Chapter 1
Socio-Economic Impact Assessment Tools

Martijn Vis, Anne-Sophie Dörnbrack and Sébastien Haye

Abstract Impact assessments are used throughout different sectors to evaluate the potential damages and benefits to the environment and the society, which a given project or realization could cause. Impact assessments are applicable to all sectors from construction to agriculture, services and industry. In many countries, (environmental) impact assessments are part of the legal requirements for any new project beyond a certain size. Socio-economic impact assessments are relevant to many bioenergy, biofuel and bio-product production processes. These assessments consists of the following steps: (1) scoping and issues identification, (2) determination of the social and economic baseline, (3) predicting and analyzing impacts, (4) determination of significance (5) mitigation, management and monitoring. Socio-economic impact assessments can be used as an add-on to environmental impact assessment and to support biomass certification schemes. An example of the latter is the RSB scheme in which a screening tool is applied to determine if impact assessments are required as part of the biomass certification process.

Keywords Impact assessment tools · Socio-economic impact assessment · Social impact assessment · Bioenergy · Rapid appraisal

M. Vis (✉)
BTG Biomass Technology Group B.V.,
PO Box 835, 7500 AV, Enschede, The Netherlands
e-mail: vis@btgworld.com

A.-S. Dörnbrack
Energy Center, École Polytechnique Fédérale de Lausanne (EPFL),
BAC 004, Station 5, 1015 Lausanne, Switzerland
e-mail: anne-sophie.doernbrack@epfl.ch

S. Haye
Roundtable on Sustainable Biomaterials (RSB), International Environment House 2,
7–9 Chemin de Balexert, 1219 Chatelaine (Geneva), Switzerland
e-mail: sebastien.haye@rsb.org

D. Rutz, R. Janssen (eds.), *Socio-Economic Impacts of Bioenergy Production*,
DOI 10.1007/978-3-319-03829-2_1,

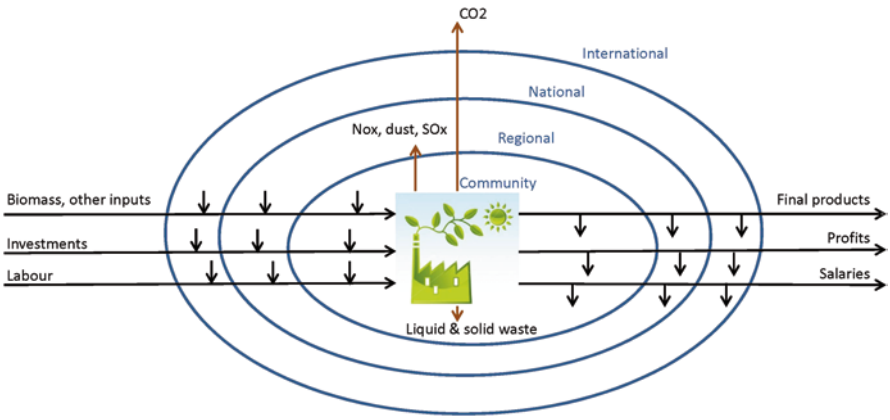

Fig. 1.1 Main inputs and outputs of a biomass conversion facility

1.1 Introduction

Each activity that takes place in a biomass conversion chain, as well as each input and output has impacts. Raw materials, labor and capital are the classic ingredients needed for a factory to operate. Technology could be added as a fourth factor that is materialized in capital goods (equipment/hardware, information technology, etc.) and embedded in humans (technical and organizational skills, etc.). The activities in the conversion chain result in various outputs such as final products, jobs, salaries, profits, but also emissions, waste, transport movements, etc. Figure 1.1 presents the main inputs and outputs of a biomass conversion facility.

The biomass conversion chain (its inputs, outputs and activities) will have various impacts such as socio-economic, fiscal, environmental, and traffic impacts. The impacts can take place at various levels:

- Production unit level
- Community level
- Regional level
- National level
- International level

Moreover, several types of impacts can be distinguished, such as direct and indirect impacts as well as in cumulative impacts.

