not capture their interest at the level of researcher's expectation and there was some reluctance to engage in the project. So, for Spain this method proved to be weak because the designed questionnaire was excessively long. This statement is based on the Spanish farmers' feedback and the Minaya vice-Mayor comments. Unfortunately, this findings were late in the survey and the researcher did not have time and resources to redesign the questionnaire for Spanish farmers. It is worth mentioning, however, that this aspect did not impact in any way the aim and objectives of this task: develop a SEIA methodology & design a SEIA framework.

Although adequate resources were allocated to collect impact data, the scarcity of this vital information was an unexpected discovery and a major hindrance to delivery of the report. Data fed from Spain was a bit confusing because a number of different information sources were used, i.e. census, national & regional statistics. Therefore additional work was required by the researcher to interpret the data. As a result, the figures could not always be clearly illustrated. Data from Romania was easier to be analysed and interpreted due to the smaller number of data sources.

Gathering information on the development proved to be time consuming and challenging. Collecting data on the fiscal, social and economic resources in the selected communities, required significant time, especially when primary sources were not enough, and secondary data sources proved not to provide the appropriate information.

Though the literature contains clear guidance for the development of an appropriate methodology for socio-economic surveying, there was a need to refine the approach to meet the specific conditions at each location, local cultural issues, data availability and the willingness to engage by stakeholders. In addition, using lessons learnt from the first field season, it was necessary to make further improvement to the research methodology used in the second.

It is recommended (The Economist Intelligence Unit, 2009), when carrying out socio-economic surveys, that contact to be made with people through their natural leaders, but this proved a particular challenge at some locations. Two partners of the ITAKA project, Biotehgen in Romania and CCE in Spain were involved in making liaison with local stakeholders. In Spain CCE chose the farmers and landowners who were already involved with Camelina production, but it was difficult to get those farmers to spend sufficient time to collect the necessary information and refine SEIA Framework. Getting the active involvement of local authorities representatives was very difficult (especially in Spain), it required a lot of time, and in many cases, yielded very poor results.

A further challenge was to obtain some information that was considered commercially confidential (at a corporate or personal level). This may also explain the reticence of some stakeholders in Spain to engage with the project and needs to be considered for future applications of the methodology or the framework.

Level of involvement by different stakeholders

The response rate to the questionnaire was generally good in Romania and lower than expected in Spain, but the comparison is weak due to the differences in designing sample selection, interviews, regional culture. The engagement in the survey was found to be four times higher in Romania than Spain. The response rate was 80% in Romania compared to 55% in Spain. The level of involvement was comparatively high for landowners and farmers, but lower for labourers/workforce, as in most of selected case-studies, the farmers were working the land themselves, which made difficult to identify workforce involved in Camelina. The participation from local authorities was good in Romania, but lower in Spain. Romania had three case-studies

selected: LA from Romania participated 100%. From Spain only Minaya took part in this survey, though Spain had 4 case-studies: see fig B7**.** Some Spanish authorities were relatively unengaged with the rural communities, but were aware that biofuels may constitute an opportunity for economic diversification (i.e. example given previously with Minaya).

At this point, a backup plan adapting the methodology to the local circumstances was necessary in Spain, to engage other representatives of rural communities, or typical stakeholders, like, for instance farmers authorities (UPA, COAG, ASAJA, Agrifood Cooperatives).

Response to interview requests was generally good. In both countries, the response rate was 65% in total, which is considered good, according to Sivo *et al*, (2009).

Data recorded through interview in Spain was essential to add to initial data via questionnaire and capture real perception regarding Camelina development; another proof that the mix methodology was useful.

Access to appropriate cohorts in Spain was through CCE. Several difficulties and delays were recorded, and probably biases in the data as interviewees were preselected rather than voluntary.

Drivers in expanding Camelina production

One important subject that would influence attitudes is an understanding of the benefits and risks of expanding Camelina feedstock production. In both Romania and Spain, farmers seem to be the main drivers, as they have the necessary knowledge of the issues and connections to mitigate any production-related risks at local level. In Romania, farmers were interested in working with Local Authorities to nurture and develop local skills, while in Spain they seem engaging with and being linked instead to their professional associations. Another reason for engagement by farmers and a willingness to commit the investment is that many are looking to diversify away from their current crops and Camelina is a very promising option. It is noteworthy that Romanian farmers expressed an interest in developing long term contracts, linked to markets for oil, seeds and Camelina cake. In this country farmers had to rely on Local Authorities, as they are isolated from professional associations. These associations include farmers with many hectares, while farmers involved for SEIA exercise had max. 10 Ha.

Lessons learned

This initial study has revealed the following lessons for application in future research:

- All appropriate survey methods need to be initially considered, with the specific methodology chosen for final use selected after consultation with key stakeholders.
- The availability of economic, agricultural, labour force and other structural and census data needs to be confirmed prior to the finalisation of the survey methodology.
- An understanding of local conditions will give information on who are the most influential stakeholders in that particular community, and the type of data that can be collected, so the SEIA design will develop around those data initially, and refine it later, i.e. type of local taxes, community oriented towards social development or economic development, service oriented, etc. The benefits of spending more time with community leaders to take on board their views regarding issues of local significance such as priorities, existing projects, the role of and need for economic diversification or social cohesion.
- The need to redesign the SEIA framework to take on board lessons learnt during initial questionnaire and survey work.

- There is a need to proactively engage with key stakeholder groups, provide the appropriate information and develop an awareness campaign well in advance of the study, to maximise levels of engagement and participation.

6. Discussion

The broad SEIA Framework adopted for this task proved to be an effective way of assessing the potential social and economic impacts of Camelina feedstock production in both countries, but the precise methodology adopted had to be adapted to the particular conditions, culture and data availability at each study location in Romania and Spain.

The SEIA used in Romania (Figure 1) was structured primarily around development / economic factors: land ownership and use, the size of the existing workforce, hard and soft infrastructure, local and national taxes on land and income. Social impacts were seen as being directly linked to economic factors: a better quality of life being defined by protection of employment, job creation, skills development, with issues such as improved education and health being considered as accompanying service development. The SEIA framework used in Romania was revised and enhanced on two occasions as additional data were collected. Based on this refinement, it was possible to develop an economic impact assessment framework which, although not part of the original ITAKA task, allowed the calculation of some monetary values.

It is hard to quantify, in fiscal terms, the full social impact of the Camelina production. However there were significant secondary economic benefits that need to be noted. For example, although the SEIA research in Romania did not address environmental impacts, growing Camelina on contaminated land will permit this land to be brought back into productive capacity, allowing it to start to yield social and economic benefits. It is worth mentioning that research on Camelina & soil remediation is at the beginning, but promising results can be signalled as part of D 5.7. However, Copsa Mica region is known as case-study for soil remediation, due to research conducted by Barbu *et al*., (2009) using Miscanthus during a period of 10 years.

