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Conceptual proposals for measuring the impact of international regimes on energy security

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HIGHLIGHTS

- International regimes mitigate political risks for energy supply and must be considered.
- The paper proposes two concepts to measure energy regime effectiveness.
- The OPS-variant measures output, the IRDB-variant measures structure effectiveness.
- The paper offers a preliminary feasibility test for the concepts.
- Finally, it suggests further roads for research.

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ABSTRACT

The paper proposes two concepts to assess the effect of international regimes on energy security. Existing indicators focus mainly on state-level factors, excluding international influences. International relation scholars on the other hand see a clear connection between international regimes and stable energy relations. International regimes stabilise energy relations by providing frameworks for negotiations, defining, controlling and sanctioning compliance and allowing the actors to engage in package deals. The researcher needs to include these factors in a complete assessment of political energy security risks. As first step, the paper uses the effectiveness of control mechanisms as basis for such consideration. It refers specifically to international arbitration as the most important control mechanism in international energy relations. The simplest measurement option is the share of a county's energy imports covered by a certain regime. The paper applies the Oslo-Potsdam-Solution to account for outcome effectiveness. It applies a variant of the International Regimes Data Base protocol to account for effective regime structures. In a last section, the paper proposes some possible paths for future research.

1. Introduction: why to assess regime effectiveness

Energy security is a complex and multi-faceted phenomenon. Different ways of thinking about energy security lead to different definitions which in turn consider different aspects out of their specific focus. These definitions encompass topics as diverse as for example climate change, social development or piracy and terrorism (see Sovacool, 2011: 3–6).

This paper aims to improve our understanding of the crucial international governance dimension of energy security by proposing some venues for its systematic consideration in political risk assessments. In this context, it understands energy security narrowly as security of energy supply. Largely following Winzer's recommendation (Winzer, 2012), it refers to security of energy supply as continuos supply of energy commodities at stable prices. This includes the price dimension despite warnings against such "subjective severity filters" (Winzer, 2012) in order to capture the whole range of regime effects on security of energy supply. Due to its focus on political actors and political regulation of energy systems, this paper situates its definition of "energy security" within a political security-oriented perspective on energy or what *Jewell* and *Cherp* called the "sovereignty mind-set" (Cherp and Jewell, 2011a: 332; Cherp and Jewell, 2011b: 206).

One important school within this mind-set regards political security of energy supply as a zero-sum game for control over scarce energy resources with the potential to escalate up to full-scaled military conflicts. However, this article situates itself within another important substream of political energy security research

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that views international energy relations as positive-sum coordination games between actors with different but compatible preferences. See also Finon and Locatelli (2008) and Correlje and van der Linde (2006) for a closer assessment of these two schools, which more or less resemble what Ciuta describes as the "logic of war" and the "logic of subsistence" (Ciută, 2010: 129–134).

Several indicators exist to measure the different dimensions of energy security (see for example Winzer, 2012; Kruyt et al., 2011, 2009 for overviews). Only few of them explicitly consider political factors. None of these cover explicitly cross-border factors like international regimes or transnational cooperation.

Some indicators try to determine political risks through conclusion by analogy to other more or less connected policy areas. *Frondel* et al. use the OECD risk classification to account for the probability of politically motivated energy supply disruptions (Frondel and Schmidt, 2008, 2009; Frondel et al., 2009). Löschel et al. also refer to the OECD classification, but use it only as a proxy to illustrate an ex-post indicator for energy security (Löschel et al., 2010). The OECD developed its system to account for the default risk of external credits (OECD, 2011).

Jansen et al. take a more general approach in accounting for overall political stability in an energy exporting country, using the *Human Development Index* as a base. The HDI is calculated on the basis of four indicators that measure health, education and living standard. The authors assume that a higher HDI score implies higher political stability and hence a lower risk for a disruption of supplies (Jansen et al., 2004). The HDI excludes factors as the internal structure of (energy) markets or the political process in energy. Hence neither the resource control of certain actors nor the adaptability of exporting countries in case of a crisis is measured. This might result in an underestimation of existing risks as some autocratic countries with a (semi-)monopolised market structure, most prominently Russia, figure comparatively high on the HDI. For example, Algeria (0.713; rank 93.) figures lower than Russia (0.788; rank 55.), which would make the latter the more secure energy trading partner according to the indicator (UNDP, 2012). Actually, from the two countries it was only Russia that repeatedly caused disruptions in EU energy supply. Hence, the somewhat paradox order of the two countries points to the general danger of excluding national and international political factors or market structure from the assessment of international (energy) risks.