Direct impacts are the direct consequences of a proposed project's location, construction or operation on the socio-economic environment. The direct socio-economic impacts of a large-scale development are often manifested as changes in socio-economic structures (e.g. increased employment opportunities, increased income levels, new or expanded social services, etc.).

Indirect impacts are the secondary consequences of direct impacts (e.g. altered consumption patterns, increased business opportunities and an increased need for

particular services). The types of indirect impacts that the proposed development may cause, depend largely on an individual and community's priorities, and their ability to manage changes.

Cumulative impacts are repeated impacts on a valued component. The accumulation of insignificant impacts happening over time can cause one significant impact. An example of a cumulative impact is the effect on housing availability and the cost of living in a community that is experiencing an extended period of immigration of people employed by several consecutive developments in one region.

1.1.1 Types of Impact Assessments

Various methods have been developed to assess and quantify the impacts of planned interventions (policies, programs, plans, projects), such as:

- Socio-economic impact assessment (SEIA)
- Environmental impact assessment (EIA)
- Strategic environmental assessment (SEA)
- Social impact assessment (SIA)
- Development impact assessment/sustainable development
- Fiscal impact analysis
- Traffic impact analysis

These will be described in more detail in the subsequent sections.

1.1.1.1 Socio-Economic Impact Assessment

Different definitions for the **Socio-economic Impacts Assessment** (SEIA) exist. Mackenzie (2007) defines SEIA as the systematic analysis (used during EIA) to identify and evaluate the potential socio-economic and cultural impacts of a proposed development on the lives and circumstances of people, their families and their communities. After Edwards (2011), the SEIA examines how a proposed development will change the lives of current and future residents of a community.

The goals of SEIA may vary from simply reducing the negative effects of these actions on people to maximizing their positive benefits and to contribute to sustainable development.

The concepts used in SEIA are derived from a number of social disciplines, including economics, sociology, geography, anthropology and political science. The key issue and challenge in SEIA is to understand the nature of social or economic impacts. An impact is a change in conditions caused by a development, such as a road or a mine. Generally, socio-economic impacts are changes in the human condition. They are changes in the economic and social conditions of local communities, vulnerable groups (such as women, children, or poor), businesses and employees, districts, provinces or even the nation. Generally, health impacts and

cultural impacts (e.g. language loss) are also subject of SEIA, but are not always covered in depth, as they may need special studies. Social and economic impacts may each require specific studies and analysis using different techniques.

Various other assessment methods have been developed in order to determine the impacts of projects, policies, programs and plans. Below a selection of these assessment methods are defined and related to the SEIA.

1.1.1.2 Environmental Impact Assessment and Strategic Environmental Assessment

Environmental Impact Assessment (EIA) is a systematic process to identify, predict and evaluate the environmental effects of proposed actions and projects. This process is applied prior to major decisions and commitments being made. A broad definition of environment is adopted. Whenever necessary, social, cultural and health effects are considered as an integral part of EIA (UNEP 2002).

Strategic Environmental Assessment (SEA) refers to a formal process of systematic analysis of the environmental effects of development policies, plans, programs and other proposed strategic actions. This process extends the aims and principles of EIA upstream in the decision-making process, beyond the project level and when major alternatives are still open (UNEP 2002).

Socio-economic impact assessments (SEIA) are often seen as additional to environmental impact assessments (EIA). Mackenzie (2007) states: *"In the past EIA focused on direct and indirect biophysical impacts of proposed developments (i.e. impacts of development activities on water, air, land, flora and fauna). In recent years the impacts of industrial development on society, culture and different forms economic activity have gained equal importance in EIA."* Especially when the social impacts are high, for instance when a big dam is planned, it is obvious that carrying out a SEIA, in addition to an EIA, is essential. EIA procedures and frameworks have been used as a base to develop SEIA.

