



Defining and conceptualising energy policy failure: The when, where, why, and how

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ABSTRACT

Energy policy failure is complex and to date there is a lack of a clear definition as society advances to a low-carbon world. Here a new *definition* is proposed, where energy policy does not meet local, national, and international energy and climate goals across the activities of the energy life-cycle and where just outcomes are not delivered. Energy policy failure is a major problem given the global aim of a low-carbon society, thus this paper conceptually sets out and defines energy policy failure in light of the energy transition, the 2015 Paris Agreement and the necessity of meeting energy and climate commitments. This conceptual research marks a first in connecting the current extensive energy justice literature with that of energy failure and under the premise of the climate emergency (announced by the United Nations in 2020). The direction here is both from a legal and an interdisciplinary perspective which is vital to energy research. The paper highlights the key literature on energy failures such as collapsed incentives, abandoned projects, mistakes, wrong paths, and bad decisions. It analyses some of the key causes and consequences of these energy policy failures, and aims to offer a solution for resolving them that meets the requirements of the just energy transition. At the heart of the paper's solution is the aim of furthering more fairness, equality, equity and inclusiveness into energy project decision-making, so that justice is at the centre of energy project development. Ensuring that this is the case will reduce a whole variety of project risks, result in successful project completion and reduce the possibility of energy policy failure, as society moves from the energy transition into net zero frameworks.

1. Introduction

Failed energy policies have implications for society, the climate, the economy and international relations. There are various views on energy policy failure, especially in public discourse, for example, “[o]ur present system of energy is weakening our national security, hurting our pocketbooks, violating our common values, and threatening our children’s future. Right now, instead of national security dictating our energy policy, our failed energy policy dictates our national security” (Clinton, 2006). Others include: “[t]he failed energy policy ... drives us to war” (Mandle, 2002); “economy continues to suffer from the failed energy policy of the past” (Stallman, 2005); “[the] failed energy policy ... is eating away at the family ... budget[s]” (Knowles, 2005); or “[t]he ... disaster is ... the product of a failed energy policy ... that puts ... profits ahead of people and the environment” (Redford, 2010).

As highlighted above, there are several points that may be made in

relation to energy policy. They form the basis of the principal issue we discuss in this study, concluded in the following research question: how to define and conceptualise energy policy failure? We address this key research question in our conceptual article. However, there has to be a common solution that the energy sector can work towards. The solution proposed here in the context of energy policy failure is to provide just outcomes for society, thereby achieving both the energy and climate goals. Here, we could possibly advance the theory that in the future energy failure would mean any energy policy which does not deliver the 2030 energy and climate goals. Naturally, all policies involve some level of risk, and there is no guarantee that all will be successful. However, the failure of energy policy can be costly, and it is now necessary to deliver sustainable and low-carbon solutions that contribute towards a just transition to a low-carbon economy. In this context, the paper conceptualises energy failure in light of the energy transition and the 2015 Paris Agreement as, despite the global goal of a low-carbon society, energy

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policy failure is a major issue.

Regarding the theoretical framework applied in this paper, the approach is legal (normative) but also interdisciplinary in nature. Section 2 highlights energy policy failures and reviews the collapsed significant incentives, lost projects, mistakes, wrong paths, and bad decisions which are all policy failures in the energy policy making. Section 3 presents our *definition* of energy policy failure and the energy justice framework for assessing failure. Section 4 explores causes, unjust outcomes, and just solutions in terms of energy failure. Section 5, apart from the conclusions and policy implications, discusses what shape the debate on energy policy failure and its role in a just energy transition should take in the future.

2. Energy policy failure – interdisciplinary literature review

Despite frequent references in the public discourse to “energy policy failure”, “failed”, “wrong”, or “unsuccessful energy policies”, as illustrated in Section 1, research in this area is not as extensive as it should be. A review of research on energy policy failures demonstrates this. Another issue that arises is the tendency to confound policies, plans, programmes, and projects, as well as the planning and implementation processes. This is particularly critical because energy policy failure may occur at any point of the process: it begins with initial ideas and policy statements, which are then followed up by substantive documents, materials, and acts.

2.1. Research on energy policy failures

Seemingly, policy failure research is a well-established component of different disciplines, ranging from interdisciplinary approach, through political science, sociology, management, economics, engineering, and law where one may also find examples covering energy studies. However, aside from numerous studies addressing specific topics related to policy failures, as McConnell (2015, p. 223) highlights in his review, there is, surprisingly, a scarcity of literature on policy failure. This particularly concerns studies presenting a general understanding of this issue (May, 1992; Dunlop, 2017, 2020). Nonetheless, there are wide strands of policy literature that highlight this topic to varying degrees; in some, the idea of failure is addressed in a relatively brief manner, while in others, direct attempts to concentrate on the essence of policy failure are made (McConnell, 2015, p. 223). The same concerns energy policy failure, where it is noted that “[t]he energy sector is littered with examples of policy failure” (Heffron et al., 2018b, p. 1193).

