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Energy, conflict and war: Towards a conceptual framework

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ABSTRACT

It is widely recognised that the presence of some fossil fuels and their transport routes can affect the risk of conflicts. Other parts of the energy system and contextual conditions (social, economic or political factors) also matter for such conflicts, but which and how is not as well researched. This paper develops a framework that links characteristics of energy systems with contextual conditions that if combined increases the risk of conflict. The framework also provides a brief theoretical background as well as examples of previous energy conflicts.

Examples of energy system characteristic that can affect the risk of conflicts include geographical concentration of primary resources, the number and diversity of exporters on the international energy market, vulnerability of infrastructure to attacks, vulnerability of users to disruptions and externalities related to interconnections with other systems. Contextual conditions include, among other, the rationale of actors to engage in conflict under various circumstances. The capacity of humans and societies to adapt to change should be analysed together with the characteristics of the energy system that place stress on actors. The framework can serve as a tool to identify 'hotspots' and, develop more robust energy policies and strategies to anticipate and prevent conflicts.

1. Introduction

Previous research has shown that there can be various connections between energy and conflicts [1–3]. It has generally focused on one single factor as a cause of conflict, whether geopolitical, environmental or economic. It is also common to restrict analyses to only one energy carrier or resource, particularly oil, e.g. [4–7]. Integrated assessments that cover several factors are less common. Moreover, researchers tend to focus on one domain at a time, e.g. either interstate or intrastate conflict, while interactions between domains are seldom analysed [8]. This approach is useful for understanding many historic and contemporary energy conflicts, e.g. those related to competition for oil. However, such approaches do not allow the analysis of how risks of different conflicts may evolve under broader changes in energy systems or contextual conditions. A case in point is Colgan [5] who developed a framework that is very useful to understand the links between oil and international armed conflict. For assessing many future challenges, e.g. climate change induced conflicts and energy system transitions, the scope of such frameworks need to be extended.

A narrow focus restricts the possibility to detect different forms of conflicts and policy trade-offs and is also less useful for broader assessments of how the future may unfold. Furthermore, different theoretical points of departure may influence the choice of which factors to evaluate and their relative weight and interpretation. This can result in diverging views on how the risk of conflicts may develop and can be managed [9,10]. The diverging views are not a problem per se and can in fact provide input necessary for analysing complex issues. However, a structured approach that integrates different theoretical perspectives and a broader set of aspects may be useful.

Energy systems are constantly evolving and will continue to change in response to improved energy efficiency, new electricity demands, increased use of renewables and unconventional fuels, increased demand in emerging economies and scarcity of conventional fossil fuels at low cost. Energy systems have long-term investment cycles that can cause technological lock-in. Therefore, decisions made today on how to develop existing energy systems will affect, and to some degree even determine, the features and structure of future energy systems.

In this paper, a framework is formulated that addresses the characteristics of energy systems and contextual conditions that, if combined, increase the risk of conflicts. The framework focuses on the underlying structures and patterns that make conflicts possible

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and hence enable them to take place, as this enables the framework to be used to analyse different energy systems and contexts. Three different severities of conflicts are addressed here: violent conflicts (war and other armed conflicts with casualties), social instability (e.g. manifested as social unrest) and political disputes (political conflicts manifested mainly through economic means).

One strength of the proposed framework is the broad range of factors it covers and the separation and clustering of factors related to energy system and context, which enables the framework to be used as a tool in the analysis of historic and contemporary conflicts, but also of changes in energy systems and/or contextual conditions. For example, in an explorative scenario study of future energy systems, the development of a certain pathway can be analysed under different assumptions of contextual conditions to anticipate hotspots and robust strategies. The framework can also be a starting point for comparative studies and to investigate some of the questions raised in a previous paper in this journal [11], e.g. on the differences between how "depletable" and renewable resources contribute to social or military conflict. This paper contributes to several strands of literature, including that on resource conflicts, energy system analysis and socio-technical foresight.

2. Theory and approach

Different theoretical approaches provide different insights of why conflicts occur and subsequently which factors that may explain the risk of conflicts. Different theories also focus on different actors. Realism is one of the dominant theories of international relations. It contains several sub-sets but the anarchical "self-help" system of states is a unifying assumption. Conflicts related to power struggles and/or incompatible security interests can partly be traced back to the lack of trust of other states intentions. Lebow [12] found that interstate wars during the past 350 years have mainly been related to (material) interest, security, standing and/or revenge. He thinks that such underlying motives are weakening which should make future interstate wars less likely.

