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Public perceptions of energy security in Greece and Turkey: Exploring the relevance of pro-environmental and pro-cultural orientations

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ABSTRACT

Recent definitions of energy security have evolved to include qualitative dimensions, such as social acceptability, alongside more classic issues such as the availability and affordability of energy supplies. Despite the importance of lay-public opinion in shaping energy and environmental policy, however, currently relatively little is known about the underlying nature of people's attitudes towards energy security. The current study used an online survey to gather perceptions of energy security in samples from two neighbouring countries with a historical reliance on energy imports (i.e. Greece & Turkey). There was a specific focus on understanding the relationships between individuals' pro-environmental and pro-cultural orientations and their energy security concerns. The results not only confirm the multifaceted nature of energy security attitudes but also indicate that the extent and nature of this concern (both in general and in terms of a number of sub-facets of concern) differs between populations. While pro-cultural orientations were not predictive of concern in either subsample, pro-environmental orientations were (e.g. for concerns about fossil fuel depletion within the Greek subsample). This research contributes to the literature pertaining to the nature and antecedents of lay-public opinions of energy security and provides a footing for further systematic investigation into this area.

> *"Given the complex, political nature of energy security, emerging energy security challenges, and differing socio-economic attitudes, it is important to understand the social and environmental factors that shape perceptions towards energy security"* [1] (p. 620)

1. Introduction

1.1. What is energy security?

Energy security is a complex phenomenon. While in essence it can be construed as ensuring the "uninterrupted availability of energy at an affordable price" [2], the banality of this statement masks hidden depths. For example, not only are there differences in the short- and long-term challenges of fostering energy security (e.g. responding to fluctuations in supply and demand vs. ensuring timely investment in energy infrastructure projects); but it is also shaped by manifold factors (e.g. geopolitics, markets, etc.) and the relative success or failure of attempts to ensure energy security can have significant socio-economic and environmental ramifications. For an introduction to the concept of energy security, see [3,4].

The multifaceted and polysemic nature of energy security means that the concept has many possible meanings and takes on "…different specificities depending on the country (or continent), timeframe or energy source to which it is applied" [5] (p. 893). While definitions of energy security have historically focused on the availability, reliability and affordability of energy [6,7] there is a growing recognition that the concept is more nebulous. In line with this understanding, more recent definitions have become more inclusive; recognising not only the quantifiable, market-centric roots of early definitions—principally governed by considerations of energy (particularly oil) supply and price—but also more qualitative considerations such as governance and social acceptability [1,5].

The incorporation of social acceptability into the definition of energy security, in particular, is important bearing in mind the reciprocal influences that myriad socio-political, market and community stakeholders (including publics) can exert on energy and environmental policy and decision-making [8–10]. Publics—through their interactions with one another and with the socio-political establishment (e.g. politicians and policy makers)—are a key group of stakeholders that can shape how energy security is defined within a particular context, and any affiliated energy and/or environmental policy response that follows [see [1]]. Indeed, Corner et al. [11] note that public

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opinion "is likely to be one of the most important factors that will determine future technological pathways that […] countries take in the face of climate change and energy security" (p. 4825). With this in mind, it stands to reason that developing an understanding of publics' definitions of and attitudes towards energy security should be a focus of research.

1.2. Public attitudes to energy security

In recognition of the importance that public opinion has in shaping energy and environmental policy and decision-making [8–10]; there is now a developing literature on public attitudes towards energy security [1,11–16]. A primary focus of much of this research has been to assess the implications that concerns about energy security have for energy choices (e.g., the impact that framing the energy debate in terms of energy security has on the relative preference for different electricity generating options). For instance, several studies have found that framing nuclear power in terms of energy security (and climate change) can, if sometimes reluctantly, increase endorsement of the technology [11,17,18].

Another key focus of research in this arena has been to shed more light on regional and cross-cultural variations in energy security attitudes, which has yielded some interesting findings [1,14,16,19]. For example, Knox-Hayes et al. [1] in an investigation of public opinion in 10 diverse countries (including Brazil, Germany, USA, China & Papua New Guinea), discovered notable differences in (a) relative energy security concern; and (b) the regional and social-demographics attributes giving rise to the concern. Three broad findings were registered: (1) the results were seen to confirm the multidimensional nature of energy security and its relationships to both quantitative (e.g. availability) and qualitative (e.g. governance) considerations; (2) relative oil-import dependence was found to strongly shape energy security attitudes and policies, with higher import dependence associated with *less* concern for all aspects of energy security (except availability); and (3) certain socio-demographic characteristics (particularly older age, female gender & lower education) were found to relate to greater energy security concern. Knox-Hayes et al. [1] concluded that their findings illustrated how attitudes towards energy security are embedded within the specific socio-economic and cultural systems of a given country [see also [20,21]].

The literature on lay-public perceptions of energy security is still emerging; however, the extant research indicates not only that research into public attitudes towards energy security is timely—given the influence that public opinion can exert on policies relating to energy security—but also that perceptions of energy security are apparently linked to a number of socio-demographic (e.g. gender, age) and psychosocial factors (e.g. socio-cultural systems). With this in mind, the present study sought to investigate: (1) lay-public perceptions of energy security in samples from two neighbouring countries with a historical and growing reliance on energy imports (i.e. Greece & Turkey); and (2) the specific relationships that two prominent psychological constructs (i.e. pro-environmental and pro-cultural orientations) share with energy security concerns in each of these two countries.

1.3. Pro-environmental orientation and energy security concern

Growing imbalances in energy supply and demand in some countries and the destabilization of the world climate through human activity present challenges for ensuring energy security [e.g. [1,12]]. For instance, the rising global demand for, but reducing availability of, fossil fuels to power growing economies—set against the recognised negative environmental consequences of their use—highlights the close, complex and yet sometimes conflicting relationship that can exist between energy and environmental policy. The evident relationships between energy and environmental issues suggest that it would be logical to anticipate that an individual's environmental values, identity, beliefs and attitudes (i.e. their 'pro-environmental orientation') could help to shape (or be shaped by) their concerns about energy security.

A rich literature exists linking aspects of a person's pro-environmental orientation to their environmentally-significant behaviours, including their energy-related behaviours [e.g. [22–25]]. Generally, a logical relationship is observed (although the strength can vary and be affected by certain demographic factors) with those evidencing a stronger pro-ecological orientation tending to be more concerned about the environment and tending to be more likely to engage in pro-environmental actions (e.g. lower energy use).

While it could be argued that the links between pro-environmental orientation and energy security concerns will be: (a) more complex (due to the multi-faceted and polysemic nature of the construct [5]); and (b) likely to be affected by a number of aspects of the physical and socio-political context within which people are situated [e.g. [26,27]]; it is reasonable to hypothesise that a similar positive correlation should exist between pro-environmental orientation and energy security concerns in some contexts (i.e. stronger pro-environmental orientations should correlate with higher concerns about energy security).

We reason that this is perhaps most likely in states that are dependent on imported fossil fuels (e.g. oil and gas) and where people conceptualise energy security issues as primarily relating to a choice between: (a) a continued (or growing) reliance on fossil fuel imports via vulnerable supply-lines from countries who have control over the availability, reliability and price of the supplied energy; or (b) a shift towards an increased reliance on domestically-sourced renewable energy. Indeed, there is certainly evidence linking stronger pro-environmental orientations to both preferences for renewable energy options and/or a greater concern about an overreliance of fossil fuels, which would help to support this assertion [e.g. [28–30]][1].

A scale that is seen to encapsulate an individual's pro-ecological orientation is the New Ecological (or Environmental) Paradigm (NEP) [31,32]. While the NEP has been used extensively and variously as a measure of "environmental attitudes, beliefs, values, and worldview" [31,p. 428], it is fundamentally believed to capture people's general beliefs about the relationship that humans share with the environment [33]. In essence, higher scores on the scale relate to stronger endorsement of 'eco-centric' beliefs (i.e. the belief that humans are part of, and constrained by, nature) and stronger rejection of 'dominant social' beliefs (i.e. the belief that humans are independent from, and dominant over, nature).

The NEP has been shown to correlate with a number of energy and environmentally-significant behaviours [e.g. [34–36]] and the concept has been integrated into models of environmental behaviour as a key link in the chain between one's underpinning eco-centric/ego-centric values and their personal (i.e. moral) norms and behaviours (e.g. Value-Belief-Norm model, [37]). While some questions do remain over the dimensionality of the NEP [19]; to the extent that it is deemed to capture the essence of people's relationships with the environment, the decision was taken to investigate the strength with which endorsement of the NEP might predict energy security concerns in the current study. Based upon the fact that Turkey and Greece are both fossil fuel import-dependent states (see Section 1.5) and the reasoning that people might construe energy security considerations as a choice between a continuing reliance on (imported) fossil fuels (i.e. unsustainable status quo) and a shift towards a greater reliance on (domestic) renewables (i.e. sustainable future outlook), it was predicted that in the current study that a stronger pro-environmental orientation should relate to stronger

[1] The nature of the relationship between pro-environmental orientation and energy security concern is something that requires further investigation. For example, one might assume that in situations where the status quo is reversed (i.e. where there is a perceived overreliance on domestic, renewable options); that those with weaker pro-environmental orientations might show higher concerns for energy security (e.g. due to concerns about intermittency [70]).