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Bioenergy conflicts and their management

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Solutions for Tomorrow

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Summary

This report offers insights that companies dealing with bioenergy can use to identify and manage conflicts caused by differences in opinion, serious disagreements or clashes of interest. A field such as bioenergy that is based on the use of natural resources is prone to conflicts due to an increasing demand and simultaneous deterioration of the resources. Companies involved with bioenergy thus need to prepare themselves for potential conflict situations. The consequences of a failure to respond adequately and timely to issues that may lead to serious conflicts can result in considerable costs for the company compared to preventive actions at an early stage.

This report is based on a review of scientific conflict literature related to bioenergy. Conflict generating factors as well as suggested or implemented management methods were analysed, covering all the stages of the value chains of bioenergy production. The material included forest, agriculture, waste and algae feedstocks; and cases around the globe. The material was screened by focusing on three conflict dimensions, which highlight substance, procedure and relationship or respectively ‘what the conflict is about’, ‘how things are done’ and ‘how people behave’.

Conflicts related to the substance dimension highlight the issues about which the disputants argue. These are mainly related to the side-effects of bioenergy production. Issues such as distribution of profits, use of resources, health and energy efficiency were identified. These conflicts are heavily dependent on scientific data, information and knowledge with contrasting pieces of evidence, or opposite conclusions drawn by the conflicting parties. The relationship dimension reflects the cultural differences at individual, organizational and societal levels that interact with one another. Thus conflicts can be caused by a lack of understanding of the culture or local conditions. Also lack of trust between the stakeholders is an important conflict creator. Cultural differences affect for example the valuation of resources and desired development, and the way in which opposition is expressed. The procedure dimension addresses implementation of the bioenergy development and related organisational procedures. Conflicts arise as a result of misuse of established institutions, but often they reflect flaws in the institutions themselves. Conflicts are caused, for example, by lack of respect for land use rights of indigenous people or by the exclusion of relevant stakeholders in making decisions.

Based on our findings, we recommend companies to:

1. Recognise that conflict management is about reducing risks both for the companies’ own interests and for society at large. The main task is not to eliminate conflicts but to develop an awareness that allows companies to avoid the escalation of conflicts to levels where they become unmanageable and threatening.

2. Scan the main potential risk areas recognising that the thresholds of conflict varies in the dimensions with the socio-political contexts, which can change in unpredictable ways at short notice.

3. Pay attention to the different conflict dimensions in order to develop packages that respond in an adequate way to conflicts at hand. Well managed small conflicts can strengthen a company and its operations by ensuring that relevant sustainability aspects are taken into account.

4. Be aware that many serious conflicts arise because the institutional and political framework is weakly developed in some of the countries that are part of the value chain. Companies cannot become a substitute for good governance, but can support efforts to develop governance by formulating and following principles of good governance in their own activities.

5. Recognise that a company cannot isolate its own activities and disregard conflicts related to the actions of other companies in the same value chain. The sustainability of the end products and services and thus the reputation of all the companies involved will be judged across the whole value chain and not company by company.

6. Be aware that external intelligence concerning the bioenergy value chain and potential areas of conflict will always be incomplete. By involving stakeholders and by emphasising transparency companies can gain access to information that is crucial for keeping conflicts at an acceptable level. Good and open relationships with a wide range of stakeholders build trust which is essential also for dealing with any problems that arise in the operations.

Contents

1 Introduction

The use of natural resources has triggered conflicts throughout history. Such conflicts are expected to increase due to an increasing demand that is coupled to a simultaneous deterioration of many natural resources (UNECA, 2012; UNEP, 2012). Most of the conflicts have been local or regional and have remained relatively manageable, but some have escalated into broader confrontations between regions or even countries. Especially competition over land and water resources and the extraction of fossil fuels have contributed to international conflicts (Le Billon, 2001; Ross, 2004; Giordano et al., 2005). The conflicts have involved both states and private companies. As a recent example related to the use of biomass, the construction of a pulp mill on the shore of the border river between Argentina and Uruguay escalated into an international political dispute (Lehtinen, 2013).

Bioenergy is an expanding business area that holds promises for mitigating climate change, to provide new sources of livelihood and to make use of material that is currently wasted or poorly used. At the same time the expansion of bioenergy production can increase pressure on natural resources such as land, water and forest biomass. Thus it is prone to conflicts similar to those experienced by, for example, the agriculture and forest based industries.

The expanding bioenergy production raises a variety of ethical and social responsibility issues such as carbon footprint and, for some bioenergy production value chains, also the competition with food production (Smith, 2010). Failure to respond timely and adequately to these potential sources of conflicts is likely to threaten the involved companies in the form of law suits, political obstacles, loss of credibility and consumer reactions.

There are many examples of companies that have experienced serious conflicts in bioenergy production. Neste Oil faced numerous allegations of neglecting its responsibilities in the field of sustainability (the Ecologist, 2013; Greenpeace, 2014). Its public image suffered severely after it had become a part of an Asia-based biofuel value chain[1]. The company was blamed in particular for the activities of the suppliers that were seen to cause large-scale deforestation and other unsustainable practices (Milieudefensie and Friends of the Earth Europe, 2010). This put pressure on the company to better and more visibly demonstrate that it deals with the whole value chain and pays particular attention to the activities of its suppliers. According to Neste the original target, set in 2009, was that 100% of the raw palm oil used would be certified by the end of 2015, but “thanks to a major effort this target was achieved two years early, in 2013” (Neste Oil, 2013). The activities have been successful in that Neste Oil has been publicly recognised as a developer of sustainable practices. In 2014 Neste Oil was ranked 6th in a list of the most sustainable companies in the world.[2]

The example of Neste Oil demonstrates that active conflict prevention and resolution favours the company interests in the long-term. International public trust is an important asset in a

[1] In 2011 an environmental group awarded Neste the worst company in the world award: “Hall of Shame” (the Public eye awards, 2011) and this was reported for example in Forbes Magazine (Rapoza, 2012) (with 11 204 views up to August 22 2014) showing that it is not only a fringe issue cherished by “green activists”.
[2] Corporate Knights awarded Neste Oyj 6th place in its ranking of world companies in 2014. The list was published by Forbes Magazine (Smith 2014) and the article has collected 56 039 views.

global market. Conflict prevention pays off, boosts the company's reputation and improves finances (Smith, 2010). The costs of the conflict management are usually negligible in comparison, provided that action is taken before serious conflicts emerge.

To be able to prevent and resolve conflicts, the underlying reasons have to be understood. Important reasons include resource scarcity in the face of increasing demand (Anderson and Snyder, 1997; Krummenacher, 2008; Gendron and Hoffman, 2009) and lack of institutional capacity for dealing with the resource scarcity (Giordano et al., 2005).

UNEP (2012, pp. 8) has summarised that conflicts related to renewable resources arise over: "issues such as who should have access to and control over resources, and who can influence decisions regarding their allocation, sharing of benefits, management and rate of use". All of the general reasons for conflicts are likely to be relevant for bioenergy, and in order to predict conflicts, several aspects of society need to be taken into account (Barton et al., 2008). Although the risk of conflict can be assessed, the detailed dynamics are often complex, making it difficult to predict the evolution of any particular conflict.

This report focuses on bioenergy. It gathers and summarises information from peer reviewed scientific articles on conflicts that have been specifically associated with bioenergy. The specific aim is to help bioenergy related companies to identify and manage conflicts at a stage when the conflicts do not yet threaten the operations of the company. Conflict in this work is thus not understood only as a battle or fighting but also as significant differences in opinion, serious disagreements, clashes of interest and public protests.

While preparing this report, the authors visited companies involved in the BEST research programme. Discussions during those meetings were helpful for understanding where the companies stand concerning conflict management and what the major challenges are that they face in this area. Key issues that the companies brought up have been reflected in our review. We hope to stimulate further reflection of these issues within companies as well as general discussions about the actual and potential conflicts that the bioenergy field is facing, together with the possible management solutions.

Some companies raised the issue of how to compare bioenergy with fossil fuels in terms of social sustainability. These companies felt that bioenergy, as an expanding form of energy production, has been more heavily contested from a sustainability point of view than fossil fuels, with some notable exceptions such as the Nigerian oil fields. Such a comparative analysis of fossil energy and bioenergy was, however, beyond the scope of this report. The starting point for this report is that bioenergy has been promoted as a way to achieve sustainable development and that it has therefore, become subject to special scrutiny in this respect. Any conflicts that arise cannot be solved by claiming that bioenergy is the lesser of the two evils instead, they need to be addressed in their own right.

A central argument of this report is that conflicts display complex dynamics. This complexity needs to be understood in order to successfully manage the conflicts. To support such understanding the report presents a framework that provides different perspectives on the conflicts and thereby insights into why and how conflicts emerge and escalate. The aim is to demonstrate a framework that can alert companies of the possible conflicts along the various steps of the value chains. This leads to a discussion on how conflicts can be managed, i.e. completely prevented so that they never materialise or reduced once they have emerged. Findings of the bioenergy conflicts are also compared to other conflicts associated with the use of natural resources in general.

2 The reviewed material

The material for this report was collected from the scientific literature. The material consists of 28 articles that fulfilled the two criteria set for the selection: 1) peer reviewed journal article and 2) including descriptions of factors generating bioenergy related conflict(s) and/or management suggestions/experiences (Appendix 1).

The decision to review scientific literature was based on a concern for quality coupled with resource constraint that did not allow empirical exploration of conflicts or their resolution based on the collection of new original data. The relevance of the material for the BEST-project was ensured by focusing only on material related to bioenergy, and not on forestry or agriculture in general.

The selected articles included conflicts prior, during and after the realisation of bioenergy projects and developments. The cases presented in the articles covered the value chains from feedstock production, fuel and energy production and distribution, to consumption. Feedstock that was dealt with in the articles included forest biomass (charcoal, chipped wood), agricultural crops (Canola, Jatropha, Miscanthus, oil palm, corn, sugarcane, wheat, willow etc.), agricultural waste (straw, slurry, manure), municipal waste and algae. The articles dealt with cases from 13 countries covering all the continents (Africa: Tanzania, Ethiopia, Cameroon, Zambia and South Africa; Americas: Brazil, USA and Ecuador; Asia: Philippines, Indonesia and India; Europe: UK and Italy).

The reviewed articles approached conflicts in many different ways. The material included conflict case studies based on official documentation and/ or stakeholder interviews, and scientific assessments of potentials and sustainability of bioenergy. The reported conflicts covered various levels of society (from individual to global) and scales of time and space (from one conflict that occurred in a certain case at certain time to bioenergy related conflicts on larger geographical areas during longer time periods). More information about the reviewed literature and its selection is given in the Appendix 1.

The review was conducted by searching for factors generating conflicts (issues directly causing the conflicts or resulting in their aggravation) and conflict management methods related to these factors. The identified issues were classified according to the used theory (Chapter 3) to construct a conflict framework.

3 The theoretical base

The interviewed BEST-companies raised a question on the possibilities to consider the sustainability of bioenergy and its feedstock from the perspective of sustainability of other uses of natural resources or the use of the same ecosystems for some other products or services. It is obvious that the basic sustainability challenges underlying bioenergy conflicts are in many respects analogous to those for any use of natural resources and that the competition between different uses can increase sustainability challenges. Therefore the sustainability of bioenergy cannot be considered as a separate issue, but needs to be examined and managed in a wide sustainability frame. To fulfil this demand, we selected a theoretical base that allows a broad examination of the nature of conflicts and their solution while focusing on bioenergy.

When conflicts emerge as battles, fights, strong differences in opinion, serious disagreements, clashes of interest, or public protests, it is easy to see that something has gone wrong. In order to disentangle the causes and to manage the conflicts one needs to understand the nature of the conflict. In this report, we aply a conflict dimension theory (Walker and Daniels, 1997; Hellström, 2001). This theory provides a salient way to unravel the nature of the main issues that cause and feed the conflicts.

According to the conflict dimension theory every conflict situation includes three dimensions: substance, procedure and relationship. Although these dimensions can been examined separately, they are all interlinked (Figure 1).