To organise the state of knowledge in this area, certain observations can be made. First, starting from the 1970s, when energy policy failure was addressed in the light of global energy crises, studies referencing energy policy failure were elaborated, then published in the literature including *Energy Policy* (Gordon, 1974; Friedland, 1979; Brown et al., 2020). Second, many papers discuss energy policy case studies in general, highlighting certain more or less specific problems qualified as “energy policy failures” (Mañé-Estrada, 2006; Kytaiev et al., 2020), treated as “wrong energy policies” (Chandran et al., 2010; Nadimi and Tokimatsu, 2018), or “unsuccessful energy policies” (Katircioglu, 2017; Breetz, 2020; Peng et al., 2020). Moreover, “energy policy failure/s” are not defined in a universal way. In this context, they emerge rather as an element of a bigger picture where topics range from very general obstacles related to energy market (McGowan, 1989) to more specific issues. The former cover, *inter alia*, market failures and barriers related to energy policy development (Fisher and Rothkopf, 1989; Mitra et al., 1995; Brown, 2001; Anthoff and Hahn, 2010), the failure of liberalised competitive electricity model (Thomas, 2006a, 2006b, 2006b), typical energy policy matters like renewable energy sources (Wood and Dow, 2011; Yoon and Sim, 2015), or energy efficiency (Wang et al., 2011; Rosenow and Eyre, 2016). The last one includes issues such as urban energy policy (Keirstead and Schulz, 2010), low carbon fuel policies (Yeh et al., 2016), or commercialisation of developed renewable energy

technologies (Foxon et al., 2005).

Third, some authors associate “energy policy failure” with different problems. Among them one may list the inability to establish administration responsible for the energy sector (Llamas et al., 2018), administration’s lack of professionalism (Kytaiev et al., 2020), the failure to adopt international, European (Padgett, 1992) or national energy policies (Grossman, 2013; Llamas et al., 2018) or a climate policy (Nye, 2014). Other issues include ignoring the cost-cutting and risk-mitigation benefits of renewables and energy efficiency (Awerbuch and Sauter, 2006), incompetence in aligning industrial and renewable policies (Xu et al., 2020), the failure of dedicated energy legislation (Sokolowski, 2017, 2020a, 2021), political and public pressure (Franchino, 2017), or the failure of leader’s broad energy visions like President Nixon’s Project Independence and President Carter’s National Energy Plan (Mittlefehldt, 2018).

Fourth, previous legal research has found a key energy policy failure in the energy sector related to decommissioning and waste management (Heffron, 2018a). In examining the US nuclear energy sector, the difference between the policy and project management failure is noted (Heffron, 2013). Other examples refer to the distributive justice and energy policy failures around resource extraction and revenue management in Africa (Heffron, 2018b). More recently, Qurbani et al. (2021) have observed the vital importance of reducing energy policy failure in the development of the critical minerals industry as it develops in South-East Asia.

Further categorisation is possible to narrow the scope of the review, which is also required for framing the proposed definition. By referring to the proposed types of policy failures in the energy policy making, one can find real-world examples of collapsed incentives, lost projects, mistakes, wrong paths, and bad energy policy decisions in literature – and these are listed below in Table 1. Naturally, this is not an exhaustive list, and there are numerous examples of failed energy projects, incentives, or ideas. For instance, Benney (2019) finds unsuccessful renewable energy projects in 29 middle-income countries representing Europe, both Americas, Africa, and Asia. Sovacool and Drupady (2016) explore failures or worst practice examples of development of small-scale renewable energy technologies in Asian countries ranging from Bangladesh, China, India, Laos, Indonesia, Malaysia, Mongolia, Nepal to Papua New Guinea and Sri Lanka. Sokolowski (2018a) discusses how certain European coal power plants failed to meet the standards set by EU legislation on industrial emissions.

Nevertheless, there is almost no item in the literature that addresses the issue of energy policy failure in a thorough manner, by delivering a holistic approach going beyond case studies. This, obviously, does not imply a simplistic view of energy policy failure, in which energy policy failure is reduced to a political statement, as shown above in the Introduction. There is, however, a gap in the literature when it comes to a basic discussion on energy policy failure as the core element of energy policy studies. To fill this void, in this Section we discuss the fundamental characteristics of energy policy failure to define the term *energy policy failure* in the universal way.