On average, Camelina production will have at least a €720 economic impact per hectare of crop in Romania (see A4.4.3. above), while creating local jobs, improving quality of life and helping the development of local communities. It is worth mentioning this example refers to contaminated land, so the production per hectare is lower. Revenues for farmers (from oil production and animal feeds) are an important part of the assessment, delivering profits, equitable business and employment, as well as improved services and infrastructure. Assessing opportunities for sustainable income is also part of the general assessment. Additional information can be found in Case Study A: Assessing and quantifying the economic impact.

The SEIA framework used in Spain (Figure 2) addressed both social and economic factors equally. It showed who should be involved in the process, what data is needed, how important existing regulations are, etc. An important characteristic of this framework is the placement of benefits verses risks, and quality of life in the centre, linking all other pillars to these two strands. This positioning illustrates economic and social factors in equal manner, both having the same importance to Spanish rural areas. This Framework explains the community main challenges also as: rural social-cohesion, soft and hard infrastructure, and identifies environment as part of quality of life, together with, education and health.

By dividing the stakeholders into three distinct groups (landowners and farmers, the workforce and local authorities) it was possible to clarify who had greatest influence over Camelina feedstock production. It also identified who carried the greatest risks and how these might be mitigated. This approach revealed the importance of community leadership in rural areas which was particularly strong in Romania, but less evident in Spain (in Spain, for example, the deputy Mayor of Minaya was not aware that Camelina was cultivated in his area, but when informed, he recognised this is a good opportunity for economic diversification and engaged positively with interviews). The impact data also identified priorities of project development in rural areas. In Romania, these being linked to the need for infrastructure development while in Spain these focussed upon social issues such as community social cohesion and the need for skills development.

The ability to make detailed assessments and draw concrete conclusions from this study was limited by time available to collect information and the paucity of some data. They explain the strengths and weaknesses of the application of SEIA to the production of biofuel feedstocks, but demonstrate the value of this approach. Overall, the findings are consistent with those from other similar studies.

A critical finding was the fact that significant regional and cultural differences exist and that these have to be taken into account not only in the design and execution of the SEIA but also in the way in which results are analysed and interpreted. Finally, it is important to note that a socio-economic impact assessment should not only assess positive impacts and opportunities, but should also identify negative impacts and risks, as well as means to mitigate these. These aspects were illustrated above at Risk Management & Risk Mitigation: A 5 and B 6.7

This task in the ITAKA project only involved an SEIA for Camelina feedstock production. In order to have a complete picture of the impact and opportunity provided by this biofuel feedstock it would be necessary to repeat the assessment for the entire value chain and also consider the environmental consequences more explicitly. Extrapolation from local to regional and to national level is also necessary. Some attempt to do this carried out in the Romanian study, but data availability made this difficult.

Within the international community there is considerable interest in the socio-economic implications of more widespread cultivation and biofuel production. Such developments are seen to be necessary, but are hampered by being poorly communicated to communities that need to engage with change. Comparison of data from different regions and cultures is fraught with difficulty. However, given the potential value of Camelina feedstock cultivation to biofuel production world-wide, further research on the development of SEIA could bring significant benefit for communities from other part of Europe and the globe. The output from the application of this technique could be used, to support a dialogue between local stakeholders, on opportunities, problems of concern for communities, risks and the mitigation of those risks. SEIA in both countries show how to motivate farmers and investors in cultivating this feedstock. Conducting a survey will help disseminate information on Camelina, its potential for rural communities and will also help assess stakeholders' perception regarding this feedstock in their area.

7. Conclusion

SEIA is a valuable tool for assessing the potential social and economic impacts (positive and negative) likely to arise from biofuel production based upon Camelina cultivation in different areas of Europe. SEIA requires the analysis of a wide variety of information and data relating not only to direct and indirect economic impacts but also social (quality of life) issues which can be subject to cultural interpretation and include consideration of attitudes to and definition of environmental quality. Effective SEIA requires the development of an assessment framework that is location specific, incorporating some factors which may be economic or structural, based upon hard data, but also requiring assessment of perceptions requiring the use of methods capable of revealing often complex and unpredictable community values.

The result of this study demonstrates the significant challenge of carrying out a comprehensive SEIA in terms of gaining access to comparable data from different localities and securing the engagement of key stakeholders.

The outcome was positive in that it demonstrated in both Romania and Spain that there is an interest in Camelina production, but the level of involvement, commitment, planning needed to facilitate feedstock production was very different. Stakeholders recognised the potential economic benefits that would likely arise but had concerns about adverse impacts upon other farming activities, upon quality of life and other environmental issues. Many of these could, however be overcome or mitigated through effective planning and by ensuring that production techniques conformed to the RSB principles.

Significant findings from this study may be summarised as follows:

- The specific design of the SEIA framework relies heavily upon the availability of published data, material provided by stakeholders and the specific conditions that pertain at a particular locality.
- The initial SEIA design has to be refined and reshaped as more and more information is received from stakeholders.
- It is critical that all key stakeholders are engaged in the SEIA process in order to secure a comprehensive overview.
- Securing stakeholder participation in the process can be challenging and requires pre-engagement and information sharing. Local knowledge can be a critical success factor.

SEIA needs to be conducted across the whole biofuel value chain in order to assess the business opportunities, to identify possible risks and develop mitigation actions; the results of this particular study were limited to Camelina feedstock production.

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Case Study A. Annex 1

Socio-Economic Impact Analysis of Camelina Production Questionnaire

Part 1 - Primary Data

Localitate (Town/Village)		**Intervievator** (Interviewer)	
Data (Date)		**Invervievat** (Interviewee)	
P1. Populatie (Local People)	**Total**		
	Sex (Sex)	Femei (Women)	
		Barbati (Men)	
	Varsta (Age)	Grupe Varsta 0-20 ani (yrs)	
		Grupe Varsta 22-60 ani (yrs)	
		Grupe Varsta 60-100 ani (yrs)	
	Ocupatie (Work Status)	Intreprinzatori (Entrepreneurs)	
		Angajati (Employees)	
	Loc de Munca (Employed by)	Intreprinderi de Stat (State-Owned Enterprises - SOE)	
		Intreprinderi Private (Privately-Owned Enterprises - POE)	
	Someri (Unemployment)	Ultimele 3 Luni (Last 3mths)	
		Ultimele 12 luni (Last 12mths)	
	Venit Mediu Net pe Angajat (Average Net Wage per Employee)	Venit mediu Lunar - ultimele 12-18Luni (Last 12-18mths)	
		Venit mediu Lunar - ultimii 3 ani (Last 3yrs)	
Alte comentarii (Other Comments)			