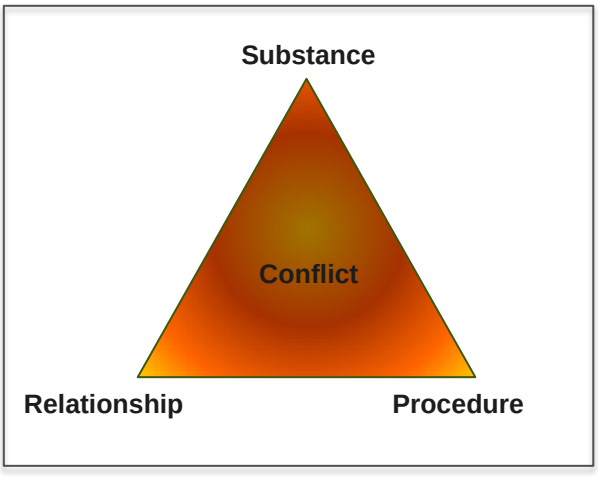

Figure 1 A theoretical framework presenting the three dimensions of conflicts following Walker and Daniels (1997, p. 22). These dimensions were used in identifying and categorising the conflict causes as well as management approaches.

The theory has been developed for conflicts related to the use of natural resources and it has been widely applied especially within forestry. The three conflict dimensions focus on different types of issues at stake. The exact interpretation of these foci varies between studies applying the theory. The definitions of the dimensions that are used in this report are described below. They follow closely those used by Hellström (2001), Niemelä et al. (2005) and Edwards and Kleinschmit, (2013).

Substance (‘what it is about’) highlights the issues about which the disputants argue. Issues such as distribution of profit, use of resources, health and energy efficiency came up in the conflict cases. Conflicts over substance are generated when stakeholders have different

views on e.g. the appropriate use of natural resources. Conflicts have, for example, emerged when environmental groups promote the protection of the forest, rural peasants living in the area want to improve their income without sacrificing their wellbeing and companies or the public sector are eager to gain profits from bioenergy production.

Relationship (‘how people behave’) reflects the cultural differences at individual, organisational and societal levels, and how these differences interact with each other. Conflicts reflecting the relationship dimension can be caused by a lack of understanding of the culture or local conditions of stakeholders. Cultural differences affect for example the valuation of resources, desired development and the way in which opposition is expressed (e.g. sporadic acts of resistance, organisation into opposition committees etc.).

Procedure (‘how things are done’) addresses the implementation of the bioenergy development, organisational procedures etc. Examples of conflicts originating from the procedural dimension are those which are caused by violations of accepted processes such as the land use rights of indigenous people and the right of stakeholders to be involved in decision-making.

Based on the theory and the review of the bioenergy conflict literature a framework was developed to highlight both conflict generating factors and conflict management approaches and methods. The framework aids the apprehension of both the character of each specific dimension as well as the range of conflicts that involve several dimensions.

4 Factors inducing bioenergy conflicts

4.1 Categorisation of the conflict inducing factors along the framework

The identified factors generating conflicts were categorised using the dimensions (procedure, substance and relationship) and leading to a conflict framework. This framework is a generalisation of the individual conflict generators. The identified factors and related literature are described in detail in Appendix 3 and the main elements of the framework are presented in Table 1.

Table 1. Conflict dimensions (substance, relationship and procedure) categorising the factors identified to generate bioenergy conflicts.

Conflict dimension	Factors generating conflicts
Substance	Risks to human health and wellbeing Degradation of ecosystems and biodiversity Competition with other businesses and forms of income Increasing economic inequality Questioning climate benefit
Relationship	Clashes with culture, way of life and local conditions Lack of trust between stakeholders Lack of connections between stakeholders to transmit information
Procedure	Deficiencies in governance and institutions Lack of recognising and respecting on-going land use Abuse of power Exclusion of stakeholders from the decision-making

The framework is intended to help to comprehend the diverse set of factors that can generate conflicts. Although the factors are categorised into unique categories in the framework, it is important to note that they are interlinked and they hardly ever generate conflicts independently of one another. The example of a bioenergy conflict case given in Appendix 2 demonstrates how the dimensions are intertwined both in conflict onset and management. This should be kept in mind when using the framework.

In the following, the factors identified to induce conflicts are summarised briefly by the three conflict dimensions. More detailed information of these factors can be found in Appendix 3.

4.2 Substance dimension

The substance dimension of conflicts is generally fairly easy to identify because the concrete issues at stake get formulated and described. In the reviewed articles these included issues related to human health and wellbeing in many different forms such as pollution threatening health or bioenergy feedstock production reducing food security (Appendix 3, Table A2). Similarly conflicts over the degradation of ecosystems and biodiversity, as well as deterioration of economic welfare and lost incomes can be specified in concrete terms and were highlighted in the reviewed articles.

All these conflicts can be seen to arise due to the side effects of the bioenergy production and dominate the initial stages of the value chain. Their specific nature depends on local conditions and contexts, but their basic elements are similar across the globe. The central stakeholders are local actors that are directly affected by the bioenergy production, but if conflicts escalate, new stakeholders along the value chain may become engaged. Eventually intermediaries and groups that have no direct links with the value chain can enter the conflict.

An example of this is the organisation of local people opposing the construction of a wood processing and electricity producing plant in Newbridge on Wye in UK (Box 1).

Box 1. Escalation of a substance dominated conflict centred on the perceived risks concerning increased traffic and negative environmental effects in UK

BSW Timber Plc submitted an application in 25 November 1999 to construct an Integrated Wood Processing Plant including a power plant for electricity generation on the existing BSW saw mill area. New access road and junction, wood processing building, drying kilns, wood treatment building, wood chip storage silos and dryers, pyrolysis plant building, electricity generating plant building and air cooled condensers were proposed to be build. Severe conflict between the developers and the local people emerged after the application. The dismayed local people formed an action group called Action to Save Our Heritage (ASH) to protest the proposed development. The local residents had submitted 233 individual letters of protest to the Powys County Council (PCC). Local newspapers and NGOs played a crucial role to provoke discussion and debate about the potential negative impacts of the proposed development. The opponents argued that this is a major industrial development wrongly proposed in the nearby area of special scientific interest sites, a National Nature Reserve and a conservation area. They argued that this development could cause severe environmental problems, negative effect on tourism, livestock and visual impacts. The PCC was not satisfied with the environmental assessment and rejected the application.

(Quoted from Upreti (2004, pp. 790) with some modifications)

The conflicts related to human health, wellbeing as well as environmental and economic impacts typically arise due to poor planning or control of activities (i.e. procedures such as the environmental assessment named above). These issues are relatively easily foreseeable. However, sometimes less expected effects may arise. The strong international objection to bioenergy development due to indirect land use change effects (Gomiero et al., 2010; Janssen and Rutz, 2011) or the feared effect of bioenergy production on food prices and thus global food security (Gheewala et al., 2013) is a case in point. The hype of bioenergy fed this conflict.

The conflicts that are related to the expected outcome of the production and use of bioenergy, i.e. the climate benefits, typically arise late in the value chain. The climate benefits or the lack of them depend on calculations that are contested despite efforts to standardise them by the IPCC. The conflicts have furthermore been fuelled by political agreements on the attribution of emissions as in the Kyoto protocol (Appendix 3, Table A2).

All conflicts related to substance are heavily dependent on scientific data, information and knowledge. The conflicting parties may present different and contrasting pieces of evidence, or may draw opposite conclusions from the same pieces of evidence. Information is likely to be both distorted and misinterpreted and experts who have different opinions get engaged from both sides of the conflict.

The conflicts dominated by substance can escalate in many ways. One typical cause of escalation is the denial or distortion of reported substance based problems in the face of mounting evidence to the contrary. Conflicts can also escalate when the particular case becomes seen as an example of an undesirable course of development, even though the case in itself may be relatively small in terms of documented problems.

4.3 Relationship dimension

The relationship dimension of conflicts is fed by cultural differences at individual, organisational and societal levels that interact with one another. Conflicts that have been caused by a lack of understanding of the culture or local conditions of stakeholders represent one type of relationship conflicts. In bioenergy production cultural differences may create barriers for understanding on how social capital and identity are linked to the land and its use or how the traditional way of life fits into the bioenergy business.

These issues affect for example the non-monetary valuation of resources and views of desired development. Conflicts with a strong cultural aspect are likely when the bioenergy production implies a clear break with the past in terms of land use, way of life, cultural norms on what is considered appropriate livelihoods or practices in terms of resource management and use (Appendix 3, Table A3 and Box 2). These conflicts are common in the beginning of the value chain when bioenergy production leads to a new type of cultivation or resource use.

Box 2. Cultural dimensions of a large scale land acquisition taking place in Ethiopia where the state has ignored how the land allocation disrespects the culture and way of life of ethnic groups

'Non-economic' aspects such as social fabric, the 'social capital' and the cultural dispositions of people with the foreign land exploitation are not part of the public discourse about 'investment' and 'development'. Apart from the often morally questionable nature of state authorities disposing of land without ascertaining its comprehensive value and socio-cultural role for existing communities and without consulting the 'stakeholders' or a negotiated compensation, it is detrimental to stability and security to enforce an extraneous land regime in conditions where local people feel the land is their patrimony or heritage. In Ethiopia, the local population is often powerless, by law and by practice, to contest state measures and bring the case as to what they often see as heritage to the courts. Land being a state commodity devalued the 'sentimental' bond (as state policy makers often term it) that people might feel with it, even though their ancestors had possessed or cultivated it for ages. Arguments against the sudden and massive take-over of land are now being heard among the pastoralists and shifting cultivators in the outlying areas where land acquisitions take place. People interviewed from the Ethiopian Southwest (e.g. from the Suri and Me'en, the ethnic groups of the area) had trouble in seeing where the central or regional governments took the right to dispossess them of land they saw as their own and used seasonally (for gathering, bee-keeping, dry season pasture, etc.). One of them stated: 'We have lived here for ages. Why is this not seen as our land, as the source of our living? Can the cattle go anywhere else?

(Quoted from Abbink (2011, pp. 524) with some modifications)

These conflicts typically escalate when the bioenergy developments are forced forward according to a pre-specified rigid plan that is not accepted or perceived legitimate in the affected communities (see Box 2). Further escalation can be expected when the conflict draws attention from actors focusing on socially responsible development. At this point initially local conflicts in the beginning of the value chain can proliferate along the whole chain.

Relationship based conflicts that emerge due to lack of trust are generic and part of both cultural and business conflicts. They can escalate following a series of individually minor events that (appear to) point in the same direction, i.e. indicating deceit or misuse of trust. Lack of transparency, broken promises or leaking of confidential information are common elements of conflicts related to lack of trust. The conflicts are easily aggravated by denial, if

evidence of misuse of trust has been presented. Conflicts related to the lack of trust can appear at any point along the value chain, but the issues are naturally determined by the specific position on the chain. Two examples (Boxes 3 and 4) demonstrate that conflicts typically emerge or gain force from a history of bad experiences.

Box 3. Farmers in Tanzania have low trust in biofuel production due to their previous experiences within agricultural sector

Farmers in Tanzania tend to have low faith in becoming out-growers with new crops. Past experiences such as with the Moringe tree – promoted by the government some years ago – have been disappointing because of market collapse. During colonial times rulers gave preference to cash crops for export or to the modern food sector and neglected the agricultural smallholder sector. The biofuel wave is thus feared among the farmers to be a continuation of these past policies. This causes reluctance among the farmers to start producing feedstocks for bioenergy production.

(Quoted from Romijn and Caniëls (2011, pp. 622, 630) with some modifications)

Box 4. Non-functioning relationships between the stakeholders burden bioenergy production possibilities

In a forest conflict in the USA (over a public forest), a history of polarization between federal forest management and conservationists is feared to be a pervasive barrier for forest bioenergy production. In this case, conservationists have a lack of trust in the forest agency as they fear that the bioenergy project will be another case of overexploitation of the forest. On the other hand forest industry's trust on the conservationists is poor as they fear that the conservations may support the bioenergy project in the beginning but turn against it later on. This switching of the opinion by the conservationist has previously ended projects, in which forest industry had already invested substantial time and resources because of the green light shown in the beginning.

(Quoted from Stidham and Simon-Brown (2011, pp. 208) with some modifications)

Conflicts of relationships are not primarily driven by scientific data or scientific information, but by the actions of those involved, or by prejudices, rumours and second hand information. Data and information can play an important role in causing mistrust, by either alerting actors to discrepancies between actions and statements or by revealing fraudulent behaviour. Distorted information can be deliberately transmitted by some parties in order to cause or escalate conflicts.