2.2. Policies, plans, programmes, and projects – their role in the energy sector

One should note that the discussion on energy policy failure encounters certain issues at every stage. This begins even before the projection phase, with the first drafts of policy statements, which are then supported by detailed documents, materials, and finally actions. The first iceberg appears when defining what energy policy – or simply a policy – is. “[A] good definition is a prerequisite for a good policy” (Allen and Wood, 2006, p. 153). Among various definitions (see Wilson, 2006), the interpretation provided by Nakamura and Smallwood (1980, p. 31) offers a useful approach; they define policy as “a set of instructions from policy makers to policy implementers that spell out both goals and the means for achieving those goals”. Thereby, a policy would be an

Table 1
Energy policy failures across a selection of nations.

Failure type	Country	Description	Reason	Reference
collapsed incentives	Kenya	collapse of financial scheme of community owned microgrids	governance issues, lack of information	Karumba and Muchapondwa (2017)
	Canada, USA	dropout of pilot energy programmes	customer dissatisfaction and negative media coverage	Russell-Bennett et al. (2017)
	Tanzania	ineffective electricity tariff	insufficient revenues earned by energy utility to undertake rural electrification due to a conflict between economic efficiency and affordability	van den Broek and Lemmens (1997)
	Bhutan	unsuccessful early PV programme	failure to address the differential cost between PV-based power and large hydropower, consumer disinterest, and the lack of technical support	Pervaz and Rahman (2012)
	South Africa	failure of solar water heating programme	low quality of installations, insufficient training, and poor planning by the responsible institutions	Netshiozwi (2019)
	China	failure of energy conservation policies in the agricultural sector	insufficient incentives for advanced energy-saving technologies	Xu et al. (2014)
lost projects	Poland	failure to construct the country's first nuclear power plant between 1971 and 1990	deteriorating economic conditions in the 1980s and public pressure to stop the construction work following the 1986 Chernobyl accident	Flade (2015)
	Canada	removal of more than 100,000 new smart meters	safety issues due to reports of fires related to the equipment	Russell-Bennett et al. (2017)
mistakes, wrong paths and bad decisions	Germany	construction of Nord Stream 2 gas pipeline	failure to discuss the project with those most affected by it prior to the commencement of its development	Riley (2016)
	Japan	the Fukushima 2011 accident	failure to establish an institution responsible for nuclear safety with sufficient power, independence, and regulatory functions	Funabashi (2012)
	Chile	plans to build large-scale coal and hydropower plants	failure to adequately balance environmental protection and natural resource sustainability with economic growth and energy generation	Agostini et al. (2017)
	Australia	repeal of carbon pricing (2014)	removal of the carbon pricing scheme was a key election promise coming from climate scepticism that gained influence in the winning party	Crowley (2017)
	USA	withdrawal from the Paris Agreement under President Trump	climate scepticism questioning the link between human activity and global warming, as well as the primacy of national interests over multinational concerns related to climate change.	Pavone (2018)

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action guide related to a larger structure aimed at bringing into operation a vision, principles, and decisions that are then implemented across a range of programmes, projects, and activities (Khan and Khandaker, 2016, p. 538). In other words, it would be a manual for taking future steps and making reasonable choices or decisions in order to achieve a specific or desirable goal (Jennings, 1977, p. 30).

Alongside a policy, at the level of setting directions, one may also find a plan (see Donaj, 2013, pp. 46–47). It differs from a policy in terms of respective scope and range (wider), relative degrees of abstraction (lower) in terms of concreteness and specificity (see Alexander and Faludi, 1989, p. 132). In the management literature, strategies can be found at the same level as plans, i.e. below policies and above programmes and projects (see Nickols, 2012; Morris and Jamieson, 2005). In this light, Mintzberg (1987, p. 11) defines strategy as “a plan – some sort of consciously intended course of action, a guideline (or a set of guidelines) to deal with a situation”.

Furthermore, when proceeding to the implementation stage, it is crucial to differentiate between programmes and projects. The primary level at which policy is identified is through the use of programmes not projects (Arnold and Guy, 1997, p. 66). “A programme specifies who does what, where and how, and at what cost” (Rose, 2005, p. 8). In some cases, both programmes and projects are substitutes – and a trade-off is made between project characteristics such as focus, control, efficiency of delivery, and programme characteristics such as flexibility, accommodation, and staged benefits realisation. Where projects are elements of programmes, however, management approaches are not substitutes but complementary (Pellegrianni, 2011, p. 235). Thus, programmes and projects are distinct elements of solutions, aimed at accomplishing specified goals. Simply put, a programme provides services or initiates some course of action, such as legislation, regulation, or reorganisation, whereas a project delivers a concrete product, such as a facility, construction, or infrastructure (Alexander and Faludi, 1989, p. 132). Finally, activities (see Khan and Khandaker, 2016, p. 538) include operational decisions, made during a deliberative process, which commit the decision agent to action, as well as implementation and implementation decisions, which refer to action and operations in the

field (Alexander and Faludi, 1989, p. 132).