P2. **Gospodarii** (Households)	**Total**		
	Tip (Type)	Casa (House)	
		Apartament (Apartment)	
	Proprietate (Ownership)	Inchiriat (Leased/Rented)	
		Proprietar (Owner)	
	Utilitati si Echipamente in Gospodarie (Household's Utilities & Equipment)	Autoturism (Car)	
		Electrocasnice (House Appliances)	
		Apa Curenta (Running Water)	
		Canalizare (Sewage)	
		Gaz (Gas – heating and/or cooking)	
	Venit Mediu Net pe Gospodarie (Average Net Income per Household)	Venit mediu Lunar - ultimele 12-18Luni (Last 12-18mths)	
		Venit mediu Lunar - ultimii 3 ani (Last 3yrs)	
Alte comentarii (Other Comments)			
P3. **Economie Locala** (Local Economy)	**Top 5 Angajatori** (Top 5 Companies)	Numar de Angajati (Total Employees for the Top 5 Companies)	
	Tipul de Activitate (Industry / Agriculture**)**	Industrie – Numar Angajati (Industry – Total Employees)	
		Agricultura - Numar Angajati (Agriculture – Total Employees)	
	Angajati in Agricultura (Agriculture-related employees)	De Subzistenta (Subsistence)	
		La Companii Agricole Locale (with Local Agricultural Companies)	
	Nivel de Instruire - Angajati in Agricultura (Knowledge level for Agriculture Employees)	Experienta Proprie (Personal Knowledge/Experience)	
		Pregatire de baza (scoala/liceu agricol) (Highschool)	

		Pregatire superioara (universitate) (University)		
	Venit Mediu pe Angajat in Agricultura (Average Wage for Agriculture Employee)	Venit mediu Lunar - ultimele 12-18Luni (Last 12-18mths)		
		Venit mediu Lunar - ultimii 3 ani (Last 3yrs)		
Alte comentarii (Other Comments)				
P4. Infrastructura Locala (Local Infrastructure)	**Drumuri Nationale (Km)** (National Roads)	Drumuri Nationale pe o raza de 10km (National Roads within 10km radius)		
	Strazi (Km) (Streets)	Pavate (Paved)		
		Nepavate (Unpaved)		
	Cai Ferate (Km) (Railways)	Cai ferate pe o raza de 10km (Railways within 10km radius)		
		Gari pe o raza de 10km (Railstations within a 10km radius)		
	Spatii Depozitare Produse Agricole (m2/m3) (Crop Warehouses)	Total		
		Libere (Free)		
	Dotari Utilaje Agricole (Agriculture Machinery)	Ferme/Gospodarii Independente (Small Independent Farms)	Tractors	
			Harvests	
			Warehousing	
			Other	
		Companii Agricole Locale (Local Agricultural Companies)	Tractors	
			Harvests	
			Warehousing	
			Other	
	Ferme Locale (Local Farms)	Forma Proprietate (Ownership)	Familiale (Family-owned)	
			Companii (Company-owned)	
Alte comentarii (Other Comments)				

P5. **Terenuri** (Land)	**Teren Agricol (ha)** (Agricultural Land)	Teren Agricol Total (Total Agriculture Land)		
		Contaminat (Contaminated Land)		
		Necontaminat (Crop Grade Land)		
	Culturi Agricole Principale (ha) (Main Crop Types)	Plante Alimentare - grau, porumb (Food-related crops)		
		Plante Industriale (Industrial crops)		
		Plante Oleaginoase (Oilseeds crops)		
	Teren Agricol in Ferme Locale (Local Farms)	Forma Proprietate (Ownership)	Familiale (Family-owned)	
			Companii (Company-owned)	
			Consiliul Local (Local Authority-owned	
	Harta (Map)			
Alte comentarii (Other Comments)				

Part 2 - Local Authority (/ NGO) Questionnaire

Localitate (Town/Village)		**Intervievator** (Interviewer)				
Data (Date)		**Invervievat** (Interviewee)				
A1. Aveti cunostiinta despre culturile de Camelina in regiunea D-voastra? (Are you aware about Camelina crops near your town/village)		Yes Continue	No **Stop**			
A2. Considerati cultivarea Camelinei benefica pentru dezvoltarea agricola a zonei? (Do you consider Camelina crops as beneficial for your area agricultural development?)		Yes Continue	No – Detalii / Why			
A3. In ce zone considerati ca culturile de Cameline vor avea un impact pozitiv? (In which area do you think Camelina crops will bring the most benefits and positive impact for local community?)		Acordati o nota pentru fiecare din lista (Please rate each of them)	1-mic/ low	2	3	4	5-mare / high
		Improve local living conditions					
		Increase local economy					
		Provide local employment					
		Improve local infrastructure development					
		Improve local agricultural land utilisation					
		Increase local economy diversification					
		Reverse rural/local depopulation					
A4. Care dintre proiectele locale are putea avea cel mai mult de castigat datorita culturilor de Camelina prin veniturile catre bugetul local pe care aceasta le genereaza? (Which of the local development projects could benefit the most from Camelina crop-generated income for your local budget?)		Acordati o nota pentru fiecare din lista (Please rate each of them)	1-putin/ little	2	3-mult/ a lot		
		Building/improving schools					
		Building/improving local roads					
		Improving local health services supply					
		Improving local heating/cooking gas supply					
		Improving local running water supply					
		Improving local sewage/waste services supply					
A5. Exista la nivel local initiative sau programme de sprijin pentru companiile agricole din zona? (Are there any local initiatives to support local agricultural companies?)		Yes – Detalii / Pls provide details	No				
A6. Care considerati ca sunt cele importante riscuri in dezvoltarea plantatiilor de Camelina pe viitor? (What are the main risks for future increasing in Camelina crops?)		Acordati o nota pentru fiecare din lista (Please rate each of them)	1-mic/ low	2	3	4	5-mare /big
		Aging local population					
		Urban migration					
		Low income for agricultural workers					

	Land availability					
	Low agricultural mechanization level					
A7. Care sunt taxele locale pe care trebuie sa le plateasca fermierii care cultiva Camelina? (What local taxes should the Camelina farmers need to pay?)	Detalii / Pls provide details					
A8. Care sunt taxele locale pe care trebuie sa le plateasca un angajat in agricultura? (What local taxes should an agricultural employee need to pay?)	Detalii / Pls provide details					
Alte comentarii (Other Comments)						

Part 3 - Farmer Questionnaire

Localitate (Town/Village)		**Intervievator** (Interviewer)		
Data (Date)		**Invervievat** (Interviewee)		
F1. Din ce an cultivati Camelina? (Since when do you plant Camelina?)		2012	2013	
F2. In 2014 veti cultiva aceeasi suprafata, mai mare sau mai mica? (For 2014, the Camelina crop will be on the same area, bigger area, smaller area?)		Smaller Area	Same Area	Bigger Area
		Detalii / Comments		
F3. Care este suprafata pentru cultura de Camelina? (ha) (What area are you farming Camelina on?)				
F4. Aveti si alte culturi? (Do you have other crops?)		Yes	No	
F5. Din totalul suprafetei pe care o aveti in administrare/proprietate, cat la suta este dedicate culturii de Camelina? (What percentage of your agricultural land is dedicated to Camelina crops?)				
F6. Cultivati Camelina in cultura rotitoare sau ca si cultura de baza? (Is Camelina a rotation crop or the main one?)		Rotitoare / Rotation Crop	Baza / Main Crop	
F7. Considerati ca prin cultivarea Camelinei ati crescut productivitatea totala a suprafetei agricole? (Do you consider Camelina a land-yield boosting crop?)		Yes	No	
		Detalii / Comments		
F8. Cati angajati part-time si full-time folositi de-a lungul anului pentru cultura de Camelina? (How many FTE employees do you use over the year for Camelina crop?)		Part-time	Full-time	
F9. Considerati ca este usor sa gasiti anagajati cu pregatirea necesara atunci cand aveti		Acordati o nota pentru fiecare din lista	Usor / Easy	Greu / Hard