1.1.1.3 Social Impact Assessment

The **Social Impact Assessment** (SIA) includes the process of analyzing, monitoring and managing the intended and unintended social consequences, both positive and negative of planned interventions (policies, programs, plans, projects) and any social change processes invoked by those interventions. Its primary purpose is to bring about a more sustainable and equitable biophysical and human environment (IAIA 2003). According to the definition of UNEP (2002, topic 13) the SIA identifies the consequences to people of any proposed action that changes the way they live, work, relate to one another, organize themselves and function as individuals and members of society, with particular attention to the mitigation of adverse or unintended aspects. This definition includes social-psychological changes, for example to people's values, attitudes and perceptions of themselves and their community and environment.

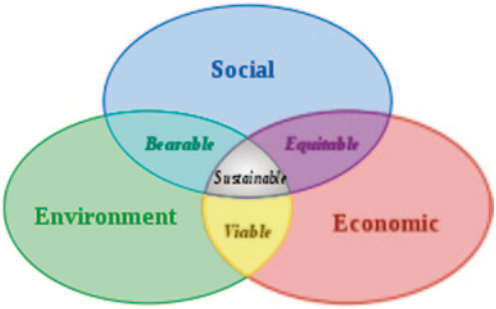

Fig. 1.2 Scheme of sustainable development: at the confluence of three constituent parts. (Source: Adams 2006)

The main types of social impact that occur as a result of these project-related changes can be grouped into five overlapping categories (UNEP 2002, topic 13):

- **Lifestyle impacts**—on the way people behave and relate to family, friends and cohorts on a day-to-day basis;
- **Cultural impacts**—on shared customs, obligations, values, language, religious belief and other elements which make a social or ethnic group distinct;
- **Community impacts**—on infrastructure, services, voluntary organizations, activity networks and cohesion;
- **Amenity/quality of life impacts**—on sense of place, aesthetics and heritage, perception of belonging, security and livability, and aspirations for the future;
- **Health impacts**—on mental, physical and social well-being, although these aspects are also the subject of health impact assessment.

The definitions of the SIA are very comparable to those of Socio-*economic* impact analysis (SEIA). These assessment types are sometimes mixed. However, it is clear that in a proper SEIA both social and economic impacts are studied.

1.1.1.4 Development Impact Assessment/Sustainable Development

The classic definition of sustainable development is *"development that meets the needs of the present without compromising the ability of future generations to meet their own needs"* (United Nations 1987). The United Nations 2005 World Summit Outcome Document refers to the "interdependent and mutually reinforcing pillars" of sustainable development as economic development, social development, and environmental protection (Fig. 1.2). By combining environmental impact assessment and socio-economic impact assessments the sustainable development impact can be assessed.

Development impact assessment involves a process to comprehensively evaluate the consequences of development on a community. The assessment process should be an integral part of the planning process as it provides extensive documentation of the anticipated economic, fiscal, environmental, social and transportation-related impacts of a particular development on a community (Edwards 2011).

Sustainable development assessment (SDA) is an overarching methodology (with many components), which is used in evaluating investment projects (as well as programs and policies), to ensure balanced analysis of both development and sustainability concerns. The 'economic' component of SDA is based on conventional economic and financial analysis (including cost benefit analysis). The other two key components are environmental and social assessment (EA and SA). However, many other more specialized types of assessments may be included within an integrated SDA.

1.1.1.5 Other Impact Assessments Analyses

The **Fiscal Impact Analysis** estimates the impact of a development or a land use change on the costs and revenues of governmental units serving the development. The analysis enables local governments to estimate the difference between the costs of providing services to a new development and the revenues, taxes and user fees, for example, that will be generated by the development. (Edwards 2011)

A **Traffic Impact Analysis** is a study which assesses the effects that a particular development's traffic will have on the transportation network in the community. Traffic impact studies should accompany developments which have the potential to impact the transportation network (Edwards 2011).