In this context, energy policy is a part of public policy (national or international) concerned with energy use (production and supply, conversion, storage, etc.), and the formulation of measures aimed at equating the anticipated overall energy demand with the presumed availability of energy sources nationally and internationally, taking into account the potential for energy efficiency and environmental impact (Kleinpeter, 1995, p. 6). Apart from the environment, climate change is becoming increasingly important in energy policy, where an integration process between energy and climate policies and their goals is being observed (see Scrase et al., 2009; Żmijewski and Sokolowski, 2011; Vandendriessche et al., 2017; Parry and Wainstein, 2018; von Lüpke and Well, 2020; Skjærseth, 2021).

Energy policy often takes on a legal dimension, like in the United States where legislation such as the US Energy Policy Act of 1992 and 2005 was adopted (see Eikeland, 1993; Yun-wei, 2010), or in the EU, where Article 194(1) of the Treaty on the Functioning of the European Union introduces “Union policy on energy” (placed in the context of the internal market, the spirit of solidarity between the Member States, and the protection of the environment).

3. Framing energy policy failure

A clear and evidenced-based foundation is required for framing the research environment for further discussion on energy policy failures. To provide a cornerstone for this discussion and any future research on energy policy failure, we forged a definition of energy policy failure that fits into the 21st century energy and climate discourse. As the proposed goal-oriented definition is based on sustainability, we refer it to energy justice, which offers a broader perspective on what energy policy failure is. Furthermore, the reference to a just approach makes it possible to address the cost-based way of considering energy policy, which can be seen as successful when it ensures affordable energy prices (see Dukert, 1980), traditionally regarded as measures to ensure low-cost energy (see McGowan, 1989, pp. 458–459; Hassan and Duncan, 1994).

Further, as various studies show, this element is still considered

important for energy consumers worldwide (both households and industry) (see Sovacool, 2016; Sokolowski et al., 2020a; Kubin, 2021), and – if it is ill-suited – can cause serious social tensions, like in France in 2018 when the “Yellow Vests” protests began (see Douenne and Fabre, 2020; Martin and Islar, 2021). The proposed just framework, which includes elements such as recognition justice where “no one is left behind” or distributive justice (see Demski et al., 2017), helps to achieve the balance between affordability and sustainability, and corresponds with tools for assessing the policy and performance, such as the World Energy Trilemma Index, which has been released annually by the World Energy Council since 2010. This is especially important when energy prices reach new highs, as they are now on the gas, oil, and coal markets, implying an increase in energy parsimony among richer countries (that do not want to share resources to finance the energy transition of others due to internal circumstances) and energy nationalism among poorer countries (which claim that this is their time now to invest in conventional energy to catch up the developed countries).

3.1. Definition for energy policy failure

What must be emphasised is that energy policy is, by its very nature, a goal-oriented endeavour. By referring to the goal-oriented characteristics of policy, and given the current energy and climate position, we offer the following, goal-driven holistic definition of energy policy failure, fitting the 21st century: *Energy policy failure is any energy policy which does not meet local, national, and international energy and climate goals across the activities of the energy life-cycle and where just outcomes are not delivered.*

Two points need to be clarified here in relation to this definition – and it should be acknowledged this is a starting point for a definition (not the endpoint). First, the previously mentioned activities progress through the energy life-cycle, i.e., from extraction through production, operation and supply, and consumption to waste management – and it is across these energy activities where energy policy failure happens (see Heffron, 2021). Second, the outcome means, in essence, the application of energy justice to deliver just results. Both these issues are vital considering the Paris Agreement, the UN declared climate emergency, the 2021 IPCC report stating that clear action is needed to change climate science and the widespread calls to address inequality in every part of society.