4.4 Procedure dimension

The procedure dimension is important in the implementation of bioenergy projects, in wider governance of bioenergy and in institutions needed for the maintenance and development of bioenergy markets (Appendix 3, Table A4). Procedures and institutions for governance set the frame for both individual bioenergy projects as well as the whole bioenergy production. Conflicts arise when bioenergy production violates or is perceived to violate accepted processes determining e.g. land use rights of indigenous people in the land sale and lease transactions, or when procedures exclude local inhabitants from decision making and ignore them in consultations (see Box 5).

These conflicts can arise as a result of a misuse of established institutions, including economic institutions, but often they reflect flaws in the institutions themselves, such as the lack of clearly defined ownership of land and other rights, including access to justice. These conflicts can be suppressed by autocratic governments but can erupt violently in cases of

(revolutionary) change of government and break down of existing institutions. They dominate the primary and industrial production end of the value chain, but can also be reflected to the consumption end, if they catch the attention of actors working for human rights and socially sustainable development. Denial of the problems in the face of evidence tends to escalate the conflicts.

Box 5. Decision-making that excludes stakeholders.

Although companies' (e.g., Marli, Oval and Bedford) mission statements clearly stated the importance of enhancing local communities' livelihoods, there was no evidence of participatory decision-making involving local affected stakeholders. Past administrators of Oval divulged that projects were poorly implemented, and that many farmers had been encouraged (through power imbalances framed by uneven knowledge) to join the Jatropha scheme. The local villagers interviewed in the Southern Province of Zambia mentioned that negotiations and deals had taken place with chiefs and governing officials, namely, those actors with more power than average citizens. Through imbalances in political power and knowledge, locals were led to believe that if they joined the Jatropha project it was for the interests of the whole community. Locals were largely excluded from participating in the project design and implementation process. The Jatropha cultivation by locals turned out to produce low yields and also deplete the farms' energy resources (wood).

(Quoted from Duvenage et al. (Duvenage et al., 2012, pp. 176-177) with some modifications)

In addition to procedures affecting the inclusion of stakeholders in the decision-making, procedures also affect the way information is processed and communicated among the stakeholders. Box 6 illustrates a case where local inhabitants raised the issue of procedural justice, i.e. questioned the fairness and transparency of the procedures because they felt that the local community was not adequately consulted. A failure to transmit information to those affected by the establishment or operations of bioenergy production typically generates conflicts by increasing fear for operations or reducing trust in operators. These conflicts dominate in the primary production and industrial production end of the value chain. Failure to inform other stakeholders of key characteristics of the products and the production processes create conflicts in the consumer end of the value chain. Escalation of the conflicts is likely when the processes remain unchanged despite observed problems. The media can contribute significantly to the escalation of these conflicts as poor handling of information can easily be understood also by non-experts.

Box 6. Procedural dimension highlighted in a biogas conflict in Italy

A group of citizens belonging to a local environmental organization founded a committee to oppose a large centralised biogas plant in the Province of Trento in Italy. The main goal of the committee in relation to the biogas project was to create the public debate, which until then had been rejected by the political institutions. To this end, the committee distributed leaflets and organized information meetings and a conference. On these occasions a variety of experts— economists, agronomists, engineers and farmers union leaders— recruited not only at local level but also from national trade union organizations and social movements were invited to discuss the effects of producing energy from agricultural biomasses in a mountain valley. As a result, the sustainability of the biogas project was challenged relative to local mountain agriculture and the local society. In addition to numerous social, environmental and economic aspects contested, the issue of procedural justice was raised by highlighting the lack of involvement of the general local community in the planning of the biogas facility and the secrecy surrounding all key aspects of the project, namely its characteristics, the farmers involved, and its risks. The committee managed to mobilize the great majority of the local population against the biogas project. In 2007 the committee collected more than 400 signatures (in a population of fewer than 1000 inhabitants) for a petition asking the municipality supposed to host the biogas plant not to issue a permit for the building of any centralized biogas plant in the area. Eventually, the small dairy farmers also withdrew their support for the project. Following their withdrawal, the municipalities abandoned the centralized biogas project.

(Quoted from Magnani (2012, pp. 112-114) with some modifications)

Conflicts dominated by the procedure dimension are on a micro level determined by agreement processes and established practices. They are, however, usually dependent on a wider set of institutions, structures and societal norms that are normally beyond the control of individual actors in the bioenergy value chain. Government functions at different levels, societal structures and institutions, and their interaction with private actors play a crucial role in the emergence and escalation of conflicts. Scientific data and information can generate conflicts in procedures, but conflicts over the procedure itself generally depends on what is considered acceptable and fair in a society or community and on prevailing values and adopted practices.

5 Suggestions for bioenergy conflict management

5.1 Conflict management approaches

Similarly to the initiation of conflicts, the dimensions in conflict management are also interlinked (see Appendix 2). This means in practice that those who aim to manage a conflict should assess the situation paying attention to all three dimensions.

> *It is often necessary to act on the three dimensions of the conflict at the same time, integrating more than one management method. Technical or scientific solutions alone can prove to be inapplicable. Similarly, participation alone cannot lead to feasible solutions without appropriate information and research provided by experts and local people. (*Niemelä et al., 2005, pp 883)

For the BEST-companies it is natural to ask which particular challenges are valid in each case and in which part of the value chain. Ideally one should know in advance which conflict management approaches and actions are adequate. Considering the variety among the BEST companies in the geographical areas of their operations, raw materials used, power over the entire value chain etc.; it is not possible to provide detailed information serving the specific interest of each company. The diversity of the reviewed cases does, however, show that the framework captures salient features of factors commonly generating conflicts. It helps to understand why some conflict management strategies and approaches may succeed where others fail. This report thus provides material for benchmarking preparedness and capacity to deal with conflict situations.

A company that aims to prevent and resolve conflicts has to consider a broad range of methods and approaches for dealing with the conflict dimensions. A key task is to deal in an appropriate way with the specific characteristics of the (potential) conflict. If a company fails to manage a conflict, or if its actions lead to an escalation of a conflict, litigations, arbitration or police interference are likely. An analysis of legal conflict resolution methods is, however, beyond the scope of this report, which focuses on actions where companies can take the lead and reduce the likelihood of serious conflict.

The management methods and approaches that were collected from the reviewed literature can be placed in the framework of conflict dimensions by identifying which dimension they primarily address (Table 2). In the following these conflict management methods and approaches are considered in detail.

Table 2. Identified conflict management methods in the reviewed literature

Conflict dimension	Management method
Substance	Disseminate information Collect more data and information Take improving actions on harmful effects
Relationship	Improve dialogue and communication Increase co-operation Provide capacity building and offer training
Procedure	Increase stakeholder engagement Aim for mediating, harmonization and monitoring of agreements Support, develop and enforce sustainability standards Work with governance

5.2 Substance dimension

The first step in managing substance dominated conflicts is to reach agreement on the issues to be addressed. A company caught up in a conflict or foreseeing a potential conflict can call in a mediator and/or arrange stakehoder meetings/ use public consultancy/engage other methods to consult stakeholders in cases when the company is not aware of or is not able to fully apprehend the issues that other parties see as the core problems. When the substance issues of each party have been understood, the company can apply several approaches to manage the conflict. In the easiest cases, a company can reduce tensions simply by improving the dissemination of available information. In other cases, when information that would be needed to address the concerns is lacking, the company will have to make an effort to collect and analyse the needed data to be disseminated. Data collection and information dissemination are, however, not sufficient for managing all substance conflicts. The company will have to show that it is ready to take concrete actions to modify plans or activities in order to improve the operations so that negative substance impacts can be avoided and positive effects can be emphasised.

5.2.1 Disseminate information

For a company the dissemination of information is a key to the prevention of conflicts, but the information provided has to succeed in addressing the root causes of the perceived problem or risk. It must also be reliable and verifiable. When the dissemination is successful, it can help in decreasing conflicts by removing opposition that is fuelled by a lack of knowledge or awareness of benefits (Upreti, 2004). For example, secrecy perceived by local villagers concerning the participants and the risks involved in a biogas project led to fierce opposition and eventually abandonment of the project (Magnani, 2012) (Box 5). Providing more information about the project may not have prevented the conflict but it would have helped the company to apprehend the nature of the problems at an earlier stage. This could have helped the company to reconsider the plans and/or to focus the data collection.

Companies often see that the main purpose of disseminating information is to reduce concerns and assure stakeholders that risks are small and manageable. Many have stumbled in their information campaigns because they have failed to recognise that the risks and concerns perceived by the general public often differ significantly from those of scientists and bioenergy developers and specialist. A thorough understanding of the concerns is essential. After that the company can consider which societal level to address (local, regional, national etc.), which means of communication to use (newspapers, leaflets etc.) and with whom to collaborate in order to disseminate information (e.g. information disseminated by professionals such as environmentalists and medical experts can be highly respected, but also deeply mistrusted if they appear to be “bought” by the company). To be effective in conflict management companies must disseminate information regularly. Similarly educating the public on bioenergy requires constant distribution of reliable information.

5.2.2 Collect more data and information

Any new activity will create a demand for information that usually cannot be satisfied by existing data. Already during the very initial steps of the planned bioenergy project, the project developers need to make broad assessments of the prevailing conditions and the changes that the bioenergy project can induce. In most countries environmental impact assessments (EIA) and pre-project studies of environmental conditions and their management are mandatory for permit procedures of large scale activities. They also help to

increase the bioenergy investors' or companies' knowledge and awareness of the potential environmental effects as well as e.g. impacts on local inhabitants' water and food security related to their operation (Abbink, 2011; Mehta et al., 2012).

Creating pilot projects can also be effective in data acquisition and dissemination because they give stakeholders an opportunity to see the effects in reality (Stidham and Simon-Brown, 2011). Moreover pilot projects allow scientists to gather data so that long-term impacts can be determined and future projects can be improved. In order to these data acquisition methods (EIA, pilot projects etc.) to be effective, the company has to determine the proper scope for targeting the salient substance issues.

The collection of site specific data provides the company with a base for addressing stakeholders' fears related to a planned project. The data needs to be made available and transparently interpreted. The new information is crucial not only for assuring other stakeholders but also for the bioenergy companies and investors so that they can minimise their financial risks as project failures and lengthy court disputes usually come with high costs.

Need for data and information acquisition does not only limit to the initial steps of the project. Conditions change and general knowledge expands bringing along new challenges. During the operations new specific issues may thus be contested by stakeholders. The emission calculations for bioenergy provide an example of such an issue, with the relatively recent demand to include also the effects of indirect land use change (Gheewala et al., 2013).

5.2.3 Take corrective actions on substance

In addition to information and data, improving some of the substance issues demands other concrete actions from the companies. The actions require different types of information and its interpretation. These improving actions should demonstrably prevent, reduce and ultimately compensate the effects that are creating the conflicts.

The planning phase is crucial in a strategy of preventing conflicts. For example the choice of raw materials and the area for feedstock production affects strongly the risks and thus the companies should consider carefully which raw material and which locations the value chains will depend on. By opting for the use of higher energy yield crops, demands for land area can be reduced (Gomiero et al., 2010). Waste based fuels (Gomiero et al., 2010; Hansen, 2013) and third generation fuels (Singh et al., 2011) offer possibilities to increase strongly the climate benefits of bioenergy. However, when considering rural development possibilities in developing countries, agrofuels can increase the returns to labour and generate employment for the poor (Gheewala et al., 2013). The risks for conflicts are always context dependent, depending on area, time and co-occurring development. Considering the risks related to the feedstock choice in the planning phase is crucial.

In cases when conflicts have already emerged, companies can reduce the conflict to "acceptable" levels by introducing new solutions. Siting and building of energy generation infrastructure are prone for conflicts due to perceived effects on health, landscape etc. By being flexible companies can include new solutions that address key concerns. For example, by adjusting the siting plans so that they take into consideration the existence of other industrial infrastructures as well as prevailing socio-economic situation in the given area can help to make the company's activities more acceptable (Upreti, 2004; van der Horst and Evans, 2010). Similarly opposition caused by perceived negative visual impacts can be

minimised for example by architectural solutions (Upreti, 2004; Stidham and Simon-Brown, 2011).

In cases when companies have caused environmental, social or economic damage trough their operations, they should estimate the impacts and accordingly compensate for the detrimental effects caused in order to avoid the escalation of the conflict. For example in Indonesia, oil palm plantations polluted the water resources in their vicinity (Obidzinski et al., 2012). In order to avoid any harm caused by the polluted water, the plantation companies advised workers not to use the river water and also constructed wells in order to compensate for the lost resource. It is important to note that the detrimental effects may spread also outside the immediate area of operation and that this is taken into account in planning and carrying compensation.