Fiscal impact analysis could be part of an economic impact assessment. A traffic impact analysis could typically be included in an environmental impact assessment.

1.2 Socio-Economic Impact Assessment

For the evaluation of socio-economic impacts of biofuel/bio-product conversion chains the *socio-economic impact assessment (SEIA)* is the most relevant assessment method. In the last decade, broad guidelines for the practice of the SEIA have been developed at the practitioner level. For example, principles for SEIA have been developed by the International Association for Impact Assessment (IAIA) (IAIA 2003). Mackenzie has published *socio-economic impact assessment guidelines* (MVEIRB 2007) and UNEP has published an *Environmental Impact Assessment Training Resource Manual*, that includes a chapter on social impact assessment (UNEP 2002). In this chapter the SEIA is described and related to the other impact assessment methods.

The following main steps are included in the SEIA process (Mackenzie 2007):

1. *Scoping and issues identification:* The proposed project must be well-defined. Social and economic issues must be identified as well as the geographic and temporal study boundaries.
2. *Determining the social and economic baseline*: There must be a good understanding of the impacted community or communities and the general socio-economic conditions in the project area.

3. *Predicting and analyzing impacts*: The assessment must be able to project what the social and economic impacts may be, including the effect of potential interactions between factors and over the lifetime of the development.
4. *Determining significance*: There must be an assessment of the importance of the social and economic impacts of the project.
5. *Mitigation, management and monitoring*: Once impacts and their significance are understood, decisions must be made about whether the project should proceed. If so, measures must be identified to avoid or lessen negative impacts (mitigation) and maximize positive impacts. Management of the mitigation needs to occur and on-going monitoring of the projects effects must be carried out to ensure thresholds are not crossed.

These steps are further explained in the next sections. More information can also be found in Mackenzie (2007).

1.2.1 Scoping and Issues Identification

Before starting an SEIA it is important to determine its scope consisting of:

- The scope of development
- The scope of issues
- The scope of assessment
- Level of detail of SEIA

The **scope of development** includes a description of the project to be studied in the SEIA, including the needed human resources, skills, goods and services and changes to the physical infrastructure.

In the **scope of issues**, potentially relevant impacts need to be identified. An initial selection can be made with the help of existing long lists of possible impacts. Initially or later in the process, also community members need to be involved to ensure that relevant impacts are included.

van Dam (2010) provides a list of socio-economic impacts relevant for biomass production, classified under the following themes:

- Working conditions and rights
- Economic aspects
- Competition and availability of natural resources
- Social aspects and welfare
- Health impacts
- Food security
- Smallholder aspects
- Policy and governance aspects
- Land tenure and rights
- Participatory aspects

Each theme consists of a number of potential impacts. The theme *working conditions and rights* includes for instance:

- Freedom of association and collective bargaining
- Forced labor
- Elimination of child labor and protection of children and young persons
- Equality of opportunity and treatment
- Minimum wages
- Working time
- Health and safety
- Social security
- Unemployment benefit
- Social security for migrant workers
- Maternity protection
- Migrant workers

Most of these themes and their underlying potential impacts could be relevant for both, biomass production (feedstock cultivation) and conversion.

If needed, other lists of potential impacts can be used to support the process of impact identification. An initial list of issues—mainly relevant on community level—is provided by Mackenzie (2007). Another extended list of potential impacts can be found in UNEP (2002). During the SEIA process some issues initially included might be found less relevant, and some new issues might be added to the selection.

The **scope of assessment** defines the spatial boundaries of the SEIA, depending on the type of the listed potential impacts. It is likely that many social impacts take place on company and community level; some impacts such as the contribution to the GDP can be assessed on national level. Furthermore, it should be defined which stages of the project are included in the SEIA. The following stages can be distinguished: planning, construction, operation, decommissioning, and post closure stage.

The **level of detail of the SEIA** can be different. It is reasonable to link this level to the size of the project and the expected level of concern related impacts. MVEIRB (2007) distinguished basic, moderate and comprehensive SEIAs and developed a test to determine which level is appropriate.