Therefore, the exclusion or omission of goals – for example, the 2030 energy and climate goals, or the Paris Agreement – at the decision-making level should be regarded as an indication of policy failure. The exclusion of goals can also be perpetrated by describing them in an ambiguous, constrained, or contradictory manner, with no measurable criteria, or timeline. Finding a common benchmark for elaborating energy policy targets could help with the first of these issues. In this light, for instance, the previously mentioned European policy on energy is aimed at ensuring the functioning of the energy market, safeguarding the security of energy supply, promoting energy efficiency and energy saving along with developing new and renewable forms of energy, and enhancing the interconnectivity of energy networks (see Talus and Aalto, 2017, pp. 18–20; Mittra et al., 1995, p. 701). In practice, these goals are common in nature and can be seen all over the world (see Sokolowski, 2014, 2015, 2016a, 2019; Saidur et al., 2010; Solangi et al., 2011). As a result, several broad categories of objectives can be defined, such as ensuring energy security, promoting competitiveness, empowering energy consumers, combating climate change by reducing greenhouse gas emissions (GHG), increasing the use of renewable energy sources (RES), and improving energy efficiency (see Sokolowski, 2016b).

The universality of these goals stems from the global consensus, with the Sustainable Development Goals (SDGs) adopted by the United Nations (2015) playing a pivotal role (see Visvizi and del Hoyo, 2021). One of them is SDG7 which aims to “[e]nsure access to affordable, reliable, sustainable and modern energy for all”, impacting energy services and

energy mixes to make them more energy efficient, renewable, and clean by 2030 (see Parra et al., 2020). Moreover, SDG7 not only deals with energy directly, but it also has a number of interactions with the other sixteen SDGs (see McCollum et al., 2018). Despite the fact that it is a recommendatory instrument, the United Nations General Assembly Resolution on SDGs (2015) carries significant political weight, especially when adopted with the full support of the Assembly’s members (Liu and Tronchetti, 2016, p. 65; see Kerwin, 1983). Furthermore, with the adoption and entry into force of the Paris Agreement (2015), SDGs have been covered in a legally binding international climate treaty (see Blau, 2017, pp. 91–93; Kinley et al., 2021). With 191 parties and a broad multi-national coverage, the Paris Agreement, along with the COP24 Katowice Rulebook (2018), establish a framework for reducing GHG emissions and supporting sustainable development (see Olsen et al., 2019).

Measurable goals are a recommended standard. In terms of climate-energy policy, particularly those aimed at facilitating energy transition, this is nothing new, and setting quantitative targets that must be met over time is becoming commonplace. These objectives may be determined in a variety of ways, such as a particular amount or share to be achieved. In this context, specific measurable goals were set for RES, energy efficiency, and GHG emissions.

Regarding the timeline, it can be a specific period (e.g. in 5, 10, or 15 years, 24 months, 100 days, etc.) or a particular deadline (by the end of the year, December 31, 2024, 2030, etc.) set for achieving given policy objectives. The EU has extensive experience in this field, having set the climate and energy policy targets for 2020, and now for 2030. With the global climate action being driven by the Paris Agreement and other factors such as climate emergency declarations, climate strikes, and post-COVID-19 pandemic recovery with green investments as the main point, the year 2050 holds a lot of significance, as many countries around the world have vowed to achieve carbon neutrality by that time.

However, a major shift away from the “business as usual” scenario – which is certainly a valid choice for future generations due to its detrimental impact on the environment, economy, and society (Krewitt et al., 2009, p. 5774) – together with a move towards a sustainable path necessitates a thorough re-evaluation of how the legislative and policy goals are implemented (Sjåfjell, 2019, pp. 13–14). This paradigm demands targets to be ambitious but achievable within a set time frame (see Hilson, 2020, pp. 210–211), i.e. ambitious but realistic, with feasibility analyses based on past performance (Wisor, 2015, p. 284), taking into account best efforts, technical advancements, and societal changes. Goals that are not of this nature – particularly in terms of global climate action – condemn any energy policy to failure. This happens because they represent inconsistency, wrong structure, hesitancy, soft approach, or, last but not least – injustice. There is also the temptation, pushed by the reputational consequences of poor performance, to set unambitious goals that are easily achieved. Failing to attain them, however, will be judged more harshly than the failure to meet more ambitious goals (see Mitchell, 2008, p. 88). Although unambitious goals can give an impression of success (see Deketelaere, 1998, p. 119), it is merely satisfaction of achieving something rather than nothing. However, this “something” has a limited impact due to the lack of ambition, whereas in the case of large-scale challenges such as climate change and energy transition, substantial steps are required (see Höfer and Madlener, 2020; Mikulčić et al., 2021). Therefore, at the end of the day, minimalistic approach is deceptive.