Companies can partly offset their operations' negative impacts by improving social, economic or environmental conditions. Increased employment and greater returns on forest biomass and agricultural based resource production generally perceived to offset negative impacts, but may not solve distributional issues. In particular in lower economic countries, improvements in the infrastructure (Mwakaje, 2012), social services (Duvenage et al., 2012; Obidzinski et al., 2012), as well as access to clean and cheap energy (Romijn and Caniëls, 2011; Gheewala et al., 2013) are valued highly among the local communities as they can significantly improve their wellbeing. A crucial point for companies to consider when planning offsetting is that the actions that aim to offset some negative effects are valued among those that are most severely affected by the negative impacts. BEST companies also raised the question of the appropriate level of compensation. No universal solution exists for this as it is in the end closely related also to the relationship dimension of conflicts and the conflict management strategy.

5.3 Relationship dimension

Although the relationship dimension might not be visible when conflicts emerge, elements of it are nearly always present. The relationship management approaches increase trust among stakeholders, bring the stakeholders closer to each other and spread out the feeling of "ownership" of the planned developments and projects. Relationship management can focus on improving dialogue and communication, initiating and maintaining co-operation or building capacity. Successful relationship management helps to increase trust among stakeholders and also boost acceptability of the companies and their activities.

For BEST companies it is essential to recognise the right stakeholders when developing relationships. The physical and geographical scale of the activities of the BEST companies vary and with that the number and kind of stakeholders. An important observation emerging from the review of conflicts (Chapter 4) is that in a global world also stakeholders interact. Those immediately affected by the value chain are obvious stakeholders, but underestimating the significance of the links between local stakeholders in the production end and stakeholders in the consumption end of the value chain can be a serious mistake.

5.3.1 Improve dialogue and communication

Open and frank dialogues among stakeholders build on trust and also deepen it. Ideally a dialogue is a process in which all relevant stakeholders are included and in which individual views are acknowledged, respected and valued (Upreti, 2004; Abbink, 2011; Amigun et al., 2011). Thus dialogues form the base for all relationship management and also support

mutual learning. In practice dialogues have to be targeted and built around specific topics. A dialogue that aims at reaching “everyone” will usually become chaotic.

Through dialogues the company gains more knowledge of the concerns that the other stakeholders have towards the operation of the company or bioenergy production in general. At the same time the other stakeholders can gain deeper insights into the bioenergy production with its benefits and consequences. Dialogues can therefore help companies to address concerns and take them into account in their operations and thus ensure accountability (Upreti, 2004; Duvenage et al., 2012).

One of the key reasons for a company to use resources on dialogues is that dialogues can improve societal relations by helping to better understand different cultures, ways of life and local conditions. In this way potential conflicts related to, for example, customary land rights as well as important cultural, religious and spiritual areas can be recognised and avoided by adjusting actions accordingly (Abbink, 2011).

In addition to creating more trustworthy relationships, dialogues can also improve the bioenergy production process and its effects. For example, a two-way dialogue concerning agronomy and suitable production processes between investors and locals in Jatropha based bioenergy production in Zambia was believed to improve the local social and environmental sustainability (Duvenage et al., 2012). Possibilities for direct dialogues between these stakeholders were created by the formation of discussion groups that were further expected to reduce exploitation across different levels and groups. In the dialogue, it is the articulation of concerns and perspectives, and the confrontation of different stakeholders that helps them to understand better the views of others and thus enhance learning (Cuppen, 2012).

5.3.2 Increase co-operation

Bioenergy production can be developed as a co-operative activity. When stakeholders work together instead of merely accepting and supporting the activities of a company, a sense of fellowship and ownership can be achieved. For example in the USA (Stidham and Simon-Brown, 2011) a plan to use common forests as a feedstock supply for energy production faced difficulties due to the non-functioning relationships between the stakeholders (Box 4). A history of polarization between some of the stakeholders burdened the relationships and thus the project was feared to collapse sooner or later. Collaboration was seen as a solution not only to bring diverse groups (a community organization, a conservation organization, forest industry sector, a tribe, a federal agency, and a state agency) together but also to attract investors for the project. Especially actors who had previously been engaged in similar biomass utilization projects emphasized the necessity of collaboration as a method by which court cases of resolving disputes can be avoided. They felt that although collaboration is time consuming and possibly challenging, it is also an effective way to resolve disagreements even prior to their escalation into conflicts.

Several examples of co-operation as an approach to relationship management are found in agrofuel production in developing countries, where conflicts related to food security, land grabbing, exploitation of the local inhabitants etc. have been recurring problems. Inclusion of local villagers as out-growers and smallholders in contrast to employing (some of) them on large-scale centralised plantations is seen to improve the relationships between the locals and the foreign investors as it improves the status of the poor and ensures that profits remain in the rural areas (Borras et al., 2010; Gomiero et al., 2010; Romijn and Caniëls, 2011;

Mwakaje, 2012; Gheewala et al., 2013; Maltsoglou et al., 2013). Building and maintaining a value chain based on out-growers and smallholders is labour-intensive and can be expensive for companies. The profitability and management of these systems can be improved by the formation of cooperatives and networks (Romijn and Caniëls, 2011; Magnani, 2012; Matos and Silvestre, 2013) as well as using e.g. non-profit foundations to help with the training and extension services (Romijn and Caniëls, 2011; Section 5.3.3).

5.3.3 Provide capacity building and offer training

A strong disparity in knowledge and skills, resulting in unbalanced relations among the stakeholders may make co-operation and even dialogue non-functional. Capacity building and training can help companies to improve the situation. Bringing bioenergy production into areas with low educational levels and, for example, lack of previous experience with cash crop production is bound to bring problems with the yields of the produced feedstock. In Zambia, farmers' poor skills and technologies threatened bioenergy feedstock production (Duvenage et al., 2012). The biofuel company, which was dependent on the collaboration with the local farmers invested into capacity building. The company established demonstration farms and set up extension workers that distributed agronomic advice among the local farmers. These activities resulted in more skilled farmers.

Providing business training to local partners can reduce the risks and conflicts that easily arise in collaborating with unskilled business partners. A bioenergy programme of the Brazilian Government ran into problems when programme participants supported by local media and politicians started showing free-riding behaviour (Matos and Silvestre, 2013). The bioenergy programme provided access to electricity to rural communities and the free-riders were electricity consumers who refused to pay their bills. Local electricity distribution companies, cooperatives as well as the larger electricity system had to face the financial losses. Providing business training at the local level was seen as a central solution to manage the conflict as educating the programme participants to honour the contracts would strengthen the general business environment. Collaborating with stakeholders such as media, activists and entrepreneurship support agencies can reduce companies' work load caused by business training.

5.4 Procedure dimension

Conflict management focusing on the procedure dimension concerns planning and decision-making processes as well as verification of the used procedures. Procedures of stakeholder engagement, monitoring, mediating, standardisation, sustainability certifications as well as policy-making and implementation range from voluntary to institutional actions. Many of these procedures are under the control of companies, but some, such as policy making and implementation involve foremost other actors. Companies should aim to work closely with other stakeholders and increase transparency in the company operations. Processes, which formally are outside the control of companies, can still be influenced in order to make them less prone to conflicts.

5.4.1 Increase stakeholder engagement

A company can gain acceptance, accountability and support for its activities by actively including stakeholders in planning through public participation (Upreti, 2004). Stakeholder engagement offers at its best an active and fair participation process with all relevant stakeholders. For example the development of a "Not In My Back Yard" (NIMBY) attitude

among the local public can be addressed through full consultation with local public, community leaders, planners and all other relevant stakeholders. Especially early public engagement can also bring long-term benefits for the company as public support is needed throughout the entire operation time to prevent conflict onset (Amigun et al., 2011).

5.4.2 Aim for mediating, harmonization and monitoring of agreements

Mediating and harmonization imply a fair and transparent process, in which external actors are included and the process is open. Processes for land acquisition in developing countries are often very sensitive. By using intermediaries in the land negotiations and deals between companies and farmers/communities as well as between foreign and local parties can be crucial for ensuring that the land use rights are understood and respected (Rist et al., 2010; Romijn and Caniëls, 2011; Obidzinski et al., 2012). Harmonization of the land sale and tenure contracts helps e.g. poor areas with subsistence farmers, people lacking previous business experiences and illiterate people to fully understand the contract with its terms (Rist et al., 2010; Obidzinski et al., 2012). The harmonization of formal agreements, which regulate the terms and benefit sharing associated with community involvement, is moreover believed to facilitate informed consent by the parties (Rist et al., 2010). Along with mediating and harmonization, monitoring the implementation of land transactions (Obidzinski et al., 2012), help companies to avoid accusations about unjust procedures in land deals and negotiations leading to them.

5.4.3 Support, develop and enforce sustainability standards

Voluntary sustainability standards have evolved after the emergence of consumer boycotts and eco-labelling in the 1980's and 90's (IISD, 2014). These private instruments have been developed to honour consumers' requirements concerning the sustainability of products. The initiatives to develop sustainability standards give stakeholders opportunities to influence decision-making concerning the supply chain with various focus on social, environmental and economic effects. A great number of voluntary bioenergy related sustainability schemes have been developed . The development of these schemes continues. In the future they may, for example, strengthen the land rights of indigenous and customary users (Janssen and Rutz, 2011; Obidzinski et al., 2012) improve food security (Gomiero et al., 2010) reduce indirect land use change (Janssen and Rutz, 2011) and increase the compatibility of small-scale diversified production systems with the large centralized plantation models (Rist et al., 2010). This requires that they are taken seriously and rigorously monitored. It is not sufficient to place labels on products, the value chains must also be transparent and traceable.

Sustainability standards need to define clearly the term "degraded land" (also termed as set-aside land, wasteland) (Obidzinski et al., 2012). As long as the land definition is not standardised using commonly agreed criteria and indicators, cases of disputes will emerge as is seen in Indonesia, Kenya, India and China (Obidzinski et al., 2012; Acosta et al., 2013). Certification systems have proven to be a powerful method for companies to gain more trust among consumers and policy-makers (European Commission markets require biofuels to pass sustainability standards). Thus by supporting, developing and enforcing standardisations and certification schemes, biofuel companies can reduce a number of potential conflicts and also aim for higher market shares.

5.4.4 Work with governance

The regulation of the use of natural resources, land rights, worker's rights etc. is ultimately under the responsibility of the regional and national governments. Conflicts fuelled for

example by poor work conditions can thus be partly managed by governments introducing new laws (Janssen and Rutz, 2011) or government institutions increasing the monitoring and enforcement of existing regulations (Obidzinski et al., 2012). Conflicts fuelled by food security issues in countries such as Tanzania and Philippines, can be partly managed by their governments regulating the amount and location of land that can be used for bioenergy feedstock production (Mwakaje, 2012; Acosta et al., 2013). Regulation can, however, be a double edged sword and also cause conflicts through, for example, distributional effects or implementation that is perceived to be sloppy or unfair.

By fostering good governance, companies can aim at preventing and reducing conflicts related to or caused by regulation. This can be achieved by strengthening the implementation of the spirit of existing policies by monitoring and adhering to the regulations in the companies' own operations (Janssen and Rutz, 2011; Obidzinski et al., 2012). When relevant policies and regulations do not exist or are incomplete, the company can follow internationally accepted good practice and thereby set examples that can contribute to the development of appropriate and fair policies and regulations. This is, however, a difficult route and demands great familiarity with existing practices and informal institutions. Close co-operation with local actors is likely to increase chances of success. For example an association, formed by a number of private biofuel producers, lobbied for coherent and transparent policies in Tanzania (Romijn and Caniëls, 2011). The lobbying was seen necessary as the number of biofuel companies with international investors was rapidly increasing and international media and NGOs were accusing the biofuel companies and government for neglecting smallholders and carrying out unsustainable practices.

