# BIOENERGY POLICIES: A TOOL FOR REGIONAL DEVELOPMENT AND SOURCE OF LOCAL CONFLICTS

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***Abstract.*** *Current bioenergy development, particularly in the EU, is strongly driven by a framework of supportive legislation and political programmes on transnational, national and local level. The EU renewable energy directive (RED) and the resulting national and regional translations and implementations of the same are a prime example of these processes. Aside the aims of decarbonisation, security of supply and an European energy union based on sustainable energy production, regional development through local green growth is a core aspect of most bioenergy policies and programmes. Still, hailed as a saviour of local countryside and their economic possibilities from one side, bioenergy development has become a contested process and multiple conflicts have materialized spanning from issues related to local implementation towards global debates, such as food vs. energy. The study connects these two interlinked processes of regional development and bioenergy conflicts by drawing on an conflict from German Bioenergy Region development and by presenting data from DEBEG bioenergy conflict database. First, it provides an overview on global conflicts, their causes and typologies and; second, displays a conflict that results from a bioenergy instrument that aims to facilitate regional development. Thus, the study presents the conflict potential of bioenergy development in general and highlights restrictions of bioenergy policies as a tool for regional development.*

## (EU) renewable energy policy translation, regional development and conflicts

EU Renewable energy directive (RED) is a part of the EU transition towards sustainable, low-carbon economy. Within RED, member states can choose their own approaches within the common EU 2020 target framework and the 2030 energy strategy.EU 2020 low-carbon policy documents highlight security of supply, sustainability of the energy sector and an internal (energy) market development as key targets [12,5, 6;14]. Additionally, regional, particularly rural development is set as another aim and plays an important role for many of the national and regional institutions that translate and implement RED [1]. Consequently, a wide variety of national and regional approaches, programs and policies have emerged [1, 2, 9, 13], reaching from ambitious energy transitional foci to approaches including minimal adjustments to the status quo. The result is a heterogeneous and rather unstable space of EU renewable energy governance processes that on the one hand creates opportunities to be employed for regional development, on the other, inhabits large potential for conflict due to its open character. Thus, to understand the interlinkages between the translation of a transnational policy (e.g. RED) into localized practices and the emergence of conflicts we have to regard it as a mobile process from policy design towards materialization of policy programs [11, 3]. On such continuous journey, policies/programmes are subject to multiple loops of translation and shifting rationalities concerning the implementation of objectives [8]. While these multiple translations might affect the aims, approaches and results of policy [1, 2] the rationalities on which they are based are not necessarily representative of the (local) stakeholders and might be confronted with contestation, which, if not resolved leads to conflicts.

To foster a better understanding of conflicts related to bioenergy development the paper introduces the DEBEG bioenergy conflict database and present a brief statistical analysis and characteristics of globally collected conflicts. This is followed by a detailed example from German Bioenergy Regions; a national/regional translation of RED into regional development and a complex conflict that derived within this process.

**DEBEG conflict database: overall results**

DEBEG conflict database is a global open access database that has been developed within the research projects “Developing Bioenergy Governance” and “Contested Bioenergy Governance” (www.debeg.org). The database currently consists of 191 bioenergy related conflict cases. Data has been collected largely through internet search, using key words in eight different languages (English, German, French, Spanish, Portuguese, Finnish, Swedish, Russian). Additional cases derive from research carried out within the above-mentioned projects and through tasks in University courses. The methodology for identification, mapping and describing the bioenergy conflicts has been adopted and revised from previous research on conflicts in forestry and land disputes [7, 10].

Out of the current 191 cases globally 107 case are located in Europe, 27 cases in North America, 8 cases in South America, 18 cases in Africa, 27 cases in Asia and remaining 4 cases in Australia and Oceania. From the 191 cases in the database, the majority (112 cases/59%) have been ongoing conflicts at the time of collection (2016) while the remaining 79 conflicts or 41% had been resolved or ended in another way.