nevoie de ei? (How easy is to find skilled employees when needed?)	(Please rate each of them)				
	Necalificati (Unskilled)				
	Calificare medie (Semiskilled)				
	Calificati (Skilled)				
	Detalii / Comments				
F10. Care este impactul urmatoarelor taxe pentru dezvoltarea companiei Dvoastra? (What is the impact of the following taxes on your company development?)	Acordati o nota pentru fiecare din lista (Please rate each of them)		1-mic/ low	2	3-mare / big
	Taxe Locale (Local taxes)				
	Taxe Nationale (National Taxes)				
	Taxe pe Munca (Work (Employment) Taxes)				
F11. Aveti planuri pentru a oferi training la locul de munca pentru angajatii Dvoastra? (Do you have any on-the-job training programmes for your employees?)	Yes	No			
	Detalii / Comments				
F12. Considerati cultivarea Camelinei benefica pentru dezvoltarea agricola a zonei? (Do you consider Camelina crops as beneficial for your area agricultural development?)	Yes	No – Detalii / Why			
F13. In ce zone considerati ca culturile de Camelina vor avea un impact pozitiv? (In which area do you think Camelina crops will bring the most benefits and positive impact for local community?)	Acordati o nota pentru fiecare din lista (Please rate each of them)	1-mic/ low	2	3	4	5-mare / high
	Improve local living conditions					
	Increase local economy					
	Provide local employment					
	Improve local infrastructure development					
	Improve local agricultural land utilisation					
	Increase local economy diversification					
	Reverse rural/local depopulation					
F14. Care dintre proiectele locale are putea avea cel mai mult de castigat datorita culturilor de Camelina prin veniturile catre bugetul local pe care aceasta le genereaza? (Which of the local development projects could most benefit from Camelina crop-generated income for your local budget?)	Acordati o nota pentru fiecare din lista (Please rate each of them)		1-putin/ little	2	3-mult/ a lot
	Building/improving schools				
	Building/improving local roads				
	Improving local health services supply				
	Improving local heating/cooking gas supply				
	Improving local running water supply				
	Improving local sewage/waste services supply				
F15. Exista la nivel local initiative sau programme de sprijin pentru companiile agricole din zona? (Are there any local initiatives to support local	Yes – Detalii / Pls provide details	No			

agricultural companies?)						
F16. Care considerati ca sunt cele importante riscuri in dezvoltarea plantatiilor de Camelina pe viitor? (What are the main risks for future increasing in Camelina crops?)	Acordati o nota pentru fiecare din lista (Please rate each of them)	1-mic/ low	2	3	4	5-mare /big
	Aging local population					
	Urban migration					
	Low income for agricultural workers					
	Land availability					
	Low agricultural mechanization level					
F17. Care sunt taxele locale pe care trebuie sa le platiti datorate cultivarii de Camelina? (What local taxes need to pay?)	Detalii / Pls provide details					
F18. Care sunt taxele nationale pe care trebuie sa le platiti datorare cultivarii de Camelina? (What national taxes need to pay?)	Detalii / Pls provide details					
F19. Care sunt taxele locale pe care le platiti pentru angajatii la cultivarea Camelina? (What local taxes are you paying for Camelina employees?)	Detalii / Pls provide details					
F20. Care sunt taxele nationale pe care le platiti pentru angajatii la cultivarea Camelina? (What national taxes are you paying for Camelina employees?)	Detalii / Pls provide details					
F21. Folositi contractori locali si/sau nationali? (Are you using local and/or national contractors?)	Local Contractors	National Contractors				
F22. Ce procent din cifra de afaceri este generate cu contractori locali / nationali? (What percentage of your turnover is generated using local/national contractors?)	Local Contractors	National Contractors				
F23. Ce procent din serviciile necesare productiei de Camelina le cumparati local/national? (What percentage of your services purchasing is local/national?)	Local Purchasing	National Purchasing				
F24. Ce procent din materialele necesare productiei de Camelina le cumparati local/national? (What percentage of your materials purchasing is local/national?)	Local Purchasing	National Purchasing				
F25. Cat platiti, in medie, pentru un Ha arendat pe an de la micii proprietari? (How much do you pay, on average, for a leased Ha per year to small landowners?)	N/A – Nu Arendez / No Leased Land					
	Costul mediu annual pe ha / Average yearly payment per ha	Detalii – daca plata e in natura / Details – if payment is in kind				
Alte comentarii (Other Comments)						

Part 4 - Workforce Questionnaire

Localitate & Ferma (Town/Village & Farm)		**Intervievator** (Interviewer)				
Data (Date)		**Invervievat** (Interviewee)				
W1. Considerati cultivarea Camelinei benefica pentru dezvoltarea agricola a zonei? (Do you consider Camelina crops as beneficial for your area agricultural development?)		Yes	No – Detalii / Why			
W2. Sunteti angajat part-time sau full-time? (Are you employed part-time or full-time?)		Part-time	Full-time			
W3. Procentual, ce procent din venturile gospodariei Dvoastra este din munca agricola? (What percentage of your family income is derived from agriculture work?)						
		Detalii / Pls provide details				
W4. Va rog sa imi dati detalii despre o zi de munca – cum decurge, ce faceti, ce ar putea fi facut mai bine, etc. (Please provide details about your working day – what are you doing, what could be done better, etc?)		Detalii / Pls provide details				
W5. Considerati ca viata Dvoastra s-a imbuntatit, in general, de cand munciti la cultivarea Camelinei? (Since starting working on Camelina crop, does your living/lifestyle improved?)		Yes	No – Detalii / Why			
		Detalii / Pls provide details				
W6. Daca vi se va oferi oportunitatea, veti continua sa lucrati la culturile de Camelina? (Having the opportunity, would you be interested in future work on Camelina crop?)		Yes	No – Detalii / Why			
		Detalii / Pls provide details				
W7. In ce zone considerati ca culturile de Cameline vor avea un impact pozitiv? (In which area do you think Camelina crops will bring the most benefits and positive impact for local community?)		Acordati o nota pentru fiecare din lista (Please rate each of them)	1-mic/ low	2	3	4	5-mare / high
		Improve local living conditions					
		Increase local economy					
		Provide local employment					
		Improve local infrastructure development					
		Improve local agricultural land utilisation					
		Increase local economy diversification					
		Reverse rural/local depopulation					
W8. Care dintre proiectele locale are putea avea cel mai mult de castigat datorita culturilor de Camelina prin veniturile catre bugetul local pe care aceasta le genereaza? (Which of the local development projects could most benefit from Camelina crop-generated income for your local budget?)		Acordati o nota pentru fiecare din lista (Please rate each of them)	1-putin/ little	2	3-mult/ a lot		
		Building/improving schools					
		Building/improving local roads					
		Improving local health services supply					
		Improving local heating/cooking gas supply					
		Improving local running water supply					
		Improving local sewage/waste services					

	supply			
W9. Care sunt taxele locale pe care trebuie sa le plateasca un angajat in agricultura? (What local taxes should an agricultural employee need to pay?)	Detalii / Pls provide details			
Alte comentarii (Other Comments)				