3.2. Framework for exploring energy policy failure

Energy justice can provide a clear framework for considering energy policy failure. In this regard, there has been a significant growth in the energy policy literature, as evidenced by a Special Issue of *Energy Policy* “Exploring the Energy Justice Nexus” (see Jenkins et al., 2017). At the core of this framework there are five forms of justice: procedural, distributive, restorative, recognition, and cosmopolitan. At its simplest,

energy justice is about the application of *human rights* across the energy life-cycle, from extraction, production and operation (plus supply) through consumption to waste management (including decommissioning). Energy justice provides a comprehensive framework for action, and it centres on the five forms of justice briefly described below (Heffron and McCauley, 2017):

- *Procedural justice* – the focus here is on the legal process and concentrates on whether the processes have been followed, and there is access to justice etc.
- *Distributive justice* – this concerns the distribution of benefits from the energy sector as well as the negatives, such as whether energy revenues are shared sufficiently.
- *Restorative justice* – any injustice caused by the energy sector should be rectified – decommissioning practices would be a classic example of this.
- *Recognition justice* – is concerned with the recognition of rights of different groups, in particular local and/or indigenous communities.
- *Cosmopolitanism justice* – in essence, this stems from the view that when it comes to energy we are all citizens of the same world and therefore the cross-border effects from the energy activities need to be considered.

A key practitioner guide – *The Energy Justice Workbook* (2019) – from Professor Shalanda Baker, the new Energy Justice Director appointed under President Biden, named the same five forms as the key framework for shifting energy justice from theory to practice. It is precisely this move – from theory to practice – where more research is needed and that is the key aim and contribution of this research.

Therefore, the next section categorises energy policy failure according to the above key elements of energy justice. As well as categorising them, it also offers a possible solution by (1) aiming to meet energy and climate goals, and (2) ensuring just outcomes in the energy sector, so that energy policy failure can be rectified.

4. Energy policy failure – causes, unjust outcomes, and just solutions

Unjust energy policy outcomes resulting from failures in procedural, distributive, restorative, recognition, and cosmopolitan energy justice have various causes. Among them we find inconsistency, hesitation, lack of political will, wrong structure, lack of coordination, soft regulatory approach, no enforcement, deregulation, exclusion, and nationalism. This list, based on real-world examples, is not exhaustive. However, without getting into too much detail, these causes, along with the distinguished types of energy justice, make it possible to categorise this issue.

4.1. Procedural justice & policy failure

Policy inconsistency is a key theme in terms of procedural justice. It occurs when the priorities of decision-makers' shift over time in such a way that what is favoured at one time is incompatible with what is preferred at another time, such as when a new government's preferences differ from those of its predecessor (Nwankwo et al., 2011). As a result, certain policies, as well as related programmes and initiatives, are either deliberately or inadvertently discarded (even though they are not removed from the regulatory system), while new ones are implemented or set to be introduced (see Huhta, 2020). This leads to a maze of policies, to a policy disorder where “the right hand does not know what the left hand is doing”. This also represents a formal policy failure.

This is particularly true of policy reforms (intended to provide a vital and supportive framework for reorientation and repositioning of the status quo) that could easily devolve into policy inconsistency by introducing illogical and biased non-continuity of previously existing policies, resulting in unfavourable outcomes (Kabara and

Amirthalingam, 2020, p. 24). Policy inconsistency also affects policy perceptions of those implementing policies (and those affected by them) raising doubts of the following (or similar) nature: “how wise is it to support and invest in a policy if the likelihood is that, based on previous experiences, this policy will be abolished or changed, or a new policy will be introduced?” (Van Engen et al., 2019, p. 100). The theoretical resolution of policy inconsistencies is essentially the same as traditional policy conflict resolution: remove some policies from the policy agenda – the primary difficulty is determining which policies should be removed, and which resolution addresses the inconsistency most effectively (Lu et al., 2011).

Because of measures taken under conflicting plans or programmes (e.g. old, but still realised, and new, just introduced), or because of a new course of action that halts nearly completed projects (e.g. power station completed in 80–90%), the inconsistency can also result in material policy failure (see Abdmouleh et al., 2015, p. 256). Naturally, the latter (the new course of action) may save energy policy from collapse in the event of unforeseen circumstances, such as a sudden spike in CO₂ prices in the system based on fossil-fuels. This also demonstrates a failure in terms of energy sources, as well as a project failure.

Apart from the policy inconsistency, the procedural failure may also result from hesitation or lack of political will (Muza and Debnath, 2021, p. 898). In comparison to the precaution of careful proactiveness, hesitancy is a form of fearful passiveness. Hesitancy results in formal policy failure if legally binding deadlines are passed due to delays in proceedings. This pertains to, for instance, consultations that were required by law but were not held due to a lack of decision, e.g. there were no meetings with local communities when the offshore wind programme was scheduled to begin as part of a renewable energy plan, while this was stipulated by law. In this way hesitancy leads to delays which can have a temporary character and be mitigated later, by catching-up moves.