6 Preventing and solving conflicts

6.1 Bioenergy, conficts and corporate social responsibility

This review has shown that the basic sustainability challenges underlying bioenergy conflicts and their different dimensions share many features with other uses of natural resources. The review has also highlighted that competition between different uses can increase the sustainability challenges and conflicts. The conflict dimensions have turned out to provide insights into the nature of conflicts and the different aspects of sustainable development (social, economic and environmental) have highlighted important features of bioenergy production. This underlines that the sustainability of bioenergy should not be considered as a separate issue, but should be examined and managed in a wide sustainability frame. A difficulty is that the aspects of sustainability may have very different scales for different products and services. For example, a local loss of a specific habitat serving local needs may be linked to the reduction of greenhouse gas emissions in another part of the world. Finding adequate ways of compensating for the losses may hold the key to sustainable conflict resolution.

The review has provided an overview of the challenges that the bioenergy field faces with respect to conflicts. Although these challenges are shared with many other related uses of renewable natural resources such as timber or food production, the bioenergy value chains also include new types of feedstock, new production processes and new products that may create special challenges. Important general bioenergy characteristics include:

1. Demand for large land areas for biomass production
2. Global scale of value chains
3. Cross sector activities with simultaneous feedstock management, new technological solutions and the opening of new markets
4. Markets heavily influenced by policy development
5. Large number of stakeholders in long value chains
6. Consumers' high expectation on sustainability

Companies working with bioenergy can anticipate risks and prepare themselves for possible conflict situations by acknowledging these characteristics and understanding their consequences and impacts (see Chapter 4 and Appendix 3). These characteristics introduce features that create risks of conflicts beyond issues like pollution, impacts on infrastructure or impacts on the local economy, that are relevant for all major industrial operations.

Some conflicts are inevitable and conflicts can even be beneficial for the development of the activity by highlighting issues that require special attention. When bioenergy production is a new activity or when the scale of the operations increases significantly, tensions with other co-existing activities arise. It is not possible to please all interests, but when conflicts are skilfully handled their negative effects can be minimised. It is also important to realize that a good strategy does not mean that conflicts should be avoided at all costs. Conflicts can be constructive, leading to compromises and better overall solutions which benefit all parties. But this requires an active management of the situation, taking the issues raised seriously at an early stage.

As argued in Chapter 4, all serious conflicts are a combination of the different conflict dimensions, and consequently adequate responses require approaches that can deal with all

dimensions and also their interactions. Tools are available for dealing with the different conflict dimensions (Chapter 5), but the demanding task is to manage them jointly.

Corporate Social Responsibility (CSR) offers an approach to companies for observing and reacting to risks and conflicts in a holistic way. In the EU guidance (EC, 2011), CSR is defined as “the responsibility of enterprises for their impacts on society”. According to this guidance, “To fully meet their corporate social responsibility, enterprises should have in place a process to integrate social, environmental, ethical, human rights and consumer concerns into their business operations and core strategy in close collaboration with their stakeholders”. This core message of CSR echoes the key message of this report. In order for the companies to improve social, environmental and economic issues, on which they are contested continuously, companies should have close collaboration with stakeholders and be able to demonstrate that they are paying attention to relevant issues.

Bioenergy companies can use approaches such as CSR as a starting point. CSR and related approaches are, however, not automatic problem solvers. These approaches have to be tailored to the special characteristics of bioenergy and to the specific characteristics of the company and its value chain. For example, in the case of bioenergy, many consumers’ expectations on sustainability are often higher compared to the expectations on the production of fossil fuels and cover the whole value chain. This means that a bioenergy company cannot limit its CSR approach to its own production facilities, but needs to ensure that operations of other companies along the same value chain also live up to high standards. Many companies have value chains that are international, and in conflict situations they can be challenged on issues outside their own immediate operations. This makes the task of applying CSR demanding. The policy dependence of markets also introduces special features into the CSR, manifested in, for example, sustainability criteria that become de facto standards and have to be taken seriously by any company that wishes to reduce the risk of conflict.

6.2 What are the lessons companies can learn from this review?

This review has shown that conflicts can be better understood by paying attention to the different conflict dimensions. Conflicts cannot, however, be solved by dealing with one dimension at a time, but by recognising the different aspects it is possible to work out a package that responds in adequate way to the conflict at hand.

Conflict management is about reducing risks both for the companies’ own interests and for society at large. The main task is not to eliminate conflicts but to develop an awareness that allows companies to avoid the escalation of conflicts to levels where they become unmanageable and threatening. Well managed small conflicts can strengthen a company and its operations by ensuring that relevant sustainability aspects are taken into account.

Many serious conflicts arise because the institutional and political framework is weakly developed in some of the countries that are part of the value chain. Companies cannot become a substitute for good governance, but can support efforts to develop governance by formulating and following principles of good governance in their own activities. This also reduces the companies risks of conflict.

Serious conflicts can have a specific trigger, but such triggers are usually identifiable only with hindsight. Therefore companies should focus on reducing the general conditions that

increase the likelihood of serious conflicts. By paying attention to the different conflict dimensions a company can scan the main potential risk areas. It is, however, necessary to keep in mind that the thresholds of conflict varies in the dimensions with the socio-political contexts, which can change in unpredictable ways at short notice.

Bioenergy value chains are complex which means that there are many and diverse points of conflict. A company cannot isolate its own activities and disregard conflicts related to the actions of other companies in the same value chain. The sustainability of the end products and services and thus the reputation of all the companies involved will be judged across the whole value chain and not company by company.

External intelligence concerning the bioenergy value chain and potential areas of conflict will always be incomplete. By involving stakeholders and by emphasising transparency companies can gain access to information that is crucial for keeping conflicts at an acceptable level. Good and open relationships with a wide range of stakeholders build trust which is essential also for dealing with any problems that arise in the operations.

References

Abbink, J. (2011) 'Land to the foreigners': economic, legal, and socio-cultural aspects of new land acquisition schemes in Ethiopia. Journal of Contemporary African Studies 29, 513-535.

Acosta, L.A., Enano Jr, N.H., Magcale-Macandog, D.B., Engay, K.G., Herrera, M.N.Q., Nicopior, O.B.S., Sumilang, M.I.V., Eugenio, J.M.A., Lucht, W. (2013) How sustainable is bioenergy production in the Philippines? A conjoint analysis of knowledge and opinions of people with different typologies. Applied Energy 102, 241-253.

Amigun, B., Musango, J.K., Brent, A.C. (2011) Community perspectives on the introduction of biodiesel production in the Eastern Cape Province of South Africa. Energy 36, 2502-2508.

Anderson, T.L., Snyder, P. (1997) Water Markets: Priming the Invisible Pump. Cato Institute, Washington DC, p.228.

Barton, F., von Hippel, K., Sequeira, S., Irvine, M., (2008) Early warning? A Review of Conflict Prediction Models. Center for Strategic & international Studies. https://csis.org/files/publication/080201_early_warning.pdf.

Borras, S.M., McMichael, P., Scoones, I. (2010) The politics of biofuels, land and agrarian change: editors' introduction. The Journal of Peasant Studies 37, 575-592.

Cuppen, E. (2012) Diversity and constructive conflict in stakeholder dialogue: considerations for design and methods. Policy Sciences 45, 23-46.

Duvenage, I., Taplin, R., Stringer, L. (2012) Bioenergy project appraisal in sub-Saharan Africa: Sustainability barriers and opportunities in Zambia. Natural Resources Forum 36, 167-180.

EC, (2011) COM 681, A renewed EU strategy 2011-14 for Corporate Social Responsibility. http://ec.europa.eu/enterprise/policies/sustainable-business/corporate-social-responsibility/index_en.htm.

The Ecologist (2013) Indonesia: terror and eviction for palm oil. Available at: www.theecologist.org/News/nes_round_up/2211702/indonesia_terror_and_eviction_for_palm_oil.html (accessed 22.8.2014)

Edwards, P., Kleinschmit, D. (2013) Towards a European forest policy — Conflicting courses. Forest Policy and Economics 33, 87-93.

Gendron, R., Hoffman, E. (2009) Resource Scarcity and the Prevention of Violent Conflicts. The Peace and Conflict Review 4.

Gheewala, S.H., Damen, B., Shi, X. (2013) Biofuels: economic, environmental and social benefits and costs for developing countries in Asia. WIREs Climate Change 4, 497-511.

Giordano, M.F., Giordano, M.A., Wolf, A.T. (2005) International resource conflict and mitigation. Journal of Peace Research 42, 47-65.

Gomiero, T., Paoletti, M., Pimentel, D. (2010) Biofuels: Efficiency, Ethics, and Limits to

Greenpeace (2014) Neste Oil- biodiesel driving rainforest destruction. Available at: http://www.greenpeace.org/finland/en/What-we-do/Neste-Oil--driving-rainforest-destruction/ (Accessed 22.8.2014)

Human Appropriation of Ecosystem Services. Journal of Agricultural and Environmental Ethics 23, 403-434.

Hansen, J. (2013) The Danish Biofuel Debate: Coupling Scientific and Politico-Economic Claims. Science as Culture, 1-25.

Hellström, E. (2001) Conflict Cultures – Qualitative Comparative Analysis of Environmental Conflicts in Forestry. Silva Fennica. Monographs 2, 1 -109.

IISD, (2014) The State of Sustainability Initiatives Review 2014, Standards and the Green Economy, p. 356. http://www.iisd.org/pdf/2014/ssi_2014.pdf.

Janssen, R., Rutz, D.D. (2011) Sustainability of biofuels in Latin America: Risks and opportunities. Energy Policy 39, 5717-5725.

Krummenacher, H. (2008) Environmental Factors as Triggers for Violent Conflict: Empirical Evidence from the 'FAST' Data Base. Swisspeace, Bern.

Le Billon, P. (2001) The political ecology of war: natural resources and armed conflicts. Political Geography 20, 561-584.

Lehtinen, A.A., (2013) Puunjalostuksen globalisoituminen: tapaus Fray Bentos, in: Hildén, M., Hallanaro, E.-L., Karjalainen, L., Järvelä, M. (Eds.), Uusi luonnonvaratalous. Gaudeamus Oy, Tallinna, pp. 245-257.

Magnani, N. (2012) Exploring the local sustainability of a green economy in Alpine communities. A case study of conflict over a biogas plant. Mountain research and development 32, 109-116.

Maltsoglou, I., Koizumi, T., Felix, E. (2013) The status of bioenergy development in developing countries. Global Food Security 2, 104-109.

Matos, S., Silvestre, B.S. (2013) Managing stakeholder relations when developing sustainable business models: the case of the Brazilian energy sector. Journal of Cleaner Production 45, 61-73.

Mehta, L., Vedwisch, G.J., Franco, J. (2012) Introduction to the Special Issue: Water Grabbing? Focus on the (Re)appropriation of Finite Water Resources. Water Alternatives 5, 193-207.

Milieudefensie, Friends of the Earth Europe (2010) Too green to be ture. IOI corporation in Ketapang District, West Kalimantan. Available at: http://www.foeeurope.org/sites/default/files/publications/FoEE_Too_Green_to_be_True_0310.pdf (accessed 22.8.2014).

Mwakaje, A.G. (2012) Can Tanzania realise rural development through biofuel plantations? Insights from the study in Rufiji District. Energy for Sustainable Development 16, 320-327.

Neste Oil (2013) Neste Oil achieves its palm oil certification target two years early. Press release 17.12.2013. Available at: http://www.nesteoil.com/default.asp?path=1,41,540,1259,1260,20492,22757 (accessed

22.8.2014)

Niemelä, J., Young, J., Alard, D., Askasibar, M., Henle, K., Johnson, R., Kurttila, M., Larsson, T.-B., Matouch, S., Nowicki, P., Paiva, R., Portoghesi, L., Smulders, R., Stevenson, A., Tartes, U., Watt, A. (2005) Identifying, managing and monitoring conflicts between forest biodiversity conservation and other human interests in Europe. Forest Policy and Economics 7, 877-890.

Obidzinski, K., Andriani, R., Komarudin, H., Andrianto, A. (2012) Environmental and Social Impacts of Oil Palm Plantations and their Implications for Biofuel Production in Indonesia. Ecology and Society 17.

The Public eye awards (2011) Neste Oil. Available at: http://publiceye.ch/en/hall-of-shame/2011-neste-oil (accessed 22.8.2014)

Rapoza, K. (2012) 'Worst company in the world' award goes to… Available at: http://www.forbes.com/sites/kenrapoza/2012/01/30/worst-company-in-the-world-award-goes-to/ (accessed 22.8.2014)

Rist, L., Feintrenie, L., Levang, P. (2010) The livelihood impacts of oil palm: smallholders in Indonesia. Biodiversity and Conservation 19, 1009-1024.

Romijn, H.A., Caniëls, M.C.J. (2011) The Jatropha biofuels sector in Tanzania 2005–2009: Evolution towards sustainability? Research Policy 40, 618-636.

Ross, M.L. (2004) What Do We Know about Natural Resources and Civil War? Journal of Peace Research 41, 337-356.

Singh, A., Olsen, S.I., Nigam, P.S. (2011) A viable technology to generate third-generation biofuel. Journal of Chemical Technology & Biotechnology 86, 1349-1353.

Smith, D.N. (2010) The Way We Think: Ethics, Health and the Environment in International Business. Asian Journal of WTO & International Health Law and Policy 5, 25-52.

Smith, J. (2014) The world's most sustainable companies of 2014. Available at: http://www.forbes.com/sites/jacquelynsmith/2014/01/22/the-worlds-most-sustainable-companies-of-2014/ (accessed 1.9.2014)

Stidham, M., Simon-Brown, V. (2011) Stakeholder perspectives on converting forest biomass to energy in Oregon, USA. Biomass and Bioenergy 35, 203-213.

UNECA, (2012) Natural resources and conflict management: The Case of Land. p.78. http://www.uneca.org/sites/default/files/publications/land_and_conflict_study_0.pdf

UNEP, (2012) Toolkit and guidance for preventing and managing land and natural resources conflict, Renewable resources and conflict p. 116. http://www.un.org/en/land-natural-resources-conflict/pdfs/GN_Renew.pdf.

Upreti, B.R. (2004) Conflict over biomass energy development in the United Kingdom: some observations and lessons from England and Wales. Energy Policy 32, 785-800.

Walker, G., Daniels, S., (1997) Foundations of natural resource conflict: conflict theory and public policy, in: Solberg, B., Miina, S. (Eds.), Conflict Management and Public Participation in Land Management. EFI Proceedings. European Forestry Institute, pp. 13-36.

van der Horst, D., Evans, J. (2010) Carbon Claims and Energy Landscapes: Exploring the

Political Ecology of Biomass. Landscape Research 35, 173-193.

Appendix 1 - Reviewed literature (Table A1)

For the analysis of bioenergy related conflicts, a Boolean search was conducted in the ISI Web of Knowledge and Scopus databases on November 22nd 2013. The search was conducted with a sentence: ((biomass* OR biofuel* OR bioenergy OR biogas OR biodiesel OR biopetrol) AND (social conflict*))

This search yielded 68 and 85 references in ISI and Scopus, respectively, out of which 28 were relevant for this study and were thus included. All included articles were 1) a peer reviewed journal articles and 2) described a bioenergy related conflict on setting factors and/or management suggestions/experiences. The reviewed articles are presented in Table A1 below.

Table A1 Publications that were reviewed for this report. These are listed alphabetically under three different categories, 1. Perceptions and possibilities for biofuel development, 2. Conflict analysis based on on-going and ceased projects, 3. Assessment of sustainability

Publication	Study Area	Biofuel	Focus of Study	Study material
1. Perceptions and possibilities for the biofuel development				
Amigun et al., 2011. *Energy* 36, 2502-2508	South Africa	Canola, biodiesel	A survey of the perceptions of farmers and civil servants towards a proposal to construct a large-scale biodiesel production facility	A questionnaire accompanied by a series of semi-structured interviews and a focus group discussion
Hemaiswarya et al., 2012. *Appl Microbiol Biot* 96, 1125-1135	India	Bioenergy with a special focus on microalgae	An introduction to the India's possibilities in the biofuel sector, with a special focus on microalgae	Literature study
Maltsoglou et al., 2013. *Global Food Security* 2, 104-109	Developing countries	Bioenergy	Assessment how the three main regions (Africa, Asia and Latin America) of the developing world are working toward biofuel development, including discussion of strategies, policies, and the main hurdles being encountered	Literature study
Mwakaje, 2012. *Energ Sust Dev* 16, 320-327	Tanzania	Agricultural biofuels	Assessment of the likely impact of the biofuel sector on the rural poor, food security, access to water, access to clean bio-energy, land issues, incomes, marketing, the environment and socio-cultural issues with highlighting the areas which could lead to a win-win situation for investors, the government and rural communities	Household Interviews and focus groups: village government leaders, women, youth, elders, academia and other key informants

Publication	Study Area	Biofuel	Focus of Study	Study material
Silitonga et al., 2011. *Renew Sust Energ Rev* 15, 3733-3756	Indonesia	*Jatropha*, biodiesel	Assessment of the prospects of biodiesel produced from *J. curcas* in Indonesia	Literature study
Stidham and Simon-Brown, 2011. *Biomass and Bioenergy* 35, 203-213	USA, Oregon	Forest biomass	Assessments of stakeholders' views on converting forest biomass to energy; identification of the opportunities for and barriers to converting forest biomass to energy, potential strategies to overcome the barriers and identification of the areas of common ground and conflict between and within stakeholder groups	Semi-structured interviews with 39 participants from nine stakeholder groups
Singh et al. 2011. *J Chem Technol Biot* 86, 1349-1353		Third generation biofuels	Examination of the benefits of third generation biofuels over the first and second generation biofuels	Literature study
Van der Horst and Evans, 2010. *Landscape Research* 35, 173-193	UK	Bioenergy	Exploration of the ways in which biomass is framed within the carbon debate, interrogating the trade-offs and conflicts surrounding the production of energy crops. Moreover a specific energy crop, Miscanthus is explored in its effect on current debates. A case study of recent developments in biomass energy in Yorkshire is also included	Literature study
2. Conflict analysis based on on-going and ceased projects				
Duvenage et al., 2012. *Nat Resour Forum* 36, 167-180	Zambia	*Jathropha*, biofuel	Assesssment of two operational biofuel projects and some previous attempts to produce biofuel that led into discontinued operations	Operational projects: semi structured Interviews with stakeholders: biofuel consultants, agronomic experts, researchers, farmers and project administrators. Discontinued operations: representatives of the Biofuel Association, and companies involved

Publication	Study Area	Biofuel	Focus of Study	Study material
Gerber et al. 2009. *Ecol Econ* 68, 2885-2889	Cameroon and Ecuador	Tree plantations for pulp and rubber	Assessment of two cases of tree plantation conflicts, based on a cross-fertilization of insights from ecological economics and political ecology	Interviews (peasants, plantation executives, political authorities, legal experts, academics and activists) and document analysis
Magnani, 2012. *Mt res dev* 32, 109-116	Italy	Biogas from slurry, manure, corn etc.	Assessments of the reasons why a large and centralized biogas plant project was contested by the local community and why it was eventually abandoned by the local institutions	Discourse/narrative analysis, using official documents, NGO/newspaper material, and interviews with key stakeholders
Nurlaila et al., 2012. *Procedia - Soc and Behav Sci* 35, 697-704	Indonesia	Biofuels in general	Assessment of land use impacts and sustainability of a governmental level bioenergy programme.	Interviews with biofuel actors such as farmers, plantation workers, energy institutions etc.
Obidzinski et al., 2012. *Ecology and Society* 17, 25	Indonesia	Palm oil, biodiesel	Assessment of the impacts and trade-offs of oil palm plantations with links to biofuels	Household surveys, focus group discussions, and key informant interviews
Rist et al., 2010. *Biodivers Conserv*19, 1009-1024	Indonesia	Palm oil	Assessment of the impact of oil palm development on the economic wellbeing of rural farmers in Indonesia.	Household socioeconomic data, additional surveys and field documentation
Schure et al., 2013. *Energ Sust Dev* 17, 95-105	Central- and West Africa	Charcoal	Examination of the link between the degree of formalisation of charcoal institutions and livelihood outcomes for actors involved in woodfuel chains	A literature review with reports and policy documents; case studies were retrieved from the literature and complemented by CIFOR cases.
Upreti, 2004. *Energy Policy* 32, 785-800	England and Wales	Biomass energy development	Examination of public concerns and attitudes towards biomass energy development ; identification of the main sources of conflict in biomass energy development by four case studies; exploration of the social and environmental concerns to be addressed in the future	Interviews, focus group discussion and questionnaire survey
3. Sustainability Assessments				

Publication	Study Area	Biofuel	Focus of Study	Study material
Abbink, J. 2011. *J Contemp African Stud* 29, 513-535	Ethiopia	Biofuels from agricultural crops	Identification of the main economic, social, cultural and political pros and cons of the process of large scale land acquisition and of the agricultural investments and profits that (are supposed to) follow	Literature study
Acosta et al., 2013. *Appl Energy* 102, 241-253	Philippines	Biofuels from agricultural crops	Assessment of the potential to develop a sustainable bioenergy sector by exploring people's policy preferences for sustainable bioenergy production	Interviews among representatives from the governmental level, academia, companies, farmers, etc.
Borras et al. 2010. *J Peasant Stud* 37, 575-592	Global	Biofuels in general	An introduction on a special issue: 'Biofuels, Land and Agrarian Change'. The special issue focuses on the political economy of biofuels and social and environmental sustainability.	Literature study/introduction
Cuppen, 2012. *Policy Sciences* 45, 23-46	The Netherlands, global	Conflict in stakeholder dialogue	Introduction of a constructive conflict (i.e. articulation of a diversity of perspectives and the confrontation of claims and ideas based on these perspectives) as a central design issue for stakeholder dialogue.Case example: assessment of dialogue related to sustainable biomass chains in the Netherlands and identification of what is needed in order to realize these chains	Categorization of statements from reports,websites, news items and transcripts from other stakeholder projects on biomass; stakeholder interviews (researchers, companies, branch/sector organizations SMEs, NGOs, governance at national regional and local level)
Fernandes et al., 2010. *J Peasant Stud* 37, 793-819	Brazil	Biofuels from agricultural crops	A study of peasant movement reactions, proposals, and territorial disputes with agribusiness related to an expansion of agrofuel crops and agrofuel production. A Brazilian case of territorial disputes between expanding sugarcane plantations and agrarian reform settlements as well as biodiesel production projects	Literature study and interviews
Gheewala et al., 2013. *WIREs Climate Change* 4, 497-511	Developing countries in Asia	Biofuels	A review of economic, environmental, and social costs and benefits related to biofuels in developing countries in Asia. Evaluation of the advantages, drawbacks, and possibilities for improvement of the sustainability of biofuels.	Literature study
Gomiero et al., 2010. *J Agr Env Eth* 23, 403-434	Global	Biofuels in general	A review concerning the relation between biofuels, food prices, and poverty creation.	Literature study

Publication	Study Area	Biofuel	Focus of Study	Study material
Hazlewood, 2012. *Journal of Sustainable Forestry* 31, 120-153	Ecuador	Palm oil	Assessment of how oil palm plantation monocultures have created both environmental predicaments and social conflicts	Literature study and interviews
Janssen and Rutz, 2011. *Energy Policy* 39, 5717-5725	Latin America	Biofuels in general	Sustainability conflicts for biofuel market development in Latin America	Literature study
Johnson et al., 2013. *Environ Manage* 51, 339-353	USA, global	Sustainable bioenergy	A discussion of bioenergy stakeholder groups and their varied interests that illustrates the complications to define and promote ‘‘sustainable’’ bioenergy production	Personal experience, a literature review and involvement with other researchers at meetings
Matos and Silvestre, 2013. *J Clean Prod* 45, 61-73	Brazil	Biofuels in general	Assessment of the dynamics of stakeholder relationship for sustainability in the field of bioenergy	Stakeholder interviews (farmers, refineries’ managers, companies’ executives, government officials and experts)
Mehta et al. 2012. *Water Alternatives* 5, 193-207	Global	Biofuels in general	An introduction to a special issue concerning water grabbing by agricultural (also biofuel plantations) and other activities mainly in developing countries	Literature study
Romijn and Caniëls, 2011. *Research Policy* 40, 618-636	Tanzania	Jathropha, biofuel	Identification of all significant socio-technical experiments with Jatropha; (1) Assessment of Jatropha biofuel experiments in Tanzania that have developed towards a fully-fledged sectoral production and innovation system; and (2) investigation of whether that system has developed and maintained sustainable practices and produced sustainable outcomes	Two surveys of relevant actors: Officials and members of the National Biofuels Taskforce, NGO representatives, academics and private entrepreneurs.; secondary sources such as press reports, NGO studies, company reports, research reports, etc.