The analysis of the database showed that 54% of all the cases represent point data and the remaining part is polygon data. Point data mainly represents spotted conflicts (e.g. bioenergy plants, enterprises etc.), while polygon data conflicts represents area based conflicts (e.g. forest concessions, national bioenergy policy etc.). The intensity of the conflicts is measured in four categories. Majority of conflicts were classified as “public debate” (83%), followed by “peaceful action” (13%), “violent action” (4%), and least common “regulatory action” (1%).

The database classifies conflicts based on four different general factors (see Table 1). Highest importance of bioenergy conflicts are attributed to “ecological” and “economic” factors, followed by “social” and “cultural” factors. Particularly cultural aspects have been deemed of none or low importance (91%).

Table 1. Importance of the factors in bioenergy conflicts

| | Importance of factor | | | | |
|---|---|---|---|---|---|
| | “0” | “1” | “2” | “3” | “4” |
| Factor | % | % | % | % | % |
| Ecological | 2 | 22 | 27 | 30 | 19 |
| Economic | 1 | 16 | 28 | 43 | 12 |
| Social | 0 | 29 | 35 | 30 | 6 |
| Cultural | 42 | 49 | 6 | 3 | 0 |

0= Not Important; 1= Slightly Important; 2= Moderately Important; 3= Very Important; 4= Extremely Important

Regarding the type of conflict (Table 2), bioenergy governance (37%), bioenergy plants (31%) and land use conflict (19%) dominate (see table Table 2). The number of involved stakeholders for each conflict is another parameter of the database. Most conflicts includethree stakeholders (50%), followed by four(24%) and two(22%). The database displays a wide array of involved stakeholders (Table 3). According to our dataset stakeholders involved in bioenergy conflicts (Table 3)are most frequent from government (27%) and companies (24%) followed by local people (22%) and non-governmental organizations (NGOs) (15%).

*Table 2. Conflict types*

*Table 3. Type of stakeholder involvement*

| N | Source of conflict | % |
|---|---|---|
| 1 | Land use conflict | 19 |
| 2 | Biomass extraction conflict | 7 |
| 3 | Illegal biomass extraction | 2 |
| 4 | Bioenergy plants | 31 |
| 5 | Bioenergy governance conflicts | 37 |
| 6 | Multiple-source | 4 |

| Type of stakeholders | Frequency | % |
|---|---|---|
| Local people | 127 | 22 |
| NGOs | 85 | 15 |
| Government | 154 | 27 |
| Company | 142 | 24 |
| Scientific community | 14 | 2 |
| Producer associations | 29 | 5 |
| Other associations | 30 | 5 |
| Total | 581 | 100 |

Due to limitations in the methodology of collecting conflict cases for the database, for instance the online based search focus or language restrictions, the database does not claim inclusiveness, yet it portrays a well-grounded basic dataset on factors and types of global bioenergy conflicts. This even more in the case of Europe. Following, the paper will tie processes of conflict emergence in further detail to bioenergy policy, and particular to the local implementation of policy tools as a driver for regional development.

**German Bioenergy Regions: contested developments?**

One particular German translation of RED is the Bioenergy Regions programme initiated by the *Agency for Renewable Resources* (FNR). The programme (2009-2015) choose 25 German Bioenergy Regions and was framed within the action plan "Energy for tomorrow – opportunities for rural areas" by the *German Ministry for food and Agriculture* [3]. In this context, bioenergy policy has been translated to support novel opportunities for rural areas by fostering Bioenergy Regions that should enhance regional networks and create added value based on bio-based resource flows. The programme that run for two consecutive three year periods created Bioenergy Regions managed by a wide variety of stakeholders resulting in strongly varying approaches, aims and networks [for details see 1]. The open approach of the programme, similar to the mobile and open character of RED, enabled local actors to translate initial ideas of the programme into practices and activities that suited local socio-economic needs. It further enabled the creation of many positive outcomes to enhance alternative regional development and support the implementation of bioenergy related practices. Nevertheless, while this openness has been attributed to enable meaningful local implementation [1], local practices initiated by the bioenergy Region administrative bodies have been also met with contestation.