Formal policy failures, which result from hesitancy, have an effect on energy justice, slowing down the energy transformation process, which if not initiated as soon as possible, cannot be completed by the set deadlines. In this way hesitancy leads to material policy failure. A worse dimension of delays is stagnation (see Llamosas et al., 2018). This is due to persistent hesitancy, which occurs when decision-makers do not make decisions. This may also concern legal proceedings (administrative or court) to include funding where access to justice is delayed (e.g. judges postpone their judgements, and it is impossible to accelerate the process because of their independence). Such an approach could take the form of a pyramid, with hesitancy moving from the top of the organisation to the bottom, at the operational level. As a result of the supervisor's hesitancy, subordinates will imitate this behaviour in their duties, resulting in the institution's stagnation. If this extends horizontally, it will influence the structure and its foundations.

4.2. Distributive justice & policy failure

Public policies, such as energy policy, must deal with problems that are extremely complex (see Ingraham, 1987, p. 616). The issue that can arise is one of wrong structure – an example of distributive injustice as it impedes or obstructs the fair and equal allocation in the energy sector. This refers to Rawls's (1971, p. 4) understanding of justice which under a set of principles provides “a way of assigning rights and duties in the basic institutions of society and ... the appropriate distribution of the benefits and burdens of social cooperation”. Therefore, first, the wrong organisational structure can lead to policy failure (Jackson and Stainsby, 2000, p. 15) – when it focuses on the wrong matters, exacerbates unnecessary conflicts, creates “a mountain out of trivia”, instead of strengths emphasises shortcomings and defects, is a “guarantee of non-performance” (Drucker, 1975, p. 519). In this sense, it is related to procedural justice; however, the former has a legal emphasis, whilst the latter is concerned with governance and the efficiency with which energy revenues are distributed.

The wrong structure results in formal policy failures by making it impossible to provide goals, or deliver them due to organisational issues: processes or governance. This could be, for instance, two institutions such as the ministry of climate (running the climate policy) and the ministry of energy (managing the energy policy) fighting for superiority of their own policies. This could result in no coherent policy being adopted due to a lack of coordination, and no distribution of benefits from the energy sector. Naturally, the same situation may occur if no relevant agency is established (e.g. due to budget constraints, or lack of relevant human resources). Even the best targets cannot be fully realised if they are not monitored due to a lack of structure. For instance, when left alone, the goals for 100% renewables in energy mix or 2050 carbon neutrality can drift onto rocks of incoordination. The same concerns correcting the end-use energy injustice which requires improved energy poverty detection and monitoring frameworks (Bouzarovski and Simcock, 2017, p. 646).

This brings us to the second aspect of the discussed issue. The flawed system could also fail to be implemented, resulting in material policy failure. Here, the issue of wrong structure appears also in the context of the energy market, where the wrong structure of prices or incentives is seen as encouraging emissions (see Harlow, 1974, p. 544). This is also a case of unequal access, e.g. to electric mobility in Denmark, Finland, Iceland, Norway, and Sweden, where it is viewed as an elite or luxury item, particularly for electric vehicles as “electric mobility technologies are not distributed evenly across Nordic society” (Sovacool et al., 2019, pp. 210–211). Other examples include the construction of PVs in Chile, where people living in the vicinity of the facilities (usually poor and indigenous populations) are unable to use the electricity generated because solar power plants export their energy to industry and cities; lack of sufficient support schemes for renewables in South Korea (see Yoon and Sim, 2015); or their misalignment, either over- or under-scaling as happened in Southern and Central Europe (see Punda et al., 2017; Domagła, 2015). Finally, what appears to be a significant element of distributive injustice is energy poverty (see Walker and Day, 2012). It is especially critical to address this when the energy transition is underway and the changes in the fuel mix result in significant price increases affecting individuals (Sokolowski et al., 2020b).

Although structure is one of the necessary policy-making conditions, there is no such thing as the “right” structure (Fenwick and McMillan, 2005, p. 51), the one and only. Nevertheless, the structure – in both discussed dimensions – must be carefully considered because it either encourages organisational effectiveness or obstructs it (Lank, 2006, p. 43). However, any (“right” or “wrong”) structure will not work if the wrong people are in charge (Bischoff, 2007, p. 9). Since the wrong person in the wrong place leads to wrong policies, a good structure system requires floodgates (Sokolowski, 2020, p. 182). This brings up the topic of interaction which is correlated with coordination (Cevallos and Merino Moreno, 2020). The lack of the latter, according to the OECD (2012, p. 149), is the most common cause of failures in governance.