In a *basic SEIA* the following information should be included:

- A record and description of efforts to consult potentially affected communities and other parties.
- A development description, including the following socio-economic data:
  - Total estimated capital costs of the proposed development, including annual operating costs
  - Approximate number of workers including the developer's employees and contractors, and number of person days/years of work for the proposed development, including subcontracting
  - Identified archaeological resources within the footprint of the proposed development

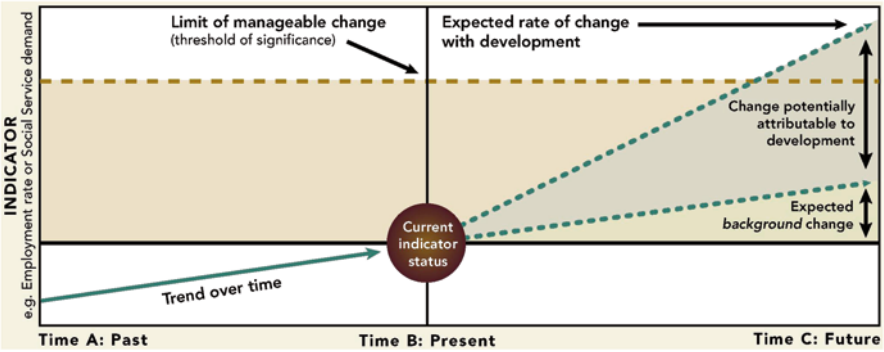

Fig. 1.3 Impact predictions. (Source: MVEIRB 2007)

  - A list of any extra regional infrastructure required for the proposed development to proceed

- Any identified potential impacts on the socio-economic environment, and suggestions for mitigating these impacts

In a *moderate SEIA* a distinction is made between the construction, operating, maintenance and decommissioning phase of the proposed project. Additional information requirements are described in MVEIRB (2007).

The *comprehensive SEIA* is required for complex large-scale and long-term developments such as large mines, oil and gas operations, pipelines, large new highways, hydroelectric dams, etc. The SEIA needs to be carried out well in advance of the proposed development (see MVEIRB 2007, pp. 28–29).

1.2.2 Determination of the Baseline

The developer should describe the current socio-economic and cultural environment and the context of the proposed project. It can be difficult to determine whether an impact is caused by the proposed project. The socio-economic environment will continue to evolve whether the project occurs or not. The occurrence of two simultaneous projects/developments can make it hard to attribute the impacts between the projects. Even the issue whether an impact is adverse or beneficial, depends on an individuals' personal choice. For example, increased disposable income can create stronger families, brighter futures for children and greater health; or it can fuel anti-social behavior (Fig. 1.3) (MVEIRB 2007).

The choice of methods and tools for characterizing and predicting social and cultural impacts is essential and described in the next sections.

1.2.3 Methods of Predicting and Determining Economic Impacts

Economic issues are given substantial emphasis in SEIA. Possible economic impact assessment tools include fiscal analysis, cost benefit analysis and input/output analysis.

The **Fiscal Impact Analysis** estimates the impact of a project or development on the costs and revenues of governmental units serving the project or development. It focuses on the inter-relationship between project viability and government costs and revenues. Government obtains revenues from a project through a variety of taxes, fees, and royalties. The government may also impose conditions on the developer that will raise the costs of government institutions managing and monitoring the environmental and socio-economic standards of a project. If the net cost of all of these elements is too high, the project will not proceed. A balance is required. Fiscal analysis also concerns intergovernmental relationships with respect to project revenues and costs (Mackenzie 2007).