Appendix 2– Conflict dimensions

A case example showing how the three conflict dimensions (substance, relationships and procedure) are tied together in the onset and management of conflicts. The example is from Upreti (2004), which is one of the reviewed articles in this report.

Elean Power Station (EPS) is a 36MW straw burning power plant situated in Ely, Cambridgeshire. The straw is collected from the farmers of 50-mile radius from the power station. At the time of construction it was the world's largest straw-fuelled power station and it obtained planning permission in 1996. The European Development Corporation Plc (EDC) submitted the first application for planning permission in March 1994. The initial application included a proposal to incinerate domestic, industrial or commercial waste. The plan evoked strong opposition in the public from neighbouring communities and local parish councils. The local communities formed a pressure group to oppose the proposed development. The East Cambridgeshire District Council (ECDC) rejected the application in October 1995. The reasons of rejection were:

I. Pollution due to the proposed use of municipal waste,
II. Visual impact (height of the boiler house),
III. Traffic pressure and associated risks,
IV. Noise, environmental and landscape impacts.

After the rejection of the plan, the developers used a compromising approach. They revised the proposal to address the concerns raised by the public and the ECDC. In the amended proposal they e.g:

I. withdrew the construction of municipal waste incinerator,
II. agreed to reduce the height of the boiler,
III. offered new arrangements for landscaping,
IV. agreed to revise EIA,
V. agreed to verify emission data and adopt the UK and the EC emission requirements, carry out air quality monitoring and give a copy of the results of the monitoring to the resident committees,
VI. agreed to perform quarterly environmental and safety audits and tests of quality of straw.

In addition, the developers sponsored a fact-finding mission including district councillors, representatives of 3 parish councils, planning officers and local journalist to visit straw combustion plants in Denmark. After the trip the mission members were convinced on potential positive contributions of the proposed power plant to local economy. They also collaborated with ECDC to form a 'Resident Liaison Group' including representatives from local parish councils and general public. This group played a crucial role to develop public confidence over the proposed development. Later the developers also produced a leaflet answering the pertinent questions raised by public. All these efforts led to get planning permission in the second application. Now the EPS is up and running without any conflict. The relation between the local people and the company is very good.

Quoted from Upreti (2004, pp. 790-1, 795) with some modifications

The case depicts a conflict between project planners and the local community. The conflict was caused mainly by **the substance dimension**. The concrete arguments included pollution, as well as health and wellbeing impacts. These were intertwined with **the relationship dimension** as the public did not trust the project planners. In the management of the conflict, the project planners considered all the subject issues raised by the public and the district council and adjusted its plans accordingly by technical solutions (withdrawal of waste incineration plan, landscaping, architectural adjustments) all of which are strongly substance management methods. The substance issues were also tackled by improving **the process dimension**: adopting emission requirements, emission monitoring and auditing and EIA revision. In addition, the company used methods to improve **the relationship dimension** by increasing the stakeholders' engagement and maintaining dialogue with representatives of district and local authorities, officers as well as media. The fact finding mission together with the other stakeholders aimed to help assuring the stakeholders concerning the risks they perceived and furthermore, to perceive the plan for bioenergy production as a common goal. The use of all the dimensions in conflict management helped to close the ongoing conflicts and in the end the planning permit was obtained.

Appendix 3 – Conflict generating factors (Tables A2-A4)

Table A2 Substance dominated factors inducing conflicts around bioenergy

Description of the factors/issues generating conflicts	Stakeholders	Country/ area	Reference
1 Risks to human health and wellbeing			
1.1 Air, water and soil pollution threatening the health of people and environment			
– Burning of sugarcane previous to harvest by the manual harvesting methods and burning of the oil palm waste at the plantations have caused air pollution.	Workers; people living near the plantation	Brazil; Indonesia	Janssen and Rutz, 2011; Obidzinski et al., 2012
– Toxic waste water from oil palm plantation extraction facility has polluted a river, which is used by the local communities for bathing, doing laundry etc.	Local communities	Ecuador	Hazlewood, 2012
– After the sugarcane producing was ceased in the area, farmers' land was left polluted by the use of agrochemicals in the sugarcane production.	Farmers	Brazil	Fernandes et al., 2010
– Municipal waste incineration was feared to cause pollution.	Public	UK	Upreti, 2004
– A planned large-scale biodiesel production facility was feared to pollute air and water.	Communities	South Africa	Amigun et al., 2011
– Jatropha's toxicity was feared to cause pollution.	Academic; public	Indonesia	Silitonga et al., 2011
1.2 Odours, dust, noise and light pollution causing health risks and general nuisance			
– Building of a power plant was opposed due to feared odours, dust, noise and light pollution.	Local inhabitants	UK	Upreti, 2004
– Bioenergy power plant was feared to increase the traffic pressure in the vicinity of the plant and cause traffic jams, vibrations and moreover, increase the risk for traffic accidents.	Public; local people	South Africa; UK	Amigun et al., 2011; Upreti, 2004
1.3 Landscape modifications affecting wellbeing			
– A planned power plant was opposed due to the perceived harm to the amenity and rural character of the countryside that would significantly alter the open landscape of the area.	Local people	UK	Upreti, 2004
1.4 Food and water security endangered			
– Global population growth and degradation of agricultural land do not allow bioenergy production without compromising on food security.	Academics, NGOs	Global	Gomiero et al., 2010
– Expanded biofuel production has greatly affected global food markets and been partly responsible for the 2007–2008 food price crises.	Academics, NGOs	Global	Gomiero et al., 2010; Janssen and Rutz, 2011
– Globally agrofuels have increased the world market prices for food crops by generating competition for the utilisation of for example maize and palm oil, as well as land, water and fertilizers.	Academics, NGOs	Global	Gheewala et al., 2013
– Displacement of smallholders, take-over of their land, and their following dependence on global markets will decrease the local producers' food security and self-sufficiency	Academics, NGOs	Ethiopia	Abbink, 2011
– Locally, food self-sufficiency has been decreased by a shift of resources such as labour, land, water and food crops to agribiofuel production as well as biofuel plantations contaminating food and water resources.	Local communities	Tanzania, Asia, Ecuador	Mwakaje, 2012; Gheewala et al., 2013; Hazlewood, 2012

Description of the factors/issues generating conflicts	Stakeholders	Country/ area	Reference
– Irrigation in biofuel plantations has increased the competition on water resources that further reflects into food security.	Academics, NGOs	Ethiopia, Tanzania	Abbink, 2011; Romijn and Caniëls, 2011; Mwakaje, 2012
– Biofuel plantations have decreased the quality and quantity of fresh water due to for example, siltation of waterways and swamps or polluting the water upstream.	Several stakeholders	Indonesia	Obidzinski et al., 2012;
1.5 Poor work conditions			
– The manual harvest on the sugarcane plantations offers low wage levels, seasonal work and causes internal migration.	Plantation workers	Brazil	Janssen and Rutz, 2011; Gomiero et al., 2010;
– In a palm oil biodiesel plant, between 50% and 80% of workers are hired on a temporary basis.	Workers	Indonesia	Obidzinski et al., 2012
– The agrofuel expansion has been accused for enslaving peasants by offering jobs that are seasonal, difficult and low-paid in return of taking over their land.	Peasants and NGO	Brazil	Fernandes et al., 2010
– The casualization of local unskilled workers, compared to skilled expatriate staff in a sugar producing company has caused opposition against the biofuel industry.	Plantation workers	Zambia	Borras et al., 2010
2 Competition with other businesses and forms of income			
– Bioenergy development induced deforestation has been considered to affect most negatively the former landowners and customary land users as they experience a decline in income from forest products and have reduced access to sources of food.	Local inhabitants, NGOs and academics	Ethiopia, Indonesia	Abbink, 2011; Obidzinski et al., 2012
– Livelihoods of local residents are threatened by the shifting of some of the lands used for cultivation and dry-season grazing for the activities of foreign investors.	Local residents, academics, NGOs	Ethiopia	Abbink, 2011
– Building of a large agricultural waste infrastructure and the consequently increasing truck traffic has been feared to damage tourism.	Local inhabitants	Italy	Magnani, 2012
– Biomass fuelled power plant development has been feared to have negative impacts on tourism and property prices.	Local communities, media	UK	Upreti, 2004
3 Increasing income inequality			
3.1 Bioenergy production models' effect on local development			
– Centralised large biofuel plantations, which exclude smallholders, have been opposed because they are seen to deprive, rather than develop, rural communities.	NGOs, government representati-ves,journalists, academics.	Ethiopia, Ecuador	Abbink, 2011; Romijn and Caniëls, 2011; Hazlewood, 2012
– Large-scale production companies have been accused to slow down the local development by their economic power, which allows them to limit their tax contribution as well as inhibit further investments and lower consumer prices by preventing competition.	Academics, NGOs	Zambia, Asia	Borras et al., 2010; Gheewala et al., 2013
3.2 Equality among areas to benefit from bioenergy			

Description of the factors/issues generating conflicts	Stakeholders	Country/ area	Reference
– The lack of technology and market infrastructure undermines the possibilities of an area to improve its agricultural sector and thus enter into the biofuel business.	Government officers	Philippines	Acosta et al., 2013
– Capabilities of a country or an area to participate and benefit further from biofuel sector are undermined among others by poor infrastructure (roads, electricity and water), unreliability and inefficiency of equipment, and the absence of well-equipped and well-funded national R&D institutions. In the absence of these assets, foreign investors will be induced to rely on foreign partners and higher steps in the value chain will be located in higher developed countries or areas.	Officers, academics	Tanzania	Romijn and Caniëls, 2011; Mwakaje, 2012
– In areas where farmers experience food shortage, their capabilities to enter the biofuel business are low.	Academics	Tanzania	Mwakaje, 2012
3.3 Distribution of the job opportunities			
– Biofuel plantation employment opportunities have been given to immigrants instead of the local inhabitants.	Local inhabitants	Philippines	Gheewala et al., 2013
– Large-scale oil palm and sugarcane plantations have been shown to generate up to only one-tenth the number of jobs generated by family farming and thus decreased the income of local population.	Local communities, academics	Global	Borras et al., 2010
– Import oriented bioenergy production will not bring job opportunities.	Biomass producers	Developed countries	van der Horst and Evans, 2010
3.4 Distribution of the profits			
– The cultivation of *Jatropha* for biofuel production has benefitted middle to rich farmers who have access to capital in contrast to the poor population.	Academics, NGOs	India	Borras et al., 2010
– Plans for the development of bioenergy industry were perceived to benefit only a small number of people, especially the rural elite.	Local communities	South Africa	Amigun et al., 2011
– The regional governments and local communities were seen to benefit less.	Academics, NGOs	Ethiopia	Abbink, 2011
– Gender inequality affects the sharing of the wealth as many cash crops are controlled by men, while food security is mainly women's responsibility. Thus the income from bioenergy feedstock production benefits usually men without benefitting families' food security.	Local communities	Tanzania	Mwakaje, 2012
– The benefits from bioenergy have been distributed unevenly among the stakeholders in woodfuel value chains and oil palm smallholders' cooperatives. In these cases the stakeholders situated higher in the supply chains have been depriving the stakeholders situated lower in the supply chains.	Direct actors involved in the bioenergy value chain.	Africa; Indonesia	Schure et al., 2013; Rist et al., 2010
– Financial compensations in biofuel land deals have been accused low compared to the real value of the land.	Local farmers	Brazil, Ethiopia, Indonesia	Fernandes et al., 2010; Abbink, 2011
3.5 Distribution of the economic risks			
– Companies have demanded plantation workers to purchase their own tools and farmers to cover the costs for planting and management of crops by taking loans.	Workers, farmers	Indonesia	Obidzinski et al., 2012; Rist et al., 2010
– Farmers had to cover investments needed for sugarcane production whilst they also lacked production knowledge. This increased the risks of the farmers' investments.	Farmers	Brazil	Fernandes et al., 2010