Case study A. Annex 2

SEIA - BACK-UP QUESTIONS

For Local Authorities / Farmers / Workforce		
BK1. Considerati cultivarea Camelinei ca interferand cu culturile de cereale/legume din zona? (Do you consider Camelina crops as taking valuable land from food-crops in the area?)	Yes – Detalii / Why	No – Detalii / Why
BK2. Considerati cultivarea Camelinei ca avand un impact positive asupra dezvoltarii comunitatii locale? (Do you consider Camelina crops as having a beneficial impact on local community development?)	Yes – Detalii / Why	No – Detalii / Why
BK3. Care dintre proiectele locale are putea avea cel mai mult de castigat datorita culturilor de Camelina prin veniturile catre bugetul local pe care aceasta le genereaza? (Which of the local development projects could most benefit from Camelina crop-generated income for your local budget?)	Better local transportation (buses)	
For Local Authorities / Farmers		
BK.4 Care considerati ca sunt cele importante riscuri in dezvoltarea cultivarii de Camelina pe viitor? (What are the main risks for future increasing in Camelina crops?)	Posibile schimbari legislative in domeniu (regulations changes)	

Case study B. Annex 1

Cuestionario para el Análisis del impacto socio-económico de la producción de Camelina/ Questionnaire for the Analysis of socio- economic impact of the production of Camelina

Parte 1 – Datos primarios

Localidad (Town/Village)		**Entrevistador (Interviewer)**	
Fecha (Data)		**Entrevistado (Interviewee)**	
P1. Población Local (Local People)	**Total**		
	Sexo (Sex)	Mujeres **(Women)**	
		Hombres **(Men)**	
	Edad (Age)	0-20 años **(yrs)**	
		22-60 años **(yrs)**	
		60-100 años **(yrs)**	
	Situación Laboral (Work Status)	Empresarios **(Entrepreneurs)**	
		Empleados **(Entrepreneurs)**	
	Empleados por (Employed by)	Empresas Públicas – SOE **(State-Owned Enterprises)**	
		Empresas Privadas – POE **(Privately-Owned Enterprises)**	
	Desempleo (Unemployment)	3 últimos meses **(Last 3mths)**	
		12 últimos meses **(Last 12mths)**	
	Salario neto medio mensual por empleado (Average Net Wage per Employee)	Últimos 12-18 meses **(Last 12-18mths)**	
		3 últimos años **(Last 3yrs)**	
Otros comentarios**(Other Comments)**			
P2. Viviendas (Households)	**Total**		
	Tipo (Type)	Casa **(House)**	
		Apartamento **(Apartment)**	
	Propiedad (Ownership)	Alquiler **(Leased/Rented)**	
		Propiedad **(Owner)**	
	Servicios y equipamientos de las viviendas (Household's Utilities & Equipment)	Coche(s) **(Car(s))**	
		Electrodomésticos **(House Appliances)**	
		Agua Corriente **(Running Water)**	
		Saneamiento **(Sewage)**	
		Gas – calefacción y/o cocina **(Gas – heating and/or cooking)**	
	Media de Ingresos netos mensuales por Vivienda	Últimos 12-18 meses **(Last 12-18mths)**	

	(Average Net Income per Household)	3 últimos años **(Last 3yrs)**		
Otros comentarios **(Other comments)**				
P3. Economía Local (Local Economy)	**Principales 5 Empresas** (Top 5 Companies)	Empleados totales de las 5 principales empresas **(Total Employees for the Top 5 Companies)**		
	Industria / Agricultura (Industry / Agriculture**)**	Industria – Empleados totales **(Industry – Total Employees)**		
		Agricultura – Empleados totales **(Agriculture – Total Employees)**		
	Empleados relacionados con la Agricultura (Agriculture-related employees)	Subsistencia **(Subsistence)**		
		Empleados de Empresas Agricultoras Locales **(with Local Agricultural Companies)**		
	Nivel de conocimientos de los Empleados Agrícolas (Knowledge level for Agriculture Employees)	Experiencia/Conocimientos Personales **(Personal Knowledge/Experience)**		
		Bachillerato **(Highschool)**		
		Universidad **(University)**		
	Salario neto medio mensual por empleado agrícola (Average Wage for Agriculture Employee)	Últimos 12-18 meses **(Last 12-18mths)**		
		3 últimos años **(Last 3yrs)**		
Otros comentarios **(Other Comments)**				
P4. Infraestructura Local (Local Infrastructure)	**Carreteras nacionales** (National Roads) **(Km)**	Carreteras Nacionales en un radio de 10km **(National Roads within 10km radius)**		
	Calles (Streets) **(Km)**	Pavimentadas **(Paved)**		
		Sin Pavimentar **(Unpaved)**		
	Ferrocarriles (Railways) **(Km)**	Ferrocarriles en un radio de 10km **(Railways within 10km radius)**		
		Estaciones ferroviarias en un radio de 10km **(Railstations within a 10km radius)**		
	Almacenes de cosecha (Crop Warehouses) **(m2/m3)**	Total		
		Disponibles **(Free)**		
	Maquinaria Agrícola (Agriculture Machinery)	Pequeñas explotaciones independientes **(Small Independent Farms)**	Tractores **(Tractors)**	
			Cosechadoras **(Harvests)**	
			Almacenamiento **(Warehousing)**	

			Otros **(Other)**	
		Compañías Agrícolas Locales **(Local Agricultural Companies)**	Tractores **(Tractors)**	
			Cosechadoras **(Harvests)**	
			Almacenamiento **(Warehousing)**	
			Otros **(Other)**	
	Fincas/cultivos locales (Local Farms)	Titularidad **(Ownership)**	Propiedad familiar **(Family-owned)**	
			Propiedad Empresarial **(Company-owned)**	
Otros comentarios **(Other Comments)**				
P5. Terreno (Land)	Terreno Agrícola **(Agricultural Land) (ha)**	Total Terreno Agrícola **(Total Agriculture Land)**		
		Suelo contaminado **(Contaminated Land)**		
		Crop Grade Land **(Crop Grade Land)**		
	Principales tipos de cultivo **(Main Crop Types) (ha)**	Cultivos Alimentarios **(Food-related crops)**		
		Cultivos Industriales **(Industrial crops)**		
		Cultivo semillas oleaginosas/para producción de aceites **(Oilseeds crops)**		
	Fincas/cultivos locales **(Local Farms)**	Titularidad **(Ownership)**	Propiedad Familiar **(Family-owned)**	
			Propiedad Empresarial **(Company-owned)**	
			Propiedad Pública **(Local Authority-owned)**	
	Mapa/plano **(Map)**			
Otros comentarios **(Other comments)**				

Parte 2 – Cuestionario para la Autoridad Local (/ NGO) (Local Authority Questionnaire)