A **Cost-Benefit Analysis** is a technique used to compare the various costs associated with an (investment) project with the benefits that it proposes to return. Most feasibility studies use cost-benefit analysis to determine the feasibility of a project. Typical indicators used are Net Present Value (NPV), Internal Rate of Return (IRR), Simple Payback Period and figures showing yearly cash flows. In order to make this calculation, traditionally the main inputs and outputs of the project need to be identified, including direct labor costs, use of intermediary products, quantities of waste, etc. *as far as they have a direct financial impact* on the proposed project. In addition, it is possible to quantify the costs and benefits of environmental impacts, cost effectiveness of mitigation and, where possible, environmental and social costs of intangibles (e.g. costs of pollution) in monetary units (e.g. dollars, euros). In some cases, the environmental and social cost/benefit estimates provided in the SEIA are then used to perform an overall economic analysis of the project. An overall economic analysis evaluates the total economic value of a project.

The **Input-output (I/O) Analysis** studies the interrelationships within and between economic sectors of a country and can be used to determine the impacts of an economic activity on the whole economy. The I/O method is based on a country's I/O table, which is available from national statistical bureaus and which generally concerns the country's economy for a time period of 1 year. There are two options by which a new industry can be introduced to the economy. The first method is based on creating a new final demand vector, while the second method is based on including the new industry in the technology matrix. Despite the first method's popularity, the second method has the advantage that it accounts for the impacts of the introduction of a new sector in a more complete manner. That is to say, the second way not only accounts for the inputs being bought by the new sector from the existing sectors, but can also account for its outputs being consumed by the existing sectors (Wicke 2006). The construction of an input-output table requires a large amount of data on inter-industry flows and other variables. Governments are often the only organizations with adequate resources for designing these models, and collecting and analyzing the required data. Other agencies using input/output models must usually rely on existing models developed by government (Mackenzie 2007). For more information

and examples of input/output analysis applied to a biomass conversion chain see Wicke (2006), van den Broek et al. (2000), and Wicke et al. (2006).

1.2.4 Methods of Predicting and Determining Social Impacts

Many consultative techniques are used in SEIA to identify issues, predict impacts and plan for mitigation. These include surveys, public meetings, workshops, focus groups, networks, and checklists. Table 1.1 gives an overview of commonly used tools.

The techniques described in Table 1.1 are effective for identifying present vulnerability and future developments, and to involve stakeholders in the identification of issues and concerns. Once issues and concerns are identified, the social analyst normally consults case studies of similar projects to compare impacts. If time permits, focused ethnographic research may be carried out. Otherwise rapid cultural appraisal techniques can be used. An example of the design of a rapid appraisal method is given in Box 1.1. The case study partners determine their approach based on the particular situation of the case.

Box 1.1: Rapid Appraisal

Rapid appraisal firstly involves collecting data from existing written sources. Secondly, 'key informants' are recruited to help obtain the views of local people. Key informants are local people who have a good knowledge of the local area. Their opinions are sought and they are asked to identify further informants, and if willing can join the research team to assist in interviewing other local people. The final stage of the process is a validation workshop, which provides an opportunity to feedback on findings and identifies any remaining gaps.

1.2.5 Determining Significance and Mitigation

After analysis of impacts it is important to evaluate whether the (negative) impacts are acceptable. If negative impacts are below an acceptable threshold, proper mitigation measures must be taken or ultimately the project should be terminated. The acceptable threshold can be determined using traditional and local knowledge, community based knowledge, standards, guidelines, policy statements, and biomass sustainability certification systems. In many cases mitigation measures can be identified and discussed with impacted communities, governments and other stakeholders. From the positive view, measures can be taken to benefit optimally from the positive impacts of the project. Management of the mitigation needs to occur and on-going monitoring of the projects effects must be carried out to ensure that thresholds are not crossed.