Description of the factors/issues generating conflicts	Stakeholders	Country/ area	Reference
4 Questioning climate benefit			
– Especially the large GHG emissions from turning tropical forests and peatlands into biofuel production fields (directly or indirectly) has caused opposition towards bioenergy industry.	Academics, NGOs	Global	Gheewala et al., 2013
– Biogas production from manure has been questioned due to its weak energy efficiency.	Local communities and experts	Italy	Magnani, 2012
– Burning of sugar cane fields prior to harvest reduces soil carbon stocks.	Academics	Brazil	Janssen and Rutz, 2011
– Transportation of bioenergy feedstocks weakens the GHG benefits.	Academics	Global	van der Horst and Evans, 2010
5 Degradation of ecosystems and biodiversity			
5.1 Land-use change threatens ecosystems and biodiversity			
– Especially urban pressure and agricultural activities related to feedstock production have been displacing local ecosystems such as forests and savannahs.	Local communities	Brazil	Gomiero et al., 2010; Janssen and Rutz, 2011
– Forest clearance directly or indirectly for bioenergy feedstock production has caused losses of biodiversity and carbon reserves, eroded soil, increased flooding and siltation, decreased local precipitation, changed nutrient cycling, caused air pollution (smoke hazes from set fires) and increased incidents of tropical diseases (such as malaria and Leishmania).	Stakeholders from the local to the global level.	Ecuador, Indonesia	van der Horst and Evans, 2010; Silitonga et al., 2011; Hazlewood, 2012; Obidzinski et al., 2012
– The exploitation of set-aside lands for (large-scale) bioenergy feedstock production was seen to lower biodiversity (for example birds' diminished feeding and nesting areas). Additionally, the introduction of new cultivated species was feared to affect biodiversity.	Nature protection organisations	UK	van der Horst and Evans, 2010
– Bioenergy plantations have fragmented the landscape and isolated communities from each other making their communication more difficult.	Local communities	Ecuador	Hazlewood, 2012
5.2 Feedstock production practices induce ecosystem and biodiversity degradation			
– Introduction of single-crop monocultures and removal of crop residues from the soil on agricultural and forest lands has been found to degrade the ecology and ecosystems in general.	Academics	UK, Brazil, Ecuador, Asia, Tanzania	Upreti, 2004; Janssen and Rutz, 2011; Romijn and Caniëls, 2011; Hazlewood, 2012; Gheewala et al., 2013
– The use of fertilizers and natural resources for bioenergy feedstock production has been criticised as being antiecological.	Local community	Italy	Magnani, 2012
– GMO is feared to be more easily introduced in the biofuel sector than food sector, an action that may consequently open the door also for GMO use in the food sector.	Academics, NGO etc.	Brazil	Janssen and Rutz, 2011

Table A3 Relationship dominated factors inducing conflicts around bioenergy

Description of the factors generating conflicts	Stakeholders	Country/ area	Reference
1 Clashes with culture, way of life and local conditions			
1.1 Lack of awareness and understanding of cultures and traditional way of life			
1.1.1 Links between land use, social capital and identity			
– Expanding Jatropha cultivation on Maasai pastoralists means a loss of their grazing lands and spiritually significant places. Many Maasai experience the attempts to involve them as feedstock producers as threatening their traditional ways of life and culture, though they might not say so openly.	Academics	Tanzania	Romijn and Caniëls, 2011
– Land is considered as inheritance and thus there is reluctance to give it up for biofuel production.	Local communities	South Africa	Amigun et al., 2011
– Land acquisitions for bioenergy production have decreased e.g. pastoral areas and hunting grounds, and thus threatened social capital and ethno-cultural identities of local people that are often tied to land or territory.	Pastoralists and shifting cultivators	Ethiopia	Abbink, 2011
– Turning a permanent protected forest into zones for sustainable and agricultural development for the purpose of e.g. bioenergy production destroyed the minority groups' ability to sustain their cultural practices and identity-based, mostly self-sufficient livelihoods, which are dependent on forest.	Indigenous and Afro-Ecuadorians communities	Ecuador	Hazlewood, 2012
– Farmer's perceived short-rotation coppice willow as 'wood' rather than a 'crop' and thus were reluctant to grow it on their land.	Local farmers		van der Horst and Evans, 2010
– A consensus reaching has been hindered due to differences in valuation of resources. Valuation by locals is made more in terms of sacredness and livelihood.	Foreign bioenergy investors and local inhabitants		Gerber et al., 2009
1.1.2 Compatibility of traditional way of life/ farming culture and bioenergy production			
– The reluctance of local people to give up traditional way of life has decreased the working force that is able to work consistently.	Oil palm plantations	Indonesia	Obidzinski et al., 2012
– The introduction of agricultural transition by a) replacing indigenous crops and traditional cultivation methods, and b) moving from autonomous farming to market dependent livelihood has caused opposition toward biomass cultivation.	Local communities	Brazil	Fernandes et al., 2010; Rist et al., 2010
– Radical transformation of farming activity in connection with the biogas industry favouring larger-sized farms has raised opposition.	Smallholder farmers and their association	Italy	Magnani, 2012
1.2 Lack of awareness and understanding of local conditions			
– Overestimation of local inhabitants' eagerness which was undermined by their lack of previous experience with cash crops	Local farmers and bioenergy company	Indonesia	Rist et al., 2010
– Overestimation of local farmers' capabilities for producing feedstock. These capabilities were not as high as expected due to the farmers' poor farming technologies, farming skills and extension services.	Bioenergy processing companies	Tanzania	Mwakaje, 2012; Duvenage et al., 2012
– The business relationships are challenged by low educational level and especially illiteracy among feedstock producers.	Farmers, bioenergy companies		Matos and Silvestre, 2013

Description of the factors generating conflicts	Stakeholders	Country/ area	Reference
1.3 Lack of awareness and understanding of existing problematic relationships within countries or regions, especially related to custormary land use			
– The customary land users lack legal rights to their land. Evictions have been carried out.	Evicted local inhabitant's groups	Ethiopia	Abbink, 2011
– The minority group of Afro-Ecuadorians do not have legally recognized communal rights over their lands. Their land tenures have been threatened by oil palm companies that have a strong demand for land. National and local politicians as well as indigenous groups have been involved in this battle over land resulting in problematic relationships between the involved parties.	Afro-Ecuadorian communities	Ecuador	Hazlewood, 2012
2 Lack of trust between stakeholders			
– Bad experiences of a particular project in another area can develop resistance towards biomass development.	Academics	UK;	Upreti, 2004
– The closures of companies especially in cases when local food crop cultivation has made way for cash crops have considerably decreased the confidence in cash crop investors, which is also reflected to bioenergy.	Local people	Develo-ping countries	Duvenage et al., 2012
– Previous negative experiences with genetically modified organisms (GMO) and adoption of agricultural chemicals have reduced the confidence of farmers toward new investors. Bioenergy production has been feared to create more poverty and enslaving working opportunities similarly to the previous agricultural activities.	Farmers	South Africa; Brazil	Amigun et al., 2011; Matos and Silvestre, 2013
– Past experiences such as with the Moringe tree – promoted by the government some years ago – have been disappointing because of market collapse. During colonial times rulers gave preference to cash crops for export or to the modern food sector and neglected the agricultural smallholder sector. The biofuel wave is thus feared to be a continuation of these past policies.	Local farmers	Tanzania	Romijn and Caniëls, 2011
– A history of polarization between actors is feared to be a pervasive barrier for forest bioenergy production. In this case, conservationists have a lack of trust in the forest agency as they fear that the bioenergy project will be, similarly to the past, a case of overexploitation of the forest. On the other hand, forest industry's trust on the conservationists is poor as they fear that the conservations may support the bioenergy project in the beginning but turn against it later on. This switching of the opinion by the conservationist has previously ended projects, in which forest industry had already substantially invested time and resources because of the green light shown in the beginning.	Federal forest management and conservationists	USA	Stidham and Simon-Brown, 2011
3 Lack of connections between stakeholders to transmit information			
– Local biomass producers have been unaware of the governmental level biofuel strategies and thus reluctant to start cultivating bioenergy crops.	Local farmers;	South Africa	Amigun et al., 2011

Description of the factors generating conflicts	Stakeholders	Country/ area	Reference
– Local communities' low eagerness to get involved in bioenergy production can be partly explained by the lack of knowledge. Actors along the bioenergy production chain were linked only weakly and the biomass producers were unaware of their role in the bioenergy production system (the farmers still do not consider their work as related to bioenergy production).	Local communities	Philippines	Acosta et al., 2013)

Table A4 Procedure dominated factors inducing conflicts around bioenergy

Description of the factors generating conflicts	Stakeholders	Country/ area	Reference
1 Deficiencies in governance and institutions			
– Lack of policy and laws, inadequate governance capacity and lack of control over resources (such as forest and water resources) has allowed investors to strike deals which can be accused to exploit the locals. These deficiencies, also increase companies' challenges in monitoring and certifying the entire supply chain.	Local communities, companies	UK, Tanzania, Asia, Ethiopia, etc.	Upreti, 2004; Borras et al., 2010; Mwakaje, 2012; Gheewala et al., 2013; Schure et al., 2013; Abbink, 2011; Mehta et al., 2012
– Production of bioenergy feedstock in developing countries, in cases when the end-product (energy), is consumed in developed countries has caused concern due to the weaker structures of environmental governance in the areas of feedstock production that will threaten ecosystems and biodiversity.	Environmental NGOs	UK	van der Horst and Evans, 2010
– The performance of the bioenergy markets has caused doubts over the bioenergy business concerning whether countries can export their biofuels to other countries such as USA and Europe.	State officers, bioenergy companies	Tanzania; Brazil	Mwakaje, 2012
2 Lack of recognising & respecting on-going land use			
– In the state of Sao Paulo, land conflicts have been dragging for more than a century and thus with the increasing pressure on land, parties still fight over their rights to own and use the land.	Cattlemen, landless workers and sugar and ethanol industry	Brazil	Fernandes et al., 2010
– The customary tie to the land is not a legal fiction in Ethiopia but validated only through practice and residence, as well as locally adapted cultivation systems, indigenous knowledge, and ritual. As the customary land users lack legal rights to their land evictions have been carried out.	Customary land users	Ethiopia	Abbink, 2011
– The minority group of Afro-Ecuadorians do not have legally recognized communal rights over their lands. Instead they hold land tenures that are insecure.	Afro-Ecuadorian communities	Ecuador	Hazlewood, 2012
– State authorities have been assigning "wasteland" for bioenergy production. However, for some local groups these areas are valuable common property resources. And they are utilized according to customary rights.	Local communities	Kenya, India, Ethiopia	Borras et al., 2010; Abbink, 2011
– Agrofuel cultivation has been taken over "barren" or "wasteland" that were actually supporting marginalized sections of the society for fuelwood, fodder, etc.	Local communities	India and China	Gheewala et al., 2013
3 Abuse of power			
– Corruption has increased the risks and challenges in business relationships. For example, corruption in land sales and leasing has caused distortion in the distribution of compensations.		Ecuador, Brazil	Rist et al., 2010; Janssen and Rutz, 2011; Hazlewood, 2012
– Community leaders have encouraged free-riding behaviour in the hope of getting votes in elections. Free-riders refused to pay the bills for the electricity they were provided to by a programme bringing electricity to rural communities.	Local electricity distribution Companies, cooperatives, Brazilian electricity system	Brazil	Matos and Silvestre, 2013

Description of the factors generating conflicts	Stakeholders	Country/ area	Reference
4 Exclusion of stakeholders from the decision-making			
– Land deals have been formed without the consultation of the locals. Instead only e.g. tribal chiefs, community leaders, district and higher authorities have been involved.	Several groups of stakeholders	Indonesia	Duvenage et al. 2012; Obidzinski et al., 2012
– As land deals have not been made by consulting all the land users, disagreements within families and between villages have evolved. Relatives or village elites have been selling land without notifying all the land inhabitants and users. The people who feel deceived have raised false accusation of land grabbing towards oil palm companies instead of contesting the relatives and villages elites. There have also been cases where villages have been noticed to give away land legally belonging to another village.	Village families and communities, biofuel companies,	Indonesia, Tanzania	Rist et al., 2010; Romijn and Caniëls, 2011
– A lack of consultation and representation of the community in both, the bioenergy project design and implementation generated opposition.	Local community	South Africa, UK	Amigun et al., 2011; Duvenage et al., 2012; Upreti, 2004
– The lack of involvement of the general local community in the planning of the biogas facility and the secrecy surrounding all key aspects of the project, namely its characteristics, the farmers involved, and its risks raised the issue of procedural justice. Political institutions had also rejected public debate.	Local community	Italy	Magnani, 2012
– The state has discouraged companies to communicate with the local inhabitants and also banned independent trade unions, farmers' unions, etc. and thus hindered companies' communication among the stakeholders. In this way companies awareness of the local communities' perceptions toward their activities has been poor.	Local communities, companies	Ethiopia	Abbink, 2011