One exemplifying conflict, classified in the database as "public debate" based "Land use conflict" evolved around the initiative of a pharmaceutical company and the managing body of the Bioenergy Region Oberland in Bavaria to construct a biomass based combined heat-power plant (CHP) on the site of the company's industrial park. The plant, financed by the pharmaceutical company should replace their old power station and would provide green excess heat via district heating grid to the town itself. As the initial plan was opposed by a citizen initiative, the city decided to hold a referendum on the matter. To understand such a conflict and the possibilities for resolution we need to evaluate the underlying spatial processes. While on first sight, the conflict seems to be a clear cut biomass plant conflict, it was related rather to land use in a wider sense; fearing the destruction of local forests, increased local transport and pollution. In short: the plant was portrayed to negatively change the qualities of the local life, making the town less attractive for tourism and to live in (both important economic factors due to pre-alpine, yet close to Munich location). Opponents embarked on a visual campaign portraying the planned power plant as destroying/polluting the local environment while draining local money into external investor's and operators pockets. Hence, economic and ecological factors were highlighted and are very important for the emergence of the conflict yet the crucial element must be seen in the social domain. This, because applicable technical, economic and

environmental aspects portrayed by the Bioenergy Region office in several town meetings and events fell short to penetrate the local social networks occupied by the opponents and their narratives of negative change. This is further portrayed by the fact that the Bioenergy Region office had only been moved to the town and was considered an external stakeholder similar to the proposed operating company of the proposed CHP plant.

The conflict dissolved swiftly as the proposed plant was rejected with nearly 70% in the referendum and a natural gas-based power plant was built instead. The gas based power plant sparked no opposition even though it produces emissions (local and global pollution), is operated by an outside company and the investments, instead of contributing to local economy through opportunities for local forest owners/managers flows off to gas producing countries. Thus, while one of the aspects to build a biomass based plant driven by local resources was to create more locally added value (jobs, and business opportunities) the opposition deriving from locally embedded social networks created the opposite. Finally, concerning the environmental reasoning of the opponents; local air pollution. Even though a biomass CHP plant reaches higher end-of-pipe emissions then a natural gas CHP plant (excluding possible sequestration through forest growth), CO2 and particularly fine particle pollution in this area is rather due to the high amount of inefficient wood stoves that exist in most households. Yet, due to cultural reasons this aspect of potential harmful bioenergy usage remain off limits to be criticised by local stakeholders. The sudden end of this conflict can hardly be called a positive solution of the conflict nor was supportive of the initial policy aims of the Bioenergy Regions programme. It nevertheless portrays well the influence of social factors in bioenergy conflicts and how means to spur regional development can be contested through their particular focus on the local/regional resource base.

**Concluding discussion**

Bioenergy policies have a clear potential to be employed for regional/local development due their focus on the local resource base. This creates development opportunities, but at the same time transnational (e.g. EU) or national policy programmes and their resulting local interventions are seen as an external influence, which often meet resistance. The high amount of local people, companies (largely outsiders) and government as stakeholders in conflicts is a clear sign of this. In combination with global and societal debates about the sustainability of biomass-use for energy purposes, these local socio-economic processes are a key driver for most locality-based conflicts. Vice versa, these local conflicts provide input to area based conflicts as they portray problems in for instance a (national) policy in general (e.g. subsidies, deforestation).

The database provides an important tool to gain an improved understanding of global bioenergy conflicts and on the factors that lead to their emergence. It does not answer the question on the suitability of the development in conflict but provides information on opposing rationalities of involved stakeholders. This knowledge enables to revise practices in local project implementation and policymaking, including possible abandonment of projects/policies, to avoid or reduce conflicts in bioenergy development. Finally, as the detailed example portrayed above has shown, the possibilities that derive from the DEBEG database is multiplied if supported by in-depth qualitative data on local socio-spatial processes that explain the particular rationalities that shape the factors and types of the conflict in question. Thus, it helps to understand how translation processes of bioenergy policies may create conflicts and what the underlying socio-spatial processes are for the same. It further enables us with a clear understanding on what are the limits of bioenergy policy for regional development.

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