4.3. Restorative justice & policy failure

Any policy which makes it possible to avoid taking responsibility leads to a policy failure. In the energy sector, this would occur when an energy policy or plan, with its programmes and projects, violates the “polluter pays” principle. This may happen, e.g. when applying a soft regulatory approach – a “light touch regulation” (Fisk, 2011, p. 556). It creates the risks of non-compliance by relying on the independent achievement of the set goals, for instance emission goals, or ignoring the environmental damage of energy production (Heffron et al., 2018b, p. 1193). Such an approach may work well in the short term, but it requires a high degree of trust in the regulated entities – as the regulatory arrangement can be used by the regulated entity to ease a burden of responsibility with regard to duties, in a classic example of regulatory capture (see Galloway, 2020, pp. 59–60). Moreover, in the long run, it can lead to a lack of target accomplishment, which is frequently found

only in the final stages of execution, when it is often much too late to make changes.

Therefore, the realisation of energy policy with its goals left in the hands of energy companies is not the best idea, especially that no enforcement is available under the soft approach, or the nature of the enforcement is very weak. Since the interests of the regulator and the regulated parties vary in several respects, it is highly likely that this soft approach will result in a material policy failure. The same issue concerns the lack of adequate financial sources (or guarantees), not provided under the energy policy’s plans and programmes to establish a decommissioning fund for energy installations. This concerns both the closing of a conventional power plant, e.g. phasing out coal power plant, as well as the failure to include funding for battery disposal in the electric vehicle development programme.

This aforementioned type of failure may be seen in Malaysia, where there is an absence of a coherent legal framework for decommissioning offshore oil and gas installations, and guidelines cannot replace the lack of hard legislation (Hazrati and Heffron, 2021). Another example is the omission or insufficient protection of instruments in the electricity project planning process in Kenya and Mali, which could prevent project funding from safeguarding people from potential harm (Tareknege and Sidortsov, 2021).

A superior form of soft approach is deregulation. It can be described as the removal of public elements from a particular area, sector, or policy issue. “For some, the problem will always be that the markets were not ‘free’ enough from government interference and a further reduction in regulation is needed” observes Thomas (2006b, p. 1975). In the most severe case, this means that neither a public agency (regulator) nor the instruments of public regulation, such as control, limits, commands, and sanctions, exist (Sokolowski, 2018b, p. 595). In its extreme form, it may lead to a complete release which, when combined with fraudulent behaviour and market manipulation, can result in a serious energy crisis (see Duane, 2002; Sokolowski, 2020b, pp. 174–175). The Enron scandal and the collapse of the market reform in California are two notable examples of this type of failure (see Navarro and Shames, 2003; Windolf, 2004).

4.4. Recognition justice & policy failure

Energy policy that is not sufficiently inclusive is also a failed policy. This is especially important in the energy transition where “no one is left behind”, no one is deliberately excluded. This necessitates the identification of various, broad groups of those who are impacted by the energy policy and its actions, and then addressing these groups in plans, programmes, or projects under the energy policy. Vulnerable energy consumers, local residents, and indigenous peoples are among these stakeholders.

Hence, at a stage of creation, the energy policy has to predict who could be impacted by its framework. This necessitates an open and transparent policy-making process that includes and consults a variety of stakeholders (see Mueller, 2020). However, simply addressing the related groups by ticking them off a list is insufficient – obtaining societal acceptance should be (and often is) regarded as an obligation (see Heffron et al., 2018a). Therefore, this requires organising a process of consultations, with meetings and discussions with different parties, and reaching compromises as different stakeholders must be taken into account in the energy policy in a real way. To get there, one will need a dose of patience, tolerance, and respect. This can necessitate the use of mediation and, in some cases, arbitration. These means of alternative dispute resolution are especially important in the situation where strong groups – like mining or nuclear industry workers who may oppose energy transition – exist.

Among the real-world examples of this type of failure is the Chipewas case from Canada, which included, in addition to procedural and distributive issues, the failure to recognise the intersubjectivity of Aboriginal right claims with respect to territories affected by pipeline

construction (see [Hurlbert and Rayner, 2018](#)). Other examples concern the Brazilian project of Belo Monte hydroelectric dam and poorly conducted consultations (see [Mayer et al., 2021](#)) or energy poverty in Bangladesh and the lack of recognition of women (particularly those living in rural areas where energy poverