

Unbundling the Energy Union: Energy Transition Governance and Review Framework

BY ANDREW KILMARTIN

Abstract

Decisions and change management are crucial to energy transitions. We need a framework that can capture the whole energy system transition and its challenges and opportunities. An independent and transparent decision quality framework can provide the policy governance and facilitate a strategic Cost Based Analysis project review based on value and utility.

Unbundling the energy union....what are we dealing with?

The energy transition is gaining momentum, backed by consensus over climate change impacts and the need to reduce or limit carbon emissions. The Energy Union is one of the programmes designed to deal with the energy transition in the EU. Yet, there is no clear consensus on how to achieve its aims collectively. More specifically, despite nationally determined contributions, there is a lack of a unified and coordinated intra or inter-regional response.

If we do not change the way we develop policy or select projects and market mechanisms to implement policy, we will not optimise the way we make investment decisions. This will affect how we manage the transitional energy mix over the next 20-30 years, and, if not kept in check, may result in policy makers losing control of the transition. We therefore urgently need a framework that can help ensure that we make the right decisions and ensure seamless changes during the transition period. This way, the efforts to achieve emission reduction, efficiency improvements, and interconnectivity targets can be managed strategically so that the market and sector coupling ambitions are realized and the transformation to net zero or low carbon is achieved.

If mismanaged, the transition process may lay waste to both renewable and non-renewable efforts, e.g., lack of storage and an infeasible energy mix restricted by transport and congestion issues. During the transition we may also experience a glut or shortage in capacity where insufficient storage and operational control problems cannot address market balancing and we could suffer excessive curtailment or extreme price volatility as a result. Worse still, we may end up with stranded assets on both sides of the renewable and non-renewable asset portfolio which will exacerbate the challenges of change and ability to manage the transition.

To that end we need to consider introduction of a framework that allows for governance of the policy process and simultaneously provides a comprehensive and collective review of the projects of common inter-

est and application of policy mechanisms to realize policy implementation. This will ensure transparent and insightful appreciation of the policy impact and ensure that we have information to support and ensure that good decisions are made to deliver the change required. For that reason we should consider the Decision Quality (DQ) framework (Spetzler et al, 2016) to provide for good policy governance and infrastructure project and market mechanism impact review.

Unboxing and reading the instructions ... Policy Governance and Project Portfolio Review!

The energy transition is probably the biggest challenge that EU industry and society has faced in recent times. So much is at stake, and yet, so much uncertainty and debate prevails. On returning to university after 20 years in the energy and marine industry, I embarked on what would become an interesting career change from operations and engineering to focusing on risk and decision making methodologies. I wanted to understand and understudy how to better frame, structure and how to model energy systems so that we could make better investment decisions.

However, with the advent of sustainability and decarbonisation policy it became difficult to address policy and project dimensions simultaneously. We struggled with how to choose the modeling approach, use the data, and how to analyse the results or understand the insights to support good investment decisions that steer us towards a low carbon energy system. While researching this challenge, I discovered the Decision Quality framework outlined in Fig. 1 (Spetzler, 2016) which succinctly and thoroughly addresses the decision process to ensure we make good and unbiased decisions based on the information we have. I could also see how this could be applied to ensure good governance and provide a review of energy transition policy and implementation challenges.

By using this framework I was able to get a better overview of how policy was determined and how investment decisions were made. I wanted to see if this meant that good policy and good decisions were being made to support the energy transition – but the results were a little surprising. The process is not as transparent as one might hope. Quite quickly, I could identify a series of poor and counterproductive decisions that have been made. It may be that these decisions are a result of bias, overoptimism or overconfidence in new technology or readiness of infrastructure, including exaggerated claims regarding scalability, feasibility, and limited impact or benefits for society. This bias

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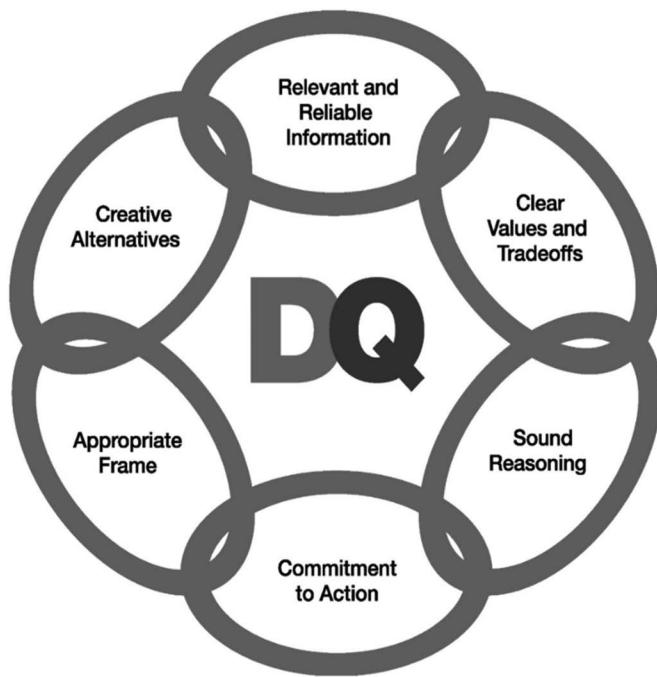


Figure 1. The Decision Quality Framework (Spetzler et al, 2016)¹

and over optimism is leading to the evolution of “battle lines” or “camps” in the energy sector between renewable and non-renewable resources, which may harm transition efforts and progress if not kept in check.

That said, the general dedication and focus on efforts to address energy transition challenges and plans for transformation are admirable. However, it seems that much is being left to market forces alone, which can be dangerous during a transition. There does not seem to be a consistent structure or agreed alignment regarding approach and direction in research efforts and subsequent analysis of timing and priority on what needs to be built, what needs to be decommissioned, and what we could salvage through modification and upgrade. This could be attributed to poor framing and lack of consideration of alternatives. We also seem to struggle with unreliable data and subsequently inadequate trade-off analysis which would help us achieve optimal energy mix at various stages of the transition process. Timing and implantation of changes at strategic milestones are paramount to the energy transition. The DQ framework could help highlight this.

In addition, to correctly frame and structure the decision making process and ensure that we have sufficient alternatives and a viable mix of modelling and solving methods, we cannot rely on models to deliver the decision. That is why we need to separate the decision making element from the modelling process, and reiterate that the energy system models and analysis are there to support the strategic decision making. This should be conducted through a separate cost-based assessment module with dedicated decision analysis which is based on model results that give insight into proposals regarding possible or potential energy mix and technological options that can be considered or need to be developed.

Moreover, we need to learn how to set and align the modelling requirements and constraints in the framing process, as it is currently near impossible to compare or combine energy system insights or results or outputs in order to allow for comparative analysis, or to collate the results into a type of confidence or capacity distribution to help the decision makers make informed decisions based on recommendations or insights from the modelling and analysis. Furthermore, we need the Decision Quality framework to illuminate the policy and project decision process to describe how the different model assumptions, constraints, data sets, and methods affect the results or insights attained or derived. This may help us combine or compare models in a much more beneficial and constructive way. In addition, it must be noted that during attempts to aggregate results or solutions, the spatial and temporal considerations between models (short term vs long term, local vs national, macro vs micro) extrapolation or clustering methods are clearly described, as this is often overlooked and ignored and can be (mis-)used to produce biased decisions.

Worryingly, we do not have a handle on stakeholder engagement and management, crucial to any change or transition process. In fact, there is so much debate about where we are and where we want to go that multiple pathways, options and opportunities are proposed, but these are not assessed by stakeholders or agents to arrive at some sort or agreed strategic energy transition at a regional and intra-national level. This means that no negotiation or compromise is resolved pertaining to priorities and timing of infrastructure and projects to meet policy implementation objectives. For example, most of the concrete implementations of EU energy transition decisions are planned and approved at country level and not agreed collectively at a European energy union level. Because of this, some opportunities or benefits may be left too late or lost altogether. If we persist in using “tried and tested” tools, metrics and models to evaluate, select and prioritize infrastructure projects or market mechanisms, we may miss out on potential value, benefits and opportunities that meet transition objectives in a more efficient and effective manner.

We should also remember that the cost based analysis (CBA) tools used in earlier regional development appraisals may not be fit to evaluate projects and infrastructure needs for the sustainable future as these were developed when sustainability and environmental impact issues such as climate change and biodiversity were not fully addressed and these market failures were not fully considered. In addition, financial and economic approaches to calculating project benefits may not be sufficient to bring about sustainable energy systems with limited impact on the environment and avoid market failures detrimental to society as the value or benefits to address these are not quantified or considered. This also affects the analysis to understand what options are feasible and affordable. The DQ can address this and help move beyond NPV. It can ensure that decisions regarding the energy mix and the infra-

structure needed support the strategic direction of the transition are identified, agreed and properly specified. In addition, if we look beyond simple NPV analysis and introduce timing decisions (e.g., real options), values of flexibility and values of information, we can address the complexity and uncertainty surrounding the decision making; thus focusing on decisions where utility and value needs to be the main consideration.

We may need to open dialogue between stakeholders responsible for policy (decision board) and infrastructure needs and policy mechanism implementation teams about the decisions we are making and to help review if the policy and the projects or mechanisms that will be implemented are feasible or meet expectations. This review process will help support the decision making process. The Decision Dialogue (DD) (Fig 2.) (Spetzler et al, 2016) may be such a tool to capture these requirements.

comparative or integrated assessments to support the energy transition. Either way, the DD and DQ combined with CBA evaluation will allow for improved policy governance and project portfolios, including introduction of carrot or stick market mechanisms.

This way, any gaps or shortfalls in policy and project or mechanisms used in integrated energy system plans will be highlighted and through CBA moving beyond NPV, i.e. using real options, flexibility or value-based flexibility and strength of knowledge, the timing and urgency issues can be addressed to ensure that the infrastructure needed to integrate the renewable energy sources or lower carbon efforts to help non-renewable sources continue service are completed in time to meet the targets and benefits envisaged.

In addition, any DQ policy governance and implementation review can then be addressed through the DD. Then, the decision making can be addressed using the decision analysis (DA) captured in the established CBA to solve portfolio infrastructure and investment issues where utility and value are central to the process to ensure a successful implementation phase.

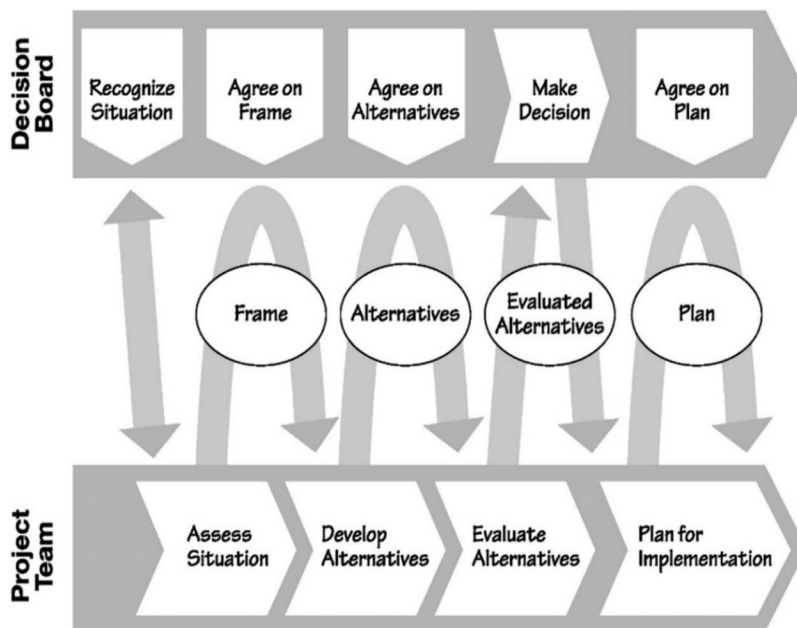


Figure 2. The Decision Dialogue Process (Spetzler et al, 2016)²

The decision dialogue above can be used in conjunction with the decision quality framework to help structure the stakeholder engagement and add a portfolio dimension to the policy governance and the project review. This will allow us to step back and get a structured review of our policy proposals and an independent cost-based analysis of the projects, mechanisms, and infrastructure needs that have been identified and approved. By combining policy governance and project reviews through dialogue with specified stage gate and approval points, any bias and over-optimism should be removed or addressed and we will end up with a spread of results that can support decision making which will be properly addressed using robust and appropriate metrics in a cost based assessment module. Maybe we will find or show that current or proposed tools and techniques are not entirely fit for this purpose and what changes need to be made to make

Repacking & rebooting ...due diligence foundations to build the energy union!

We need a whole energy system approach to allow benefits of all options and mechanisms to be considered so that the timing and use of renewable and non-renewable energy sources can be efficiently and optimally managed before we end up with stranded assets and premature redundant capacity or introduction of infrastructure and renewable capacity that is underutilised. We are all in the energy transition together and the renewable and non-renewable energy industries both have a role to play in the transition phase. So, let's get together, pool our resources, share our experiences and knowledge and learn to work together and contribute in a proactive and tangible way to achieve the low carbon society we need!

But, while doing so, we need to ensure that we address the correct situation, frame and structure the challenge correctly so that the modelling can throw up alternatives. We can then evaluate using the CBA with built in value and options. All of this can be addressed using the DD in conjunction with the DQ in tandem. So let's get the governance and review process moving and by creating a dialogue around the process include all the stakeholders and show unbiased (and hopefully enlightening!) transparency surrounding the policy and decision process so we can learn to understand limitations of older approaches, address the market failures and keep the energy transition on track.

I am confident that by removing barriers to integration of renewable and non-renewable energy sources, through delivery of a coupled energy market and sector energy system, we will be able to resolve market share

issues during the transition. This needs to be developed in conjunction with sufficient and suitably scoped and specified interconnection and storage based on value and utility. This will also help alleviate prevailing bias and feasibility issues concerning integration of the most viable and feasible energy sources that can make up a secure and reliable energy mix. Removal of these obstructions will allow constructive efforts to get on with the transition as we have no time to recover from bad decisions. This is necessary to avoid irreversible damage to a fragile start to the energy transition and avoid any further unnecessary delays in essential investments and infrastructure in either renewable or non-renewable entities to support the transformation we envisage. We need everyone to support this endeavour, such that a just transition where collaboration, diversification, innovation, sustainability and decarbonisation is on top of everyone's agenda.

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Footnotes

¹ Spetzler, C. S., Winter, H., & Meyer, J. (2016). *Decision quality : value creation from better business decisions*

² Spetzler, C. S., Winter, H., & Meyer, J. (2016). *Decision quality : value creation from better business decisions*

References:

Spetzler, C. S., Winter, H., & Meyer, J. (2016). *Decision quality: value creation from better business decisions*