Localidad (Town/Village)		**Entrevistador** (Interviewer)	
Fecha (Date)		**Entrevistado** (Interviewee)	
A1. Tiene conocimiento de cultivos de Camelina cerca de su localidad? **(Are you aware about Camelina crops near your town/village)**		Sí **(Yes)** Continúe(continue)	No **Pare(Stop)**
A2. Considera que el cultivo de Camelina es o		Sí **(Yes)**	No – Por qué?**(Why?)**

puede ser beneficioso para el desarrollo agrícola de su zona? **(Do you consider Camelina crops as beneficial for your area agricultural development?)**	Continúe(Continue)					
A3. En qué aspectos considera que el cultivo de Camelina puede impactar positivamente y aportar más beneficios a la comunidad local? **(In which area do you think Camelina crops will bring the most benefits and positive impact for local community?)**	Por favor, valore cada una de ellas **(Please rate each of them**	1-bajo (low)	2	3	4	5-alto(high)
	Mejorar las condiciones de vida locales (**Improve local living conditions)**					
	Aumentar la economía local (**Increase local economy)**					
	Favorecer empleo local (**Provide local employment)**					
	Mejorar el desarrollo de las infraestructuras locales (**Improve local infrastructure development)**					
	Mejorar la utilización del terreno agrícola local **(Improve local agricultural land utilisation)**					
	Aumentar la diversificación de la economía local **(Increase local economy diversification)**					
	Revertir el proceso de despoblación rural/local **(Reverse rural/local depopulation)**					
A4. ¿Cuál de los proyectos de desarrollo local podría beneficiarse más de los ingresos generados por los cultivos de Camelina en su presupuesto? **(Which of the local development projects could benefit the most from Camelina crop-generated income for your local budget?)**	Por favor, valore cada una de ellas **(Please rate each of them)**	1-poco	2	3-mucho		
	Construcción/Mejora de escuelas **(Building/improving schools)**					
	Construcción/Mejora de carreteras locales (**Building/improving local roads)**					
	Mejorar la oferta de servicios de salud locales **(Improving local health services supply)**					
	Mejorar el suministro de gas para calefacción/cocina **(Improving local heating/cooking gas supply)**					
	Mejorar el abastecimiento de agua **(Improving local running water supply)**					
	Mejorar los servicios locales de saneamiento y depuración **(Improving local sewage/waste services supply)**					
A5. Existe alguna iniciativa local para apoyar a las empresas agrícolas **(Are there any local initiatives to support local agricultural companies?)**	Sí – Por favor, amplíe detalles (**Pls provide details)**	No				
A6. Cuáles son los riesgos principales para el aumento futuro del cultivo de Camelina? **(What are the main risks for future increasing in Camelina crops?)**	Por favor, valore cada una de ellas **(Please rate each of them)**	1-bajo	2	3	4	5- alto
	Envejecimiento de la población **(local aging local population)**					
	Emigración a la ciudad **(urban migration)**					
	Bajos ingresos de los trabajadores agrícolas **(Low income for agricultural workers)**					
	Disponibilidad de terrenos **(Land availability)**					
	Bajo nivel de mecanización agrícola **(Low agricultural mechanization level)**					
A7. Qué impuestos locales deberían pagar los cultivadores de Camelina? **(What local taxes should the Camelina**	Por favor, amplíe detalles **(Pls provide details)**					

farmers need to pay?)	
A8. Qué impuestos locales deberían pagar los empleados agrícolas? **(What local taxes should an agricultural employee need to pay?)**	Por favor, amplíe detalles **(Pls provide details)**
Otros comentarios **(Other Comments)**	

Part 3 – Cuestionario para el Agricultor

Localidad (Town/Village)		**Entrevistador (Interviewer)**		
Fecha (Date)		**Entrevistado (Interviewee)**		
F1. Desde cuándo cultiva Camelina? **(Since when do you plant Camelina?)**		2012	2013	
F2. Para el año 2014, ¿el cultivo de Camelina ocupará la misma superficie, mayor superficie o menor superficie? **(For 2014, the Camelina crop will be on the same area, bigger area, smaller area?)**		Menor superficie **(Smaller Area)**	Igual superficie **(Same Area)**	Mayor superficie **(Bigger Area)**
		Comentarios **(Comments)**		
F3. En qué área está cultivando Camelina? (ha) **(What area are you farming Camelina on?)**				
F4. Tiene otros cultivos? **(Do you have other crops?)**		Sí **(Yes)**	No	
F5. Qué porcentaje de su terreno agrícola está destinado al cultivo de Camelina? **(What percentage of your agricultural land is dedicated to Camelina crops?)**				
F6. Camelina es un cultivo en rotación, o es el cultivo principal? **(Is Camelina a rotation crop or the main one?)**		Cultivo en rotación **(Rotation Crop)**	Cultivo principal **(Main Crop)**	
F7. Considera que el cultivo de Camelina incrementa el rendimiento del terreno? **(Do you consider Camelina a land-yield boosting crop?)**		Sí **(Yes)**	No	
		Comentarios **(Comments)**		
F8. Cuantos empleados utiliza al año para el cultivo de Camelina? **(How many FTE employees do you use over the year for Camelina crop?)**		Tiempo parcial **(Part-time)**	Tiempo completo **(Full-time)**	
F9. Le resulta fácil encontrar empleados cualificados cuando lo necesita?		Por favor, valore cada una de ellas **(Please rate each of them)**	Fácil **(Easy)**	Difícil **(Hard)**
		Sin cualificar **(Unskilled)**		

(How easy is to find skilled employees when needed?)	Semi-cualificados **(Semiskilled)**				
	Cualificados (**Skilled)**				
	Comentarios (**Comments)**				
F10. Defina el impacto de los siguientes impuestos en el desarrollo de su negocio **(What is the impact of the following taxes on your company development?)**	Por favor, valore cada una de ellas **(Please rate each of them)**	1-low	2	3-big	
	Impuestos Locales **(Local taxes)**				
	Impuestos Estatales **(National Taxes)**				
	Impuestos Laborales **(Work (Employment) Taxes)**				
F11. Tiene algún programa de formación en el puesto de trabajo para sus empleados? **(Do you have any on-the-job training programmes for your employees?)**	Sí **(Yes)**	No			
	Comentarios **(comments)**				
F12. Considera que el cultivo de Camelina es beneficioso para el desarrollo agrícola de su zona? **(Do you consider Camelina crops as beneficial for your area agricultural development?)**	Sí **(Yes)**	No – Por qué(Why?)			
F13. En qué aspectos considera que el cultivo de Camelina puede impactar positivamente y aportar más beneficios a la comunidad local? **(In which area do you think Camelina crops will bring the most benefits and positive impact for local community?)**	Por favor, valore cada una de ellas**(Please rate each of them)**	1-Bajo(low)	2	3	4	5-alto(high)
	Mejorar las condiciones de vida locales **(Improve local living conditions)**					
	Aumentar la economía local **(Increase local economy)**					
	Favorecer empleo local **(Provide local employment)**					
	Mejorar el desarrollo de las infraestructuras locales **(Improve local infrastructure development)**					
	Mejorar la utilización del terreno agrícola local **(Improve local agricultural land)**					
	Aumentar la diversificación de la economía local **(Increase local economy diversification)**					
	Revertir el proceso de despoblación rural/local **(Reverse rural/local depopulation)**					
F14. ¿Cuál de los proyectos de desarrollo local podría beneficiarse más de los ingresos generados por los cultivos de Camelina en su presupuesto? **(Which of the local development projects could most benefit from Camelina crop-generated income for your local budget?)**	Por favor, valore cada una de ellas**(Please rate each of them)**	1-poco(low)	2	3-mucho(high)		
	Construcción/Mejora de escuelas (**Building/improving schools)**					
	Construcción/Mejora de carreteras locales **(Building/improving local roads)**					
	Mejorar la oferta de servicios de salud locales **(Improving local health services supply)**					
	Mejorar el suministro de gas para calefacción/cocina **(Improving local heating/cooking gas supply)**					
	Mejorar el abastecimiento de agua **(Improving local running water supply)**					
	Mejorar los servicios locales de saneamiento y depuración**(Improving local sewage/waste services supply)**					
F15. Existe alguna iniciativa local para apoyar a las empresas agrícolas?	Sí – Por favor, amplíe detalles (Yes, Pls provide details)	No				