Geopolitics emphasise the importance of understanding spatial differences concerning resources, geographical placement, etc. to explain international affairs and how geography can render comparative advantage [13]. The subfield of "Critical geopolitics" particularly exposes how geography have shaped existing power structures, foreign policy interests and imperialist behaviour of hegemons [14,15]. Controlling global resource flows, as well as the stability and obedience of resource extracting states can therefore be important for the hegemon [15]. This perspective on hegemony can also be found in Marxism, a theory that describes how production is organised and assumes a struggle between wealthy states in the core and periphery states, see e.g. [16].

There is an ongoing debate within political economy if it is the feasibility of rebellion (e.g. opportunity for finance from resource extraction) or political motives (e.g. insufficient political rights) that is the main explanation for outbreaks of intrastate conflicts. Collier and Hoeffler [17,18] advocate the former explanation but their approach and conclusions have been questioned; particularly the framing of rebels as 'the bad guys', rather than the oppressing states, and their reductionist approach [19]. Previous research has also found that it can be useful to study domestic politics to understand international conflicts since domestic conflicts can attract external actors and leading politicians can be more or less prone to engage in conflicts with neighbouring states, see e.g. [4,5,7,8].

Environmental security scholars analyse how environmental factors can affect security [20]. The extraction and use of energy can degrade the environment. Environmental degradation is mainly a problem if it exposes individuals or societies to stress beyond their capacity to cope or to adapt to environmental change [21]. Such situations can result in scarcity of renewable resources and trigger 'ecological conflicts' [22]. Political ecology scholars study connections between environment and political processes such as how demand for resources in wealthy countries can contribute to political conflicts in producer countries between those who control, and profit from the production, and the local population [23]. Development studies complement the perspectives found in environmental security and political ecology as it frames the lack of access to food and energy, not only externalities, as a threat that can restrain what people can do (i.e. constrain capabilities [24]), affect development and contribute to conflicts, see e.g. [25].

It may be useful to have a framework to identify which insights the different theories provide and how they can be used in combination to better understand energy conflicts. However, there is no agreement on what constitutes an energy conflict or how energy interacts with conflicts. Ciută [10] identified three broad groups of relationship between energy and conflicts (energy as a *primary cause*, *secondary cause* or *means* in a conflict). This study use Ciută's definition of energy conflict and take it as a starting point to develop a framework that includes contextual conditions and energy system characteristics that increase the risk of conflict, and the theoretical background. Three levels (international, national and local) and three severities of conflicts (violent, social instability and political disputes) are addressed in this paper.

The conceptual framework is descriptive and intended to structure the analysis of empirical material and thereby bridge the gap between theory and observations of how energy systems can affect the risk of conflicts. This was done through extending a typology that describes how a socio-technical energy system and conflicts are connected. Each category includes a spatial domain where the conflict is likely to occur (as this affects the choice of level of analysis), contextual conditions that promote or prevent a situation developing into a conflict (i.e. political, economic and social conditions) and characteristics of the socio-technical energy system that enabled the conflict to occur (the socio-technical energy system is used in a broad sense including both physical parts of energy supply chains and surrounding institutions). Examples of historical conflicts are provided in order to illustrate the respective category.

3. Links between energy and conflicts

Energy can be the primary cause and objective in a conflict, an instrument that is used as a means in a conflict or a secondary cause (see Fig. 1). In the first category, the end goal of a conflict is primarily for the participants to improve their own security by securing some part of the energy system, i.e. energy is an objective in a conflict.

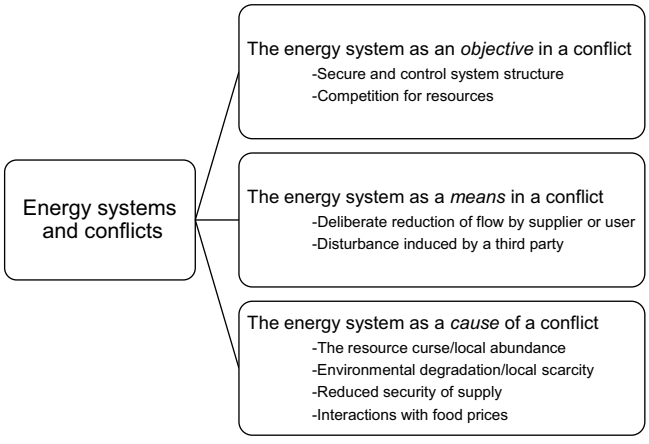

Fig. 1. Typology of links between energy systems and conflicts.