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Waging War On Climate Change: Mapping Energy Policies To Their Strategic, Tactical, And Operational Levels

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Abstract

The emergence of climate change and energy security as increasingly important issues has amplified the need for energy policies that manage these issues. While policy-makers adopt energy policies that address climate change and energy security, these policies often include broad strategy statements and may not include specific implementation plans. Accordingly, effectiveness of these energy policies is also evaluated at the strategic level, which may not appropriately evaluate the policies beyond how the policy met its strategic goal(s). This paper assesses the feasibility of mapping energy policies to their strategic, tactical, and operational (STO) levels through two case studies. The first case study assesses the European Union (EU) 2020 energy and climate policy known as EU 20-20-20 as well as the United States' Executive Orders 13514 and 13423 that mandate energy and greenhouse gas reductions for federal buildings. Results of this paper illuminate potential advantages and limitations of using STO as an energy policy assessment tool and the mapping effort described in this paper suggests that strategic, tactical and operational levels should be addressed explicitly in future energy policies.

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1. Introduction

While climate change and energy efficiency have long been issues of concern for many researchers, it is only

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relatively recently that these issues have become politicized and the subject of energy policies [1-3]. Many energy policies that address efficiency and climate change focus on high-level strategic goals, e.g., reduce carbon emissions to 1990 levels by 2030. However, these policies may not include specific implementation plans, leaving those tasked with achieving these goals to develop their own execution and implementation goals and plans. In other words, policies, and their assessments, often focus on the strategic level, with little or no mention of the tactical or operational levels.

Energy policy assessment techniques vary widely, ranging from simulation modelling to experience curves (e.g., Morthorst [4])

The strategic, tactical, and operational (STO) framework [5, 6] provides a planning framework for supply chain management. The strategic level is a high-level plan and forms the foundational basis of a policy and will dictate decisions in the long-term. The tactical plan describes the procedures planned to achieve the ambitions goals of the strategic plan. It is a short-range plan. If the strategic plan is an answer to “What?” the tactical plan responds to “How?” The operational plan defines the day-to-day activities. The operational plan provides an approach to achieve the tactical goals within a realistic period of time. This plan is highly specific with focus on short-term goals. The STO framework is also used for organizing a military force [7].

The objective of this paper is to determine the feasibility of mapping energy policies to the STO framework. Specifically, this paper maps elements of energy policies studied to the STO framework. Case studies include The European Union (EU) 2020 energy and climate policy known as EU 20-20-20 [8] and Executive Order 13514 [9]. Case study results suggest it is feasible to map energy policies to the STO framework. Results of the mapping suggest policy effectiveness varies across the STO levels, illustrating the need for policy assessment at various levels.

2. Methods

This paper leverages case study research [10] to determine the feasibility of assessing energy policies with the STO framework. Yin [10] presents a 2×2 matrix showing four types of design for case studies:

- Single case and single unit of analysis
- Single case and multiple units of analysis
- Multiple case and single units of analysis
- Multiple case and multiple units of analysis

This paper presents a type four study as it presents multiple cases with multiple levels of analysis.

A feasibility study evaluates the project's potential for success [11]. In other words, a feasibility study does not support a desire that the proposed hypothesis, method, or project will be successful. In fact, it should be an evaluation of the method's chance for success. Therefore, a study with both positive and negative conclusion can better assist decision makers. In this work the feasibility assessment is started by mapping EU 20-20-20 and the Executive Order 13514 to the STO framework, identifying the strategic, tactical, and operational goals and plans of each policy. After completing this mapping, the authors identified what was implemented at each level for each policy, and compared this to existing effectiveness assessments for each policy. The results of this comparison serve as the feasibility assessment: if the findings from the STO framework match those in literature, this paper serves as a proof-of-concept that the STO framework is a viable means of assessing energy policies.

3. Case Study Background

The authors studied two cases to assess the feasibility of mapping policies to the STO framework. The authors selected EU 20-20-20 and Executive Order 13514 as the case studies for this paper. Europe and the United States have similar overall goals for energy efficiency and climate change mitigation, largely due to a similar level of economic development [12]. Moreover, both the US and Europe have advanced energy infrastructure, and thus, more mature energy policies than some other nations. Finally, the policies selected have similar timescales, both being adopted in the first decade of the 21st century and targeting change by 2020. While these similarities make these ideal case studies, the differences in these policies are equally critical. The EU 20-20-20 addresses the entire

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