(Are there any local initiatives to support local agricultural companies?)						
F16. Cuáles son los riesgos principales para el aumento futuro del cultivo de Camelina? (What are the main risks for future increasing in Camelina crops?)	Por favor, valore cada una de ellas (Please rate each of them)	1-bajo(low)	2	3	4	5-alto(high)
	Envejecimiento de la población local **(Aging local population)**					
	Emigración a la ciudad **(Urban migration)**					
	Bajos ingresos de los trabajadores agrícolas **(Low income for agricultural workers**					
	Disponibilidad de terrenos **(Land availability)**					
	Bajo nivel de mecanización agrícola **(Low agricultural mechanization level)**					
F17. Qué impuestos locales tiene que abonar? **(What local taxes need to pay?)**	Por favor, amplíe detalles **(Pls provide details)**					
F18. Qué impuestos estatales tiene que abonar? **(What national taxes need to pay?)**	Por favor, amplíe detalles **(Pls provide details)**					
F19. Qué impuestos locales está abonando por sus trabajadores de Camelina? **(What local taxes are you paying for Camelina employees?)**	Por favor, amplíe detalles **(Pls provide details)**					
F20. Qué impuestos estatales está abonando por sus trabajadores de Camelina? **(What national taxes are you paying for Camelina employees?)**	Por favor, amplíe detalles **(Pls provide details)**					
F21. Está utilizando contratistas locales o nacionales? **(Are you using local and/or national contractors?)**	Contratistas Locales(Local Contractors)	Contratistas Nacionales) National Contractors)				
F22. Qué porcentaje de su facturación genera utilizando contratistas locales o nacionales? **(What percentage of your turnover is generated using local/national contractors?)**	Contratistas Locales(Local Contractors=	Contratistas Nacionales(National Contractors)				
F23. Qué porcentaje de los servicios que contrata local o nacional? **(What percentage of your services purchasing is local/national?)**	Servicios Locales (Local Purchasing)	Servicios Nacionales) Local Purchasing)				
F24. Qué porcentaje de la compra de materiales es local y qué porcentaje es nacional? **(What percentage of your materials purchasing is local/national?)**	Compras Locales(Local Purchasing=	Compras Nacionales (Local Purchasing)				
F25. Cuánto paga de media de arrendamiento por Ha anual a pequeños propietarios? **(How much do you pay, on average, for a leased Ha per year to small landowners?)**	N/A – No tengo tierras arrendadas (No Leased Land)					
	Pago medio anual por Ha(Average yearly payment per ha)	Detalles – si el pago es en especie (Details – if payment is in kind)				

Otros Comentarios (Other comments)	

Parte 4 – Cuestionario para los trabajadores (Workforce Questionnaire)

Localidad y Explotación (Town/Village & Farm)		**Entrevistador** (Interviewer)				
Fecha		**Entrevistado** (Interviewee)				
W1. Considera que el cultivo de Camelina es beneficioso para el desarrollo de su zona**?** **(Do you consider Camelina crops as beneficial for your area agricultural development?)**		Sí (Yes)	No – Por qué?(Why?)			
W2. Está contratado a tiempo parcial o a tiempo completo? **(Are you employed part-time or full-time?)**		A tiempo parcial (Part-time)	A tiempo completo(Full-Time)			
W3. Qué porcentaje de los ingresos de su unidad familiar proviene del trabajo agrícola? **(What percentage of your family income is derived from agriculture work?)**						
		Por favor, amplíe detalles (Pls provide details)				
W4. Por favor, facilite detalles de su jornada de trabajo – qué realiza, que podría hacerse mejor…? **(Please provide details about your working day – what are you doing, what could be done better, etc?)**		Por favor, amplíe detalles(Pls provide details)				
W5. Ha mejorado su vida o estilo de vida desde que comenzó a trabajar en el cultivo de Camelina? **(Since starting working on Camelina crop, does your living/lifestyle improved?)**		Sí (Yes)	No – Por qué?(Why?)			
		Por favor, amplíe detalles (Pls provide details)				
W6. Si surgiera la oportunidad, estaría interesado en trabajar en el futuro en el cultivo de Camelina? **(Having the opportunity, would you be interested in future work on Camelina crop?)**		Sí (Yes)	No – Por qué? (Why)			
		Por favor, amplíe detalles(Pls provide details)				
W7. ¿Cuál de los proyectos de desarrollo local podría beneficiarse más de los ingresos generados por los cultivos de Camelina en su presupuesto? **(In which area do you think Camelina crops**		Por favor, valore cada una de ellas	1-bajo	2	3	4	5- alto
		Construcción/Mejora de escuelas					
		Construcción/Mejora de carreteras locales					
		Mejorar la oferta de servicios de salud locales					
		Mejorar el suministro de gas para					

will bring the most benefits and positive impact for local community?)	calefacción/cocina					
	Mejorar el abastecimiento de agua					
	Mejorar los servicios locales de saneamiento y depuración					
	Revertir el proceso de despoblación rural/local					

W8. ¿Cuál de los proyectos de desarrollo local podría beneficiarse más de los ingresos generados por los cultivos de Camelina en su presupuesto? (**Which of the local development projects could most benefit from Camelina crop-generated income for your local budget?)**	Por favor, valore cada una de ellas (Please rate each of them)	1-poco(low)	2	3-mucho(high)
	Construcción/Mejora de escuelas (Building/improving schools)			
	Construcción/Mejora de carreteras locales (Building/improving local roads)			
	Mejorar la oferta de servicios de salud locales(Improving local health services supply)			
	Mejorar el suministro de gas para calefacción/cocina (Improving local heating/cooking gas supply)			
	Mejorar el abastecimiento de agua (Improving local running water supply)			
	Mejorar los servicios locales de saneamiento y depuración(Improving local sewage/waste services supply)			
W9. Qué impuestos locales debería abonar un empleado agrícola? **(What local taxes should an agricultural employee need to pay?)**	Por favor, amplíe detalles (Pls provide details)			
Otros Comentarios (Other comments)				