The HDI also excludes the risk of international conflicts with participation of the member state. This is another source for possible flaws. Israel, for example, figures very highly on the HDI (0.9; rank 16) (UNDP, 2012) and should therefore be regarded as stable and secure energy supplier. This assessment of Israel's – hypothetical – role as energy supplier ignores the highly unstable and conflict-prone regional environment of the Middle East.

The *International Country Risk Guide* (ICGR) of the *Political Risk Services Group* (PRS)[2] measures stability along political, economic and financial dimensions. The editors of the ICRG value the different indicators for political stability following a subjective assessment of several pre-set questions. These cover inter alia government stability, investment climate, democratic accountability and the risk of internal and external conflicts (The PRS Group, 2011). Both the earlier version of the IEA indicator (Blyth and Lefevre, 2004) and Gupta (2008) apply the ICRG to account for the political stability of energy exporting countries. The IEA later replaces the ICRG with the *World Wide Governance Indicators* of the World Bank (Lefevre, 2009; International Energy Agency, 2007), which is also used by Cabalu (2010). Most recently, the IEA published a model to assess short-term energy security (MOSES) that classifies states according to the external and internal risks they face and their potential external and internal resilience against the effects of realised risks (Jewell, 2011a). MOSES refers to the OECD political stability indicators to assess political risks from supplying states, which it includes as a secondary assessment item for crude oil and natural gas (Jewell, 2011a: 11)[3].

The WGI tries to capture perceptions of six different indicators, namely voice and accountability, political stability and the absence of violence, government effectiveness, regulatory quality, rule of law and control of corruption. The authors gather data on these indicators from surveys by firms, country analysts, nongovernmental organisations and commercial business information providers, including the PRS Group (Kaufmann et al., 2010). The WGI therefore covers fewer aspects than the ICRG and only considers secondary sources. It does however integrate a greater amount of information including the ICRG and could hence be considered the more effective instrument to assess political instability. Kruyt et al. (2009) note that for both Jansen et al. (2004) and the IEA indicator, the relation between political and market-based indicators is arbitrary. They see the results of Gupta to be more robust due to her application of *Principle Component Analysis* (Kruyt et al., 2011).

All these indicators locate political risks in certain properties of the supplying state, most generally in its stability. Hence, important influences on energy security remain excluded, which could lead to flawed assessments in some cases. Even thorough, substantial and exhaustive syztematizations of the whole energy security complex only mention the national and the global level of geographical thread extension (e.g. Winzer, 2012).

Due to this situation, existing instruments exclude crucial risks and influences on energy security, leading to potentially flawed assessments. This might contribute to the general lack of confidence of policy makers in complex indicators, partly due to the neglect of more qualitative factors (Cherp and Jewell, 2011b: 209). It also obstructs the consideration of essentially international and transnational factors in scenario-based energy security assessment of possible future development paths (see for example Jewell, 2011b: 2 on the preferability of quantitative indicators for scenario formulation). Existing indicators also fail to offer quantitative data for statistical research on energy governance. Hence, research on energy security falls back behind comparative research programs, especially on environmental governance.

Regime effectiveness has a great influence on the conduct of international energy relations and is therefore a necessary element for any comprehensive assessment of security of supply (see for example Dannreuther, 2011a). It also allows shifting the level of analysis in energy security from the currently dominating state centred perspective to the international level. That should allow for more appropriate risk assessments, since political security of energy supply is an inherently cross-border[4] concept – trade behaviour of or in one state affects the security of another – and many important influences – e.g. transnational business cooperation, general relations between these states and transit states and indeed regimes – are situated on the transnational and international level. To assess cross-border factors is therefore not only important in order to allow more comprehensive policy oriented research. It is also an important step in analysing and comparing the effects of different regimes on energy security (see for example

[2] The PRS Group is a private consultancy in New York that specializes in the assessment of political risks. The ICRG is one of their main products and is available under http://www.prsgroup.com/ICRG.aspx.

[3] Jewell also lists political stability of suppliers as risk factor for coal imports, but does not use it in her assessment due to lack of historical evidence for its relevance (Jewell, 2011a: 29).

[4] From here on, I use the term "cross-border" to refer to both international and transnational relations simultaneously.