Table 1.1 Tools for the determination of social impacts. (Mackenzie 2007)

Techniques for social analysis	Description	Evaluation
Surveys/Questionnaires	Continuous or one-time. Targeted at impacted individuals (e.g. those employed during projects, workers spouses, etc.)	If a carefully designed survey keeps turning up a particular answer, causality is suggested. Poor design can yield inadequate responses
Focus Groups/Workshops	Held in groups of 6 or less (the smaller the group, the more productive the session) of individuals well informed on a particular topic. Collaborate to move towards consensus on key issues	A well-conducted focus group/workshop can yield a great deal of very useful information and insight. Moderate disagreement would normally suggest that there should be no attribution until more evidence of causality has been obtained
Community Meetings	Held in public to identify community based concerns. Provides opportunity for open dialogue	Effective when identifying broad issues regarding impacts (e.g. do you think what is happening is good or bad?). Good indicator of public support/unhappiness. A poorly organized public hearing can be counterproductive, leading to polarization of views, to unfounded fears about the socio-economic impacts of the project, or to unfounded confidence in the project
Networks/Technical Advisory Committees	Experts on particular issues relevant to the assessment process who lend advice on an on-going basis (community leaders/policy analysts)	Difficult to establish. Development can take time and energy
Checklists	Matrices are useful in ensuring that relevant impacts are identified. Design requires giving consideration to key component impacts of a project	Useful in making inter-community comparisons—identifying how various communities may see things differently
Ethnographic/ethno-historic studies	Focused study of the impacts of development on indigenous communities on social organization. Carried out by trained community or academic researchers at the community level	Difficult to carry out in the timeframe of an SEIA. Alternative is the Rapid Ethnographic Assessment Procedures (REAP) of cultural mapping, in-depth interviewing, focus groups supplemented with limited survey research

1.3 Socio-Economic Impact Assessment and Biomass Certification

1.3.1 The Relevance of Impact Assessment in Biomass Certification

Certification schemes and impact assessments can also complement each other. An interesting example is the certification scheme of the Roundtable on Sustainable Biofuels (see www.rsb.org). It requests participating operators to perform a screening exercise to determine whether assessments like an Environmental and Social Impact Assessment are required. A special RSB Screening Tool (RSB 2011) is developed for this purpose. In case biofuel operations will have significant impacts, as measured during the screening exercise, a social impact assessment process shall be carried out. RSB provides further guidance on how to carry out these impact assessments. This could be an interesting way to address the relevant socio-economic issues in more depth while using a biomass certification scheme.

Impact assessments are used throughout different sectors to evaluate the potential damages to the environment and the society, which a given project could cause. Impact assessments are applicable to all sectors from construction to agriculture, services and industry. In many countries, impact assessments are part of the legal requirements for any new project beyond a certain size.

Standard and certification systems are designed to offer economic operators the possibility to obtain a neutral and credible mean to demonstrate compliance with sustainability criteria. Some certification systems prove to be more stringent and comprehensive in the way they address social and environmental impacts and are more robust in their implementation. Some schemes dedicated to biomass/biofuel certification, such as the Roundtable on Sustainable Biofuels (RSB, see next chapter), address a large number of potential impacts, including complex topics such as land rights violation and local food insecurity.

Certification in general and certification of biomass/biofuel in particular can greatly benefit from the use of impact assessment processes to support economic operators towards compliance with standard requirements and sustainable practices. Understanding and evaluating the intensity of potential impacts is the logical prerequisite to any mitigation or corrective action. In the example of the RSB (see next chapter), the accomplishment of an impact assessment process is not only a recommendation towards compliance, but a specific requirement, which needs to be complied with to receive certification.

Conducting an impact assessment can prove to be extremely relevant for the adaptation of the implemented design and practices in the early stage of a project. Thus, potential impacts of the biofuel project can be sufficiently understood, mitigated upfront and monitored over the further development.

Whether or not an impact assessment is required *per se* for certification, the data collected by an operator during an impact assessment process provide important information on the local context, implemented practices and potential impacts of

operations. These data can be used by an auditor during the certification process to evaluate compliance of operations. Therefore, by conducting a proper impact assessment, an operator may as well save time and costs in anticipation of a certification process. Additional benefits include improved management systems and practices, decreased likelihood of dispute with local communities, risk mitigation regarding payment of penalties for environmental damages, improved reputation, etc.

1.3.2 An Example of Use of Impact Assessment Tools in Biomass Certification: The Roundtable on Sustainable Biofuels (RSB)

Certification schemes can include impact assessments as part of the requirements for compliance, although this remains rare. As an example, the Roundtable on Sustainable Biofuels (RSB) requires operators to conduct an impact assessment process, which can be adjusted to the needs and specific context of each operator. Through this impact assessment process, operators evaluate the potential or existing impacts of their operations on all the environmental and social aspects included in the RSB Standard. These are: stakeholder consultation, human and workers' rights, impacts on local communities, food security, land rights, conservation (biodiversity), soil, water and air.

For each of these topics, operators may be required to conduct an in-depth impact assessment. Whether or not this is the case is being determined through a preliminary step called a **Screening Exercise** (RSB 2011). The screening exercise is a compulsory step for all operators to carry out. It includes different sections, which relate to the environmental and social criteria covered by the RSB Standard. For each section, the operator needs to answer simple questions, which determine whether a more detailed investigation is mandatory. As an example, an operator located in an industrialized country will not be required to evaluate the impact of operations on local food security or an operator using rain fed agriculture does not have to assess the impact of operations on the depletion of water resources.

Such differentiation and flexibility is extremely important, as each of these in-depth impact assessments involve additional costs and efforts for producers. The aim of the RSB is to have an efficient, cost-effective and practical certification process; hence the need to avoid triggering additional unnecessary studies. As an important safeguard, the results of the screening exercise are verified by the auditor during the certification process. It is also important to note that, regardless of the content of the impact assessment process and the Environmental and Social Management Plan (ESMP), operators will still be evaluated against each and every RSB requirements.

The RSB developed specific guidelines for in-depth impact assessments, which are available for operators and auditors to use. They cover the following topics:

- Rural and Social Development
- Food Security
- Conservation (Biodiversity)

- Soil
- Water, including water-use rights
- Land Rights

At the end of the impact assessment process, operators shall compile all the results and the mitigation practices implemented to address the impacts of biofuel operations in a document called an **Environmental and Social Management Plan (ESMP)**. The content and length of the ESMP will vary according to the number of impact assessments triggered by the operator. For an operator with low risk of impacts, as determined through the screening, the ESMP will be rather succinct, while operators with high risk of impacts will produce a substantial ESMP to cover all topics sufficiently.

By including Impact Assessments into their standard, the RSB assures that potential and existing impacts of certified biofuel projects are adequately addressed, mitigated and monitored.

1.4 Conclusion

Impact assessments are used throughout different sectors to evaluate the potential damages and benefits to the environment and the society, which a given project or realization could cause. In many countries, environmental impact assessments are part of the legal requirements for any new project beyond a certain size. In addition several impact assessment methods have been developed to assess relevant non-environmental impacts like socio-economic impact assessment (SEIA), Strategic environmental assessment (SEA), Social impact assessment (SIA), Development impact assessment/sustainable development, Fiscal impact analysis and Traffic impact analysis. Especially socio-economic impact assessments are relevant to many bioenergy, biofuel and bio-product production processes. These assessments consist of the following steps: (1) scoping and issues identification, (2) determination of the social and economic baseline, (3) predicting and analyzing impacts, (4) determination of significance (5) mitigation, management and monitoring. Socio-economic impact assessments can be used as an add-on to environmental impact assessment and/or to support biomass certification schemes. An example of the latter is the RSB scheme in which a screening tool is applied to determine if and what impact assessments are required as part of the biomass certification process.

Biomass certification schemes measure whether the normative sustainability criteria are met by the use of indicators for compliance, and are usually applied after project implementation. Impact assessments are systematic processes to identify, predict and evaluate the effects of proposed actions and projects. Both certification schemes and impact assessment are recommended tools for ex ante and ex post evaluation of biofuel and bio-product projects.

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