Case study B. Annex 2

SEIA - BACK-UP QUESTIONS / PREGUNTAS DE RESPALDO

Para Autoridades Locales / Cultivadores / Trabajadores		
BK1. Considera que el cultivo de Camelina perjudicará el cultivo alimentario en la zona?	Sí – Por qué	No – Por qué
Para Autoridades Locales / Cultivadores		
BK.2 Cuales son los riesgos principales para el aumento futuro del cultivo de Camelina?	Cambios en la Normativa - Detalles	

Cuestionario para el Análisis del impacto socio-económico de la producción de Camelina

Part 3 – Cuestionario para el Agricultor

Localidad		**Entrevistador**				
Fecha		**Entrevistado**				
F1. Desde cuándo cultiva Camelina?		2012		2013		
F2. Para el año 2014, ¿el cultivo de Camelina ocupará la misma superficie, mayor superficie o menor superficie?		Menor superficie	Igual superficie	Mayor superficie		
		Comentarios				
F3. En qué área está cultivando Camelina? (ha)						
F4. Tiene otros cultivos?		Sí		No		
F5. Qué porcentaje de su terreno agrícola está destinado al cultivo de Camelina?						
F6. Camelina es un cultivo en rotación, o es el cultivo principal?		Cultivo en rotación		Cultivo principal		
F7. Considera que el cultivo de Camelina incrementa el rendimiento del terreno?		Sí		No		
		Comentarios				
F8. Cuantos empleados utiliza al año para el cultivo de Camelina?		Tiempo parcial		Tiempo completo		
F9. Le resulta fácil encontrar empleados cualificados cuando lo necesita?		Por favor, valore cada una de ellas	Fácil	Difícil		
		Sin cualificar				
		Semi-cualificados				
		Cualificados				
		Comentarios				
F10. Defina el impacto de los siguientes impuestos en el desarrollo de su negocio		Por favor, valore cada una de ellas	1-low	2	3-big	
		Impuestos Locales				
		Impuestos Estatales				
		Impuestos Laborales				
F11. Tiene algún programa de formación en el puesto de trabajo para sus empleados?		Sí		No		
		Comentarios				
F12. Considera que el cultivo de Camelina es beneficioso para el desarrollo agrícola de su zona?		Sí		No – Por qué		
F13. En qué aspectos considera que el cultivo de Camelina puede impactar positivamente y aportar más beneficios a la comunidad local?		Por favor, valore cada una de ellas	1-bajo	2	3	4	5-alto
		Mejorar las condiciones de vida locales					
		Aumentar la economía local					
		Favorecer empleo local					
		Mejorar el desarrollo de las infraestructuras locales					

	Mejorar la utilización del terreno agrícola local					
	Aumentar la diversificación de la economía local					
	Revertir el proceso de despoblación rural/local					

F14. ¿Cuál de los proyectos de desarrollo local podría beneficiarse más de los ingresos generados por los cultivos de Camelina en su presupuesto?	Por favor, valore cada una de ellas	1-poco	2	3-mucho
	Construcción/Mejora de escuelas			
	Construcción/Mejora de carreteras locales			
	Mejorar la oferta de servicios de salud locales			
	Mejorar el suministro de gas para calefacción/cocina			
	Mejorar el abastecimiento de agua			
	Mejorar los servicios locales de saneamiento y depuración			

F15. Existe alguna iniciativa local para apoyar a las empresas agrícolas?	Sí – Por favor, amplíe detalles	No

F16. Cuáles son los riesgos principales para el aumento futuro del cultivo de Camelina?	Por favor, valore cada una de ellas	1- bajo	2	3	4	5-alto
	Envejecimiento de la población local					
	Emigración a la ciudad					
	Bajos ingresos de los trabajadores agrícolas					
	Disponibilidad de terrenos					
	Bajo nivel de mecanización agrícola					

F17. Qué impuestos locales tiene que abonar?	Por favor, amplíe detalles
F18. Qué impuestos estatales tiene que abonar?	Por favor, amplíe detalles
F19. Qué impuestos locales está abonando por sus trabajadores de Camelina?	Por favor, amplíe detalles
F20. Qué impuestos estatales está abonando por sus trabajadores de Camelina?	Por favor, amplíe detalles

F21. Está utilizando contratistas locales o nacionales?	Contratistas Locales	Contratistas Nacionales
F22. Qué porcentaje de su facturación genera utilizando contratistas locales o nacionales?	Contratistas Locales	Contratistas Nacionales
F23. Qué porcentaje de los servicios que contrata local o nacional?	Servicios Locales	Servicios Nacionales
F24. Qué porcentaje de la compra de materiales es local y qué porcentaje es nacional?	Compras Locales	Compras Nacionales
F25. Cuánto paga de media de arrendamiento por Ha anual a pequeños propietarios?	N/A – No tengo tierras arrendadas	
	Pago medio anual por Ha	Detalles – si el pago es en especie

Otros Comentarios	

Parte 4 – Cuestionario para los trabajadores

Localidad y Explotación		**Entrevistador**	
Fecha		**Entrevistado**	
W1. Considera que el cultivo de Camelina es beneficioso para el desarrollo de su zona?		Sí	No – Por qué?
W2. Está contratado a tiempo parcial o a tiempo completo?		A tiempo parcial	A tiempo completo
W3. Qué porcentaje de los ingresos de su unidad familiar proviene del trabajo agrícola?			
		Por favor, amplíe detalles	
W4. Por favor, facilite detalles de su jornada de trabajo – qué realiza, que podría hacerse mejor…?		Por favor, amplíe detalles	
W5. Ha mejorado su vida o estilo de vida desde que comenzó a trabajar en el cultivo de Camelina?		Sí	No – Por qué?
		Por favor, amplíe detalles	
W6. Si surgiera la oportunidad, estaría interesado en trabajar en el futuro en el cultivo de Camelina?		Sí	No – Por qué?
		Por favor, amplíe detalles	

W7. ¿En que áreas cree que el cultivo de Camelina pueda beneficiar a la comunidad local?	Por favor, valore cada una de ellas	1-bajo	2	3	4	5-alto
	Construcción/Mejora de escuelas					
	Construcción/Mejora de carreteras locales					
	Mejorar la oferta de servicios de salud locales					
	Mejorar el suministro de gas para calefacción/cocina					
	Mejorar el abastecimiento de agua					
	Mejorar los servicios locales de saneamiento y depuración					
	Revertir el proceso de despoblación rural/local					

W8. ¿Cuál de los proyectos de desarrollo local	Por favor, valore cada una de ellas	1- poco	2	3-mu

podría beneficiarse más de los ingresos generados por los cultivos de Camelina en su presupuesto?				cho
	Construcción/Mejora de escuelas			
	Construcción/Mejora de carreteras locales			
	Mejorar la oferta de servicios de salud locales			
	Mejorar el suministro de gas para calefacción/cocina			
	Mejorar el abastecimiento de agua			
	Mejorar los servicios locales de saneamiento y depuración			
W9. Qué impuestos locales debería abonar un empleado agrícola?	Por favor, amplíe detalles			
Otros Comentarios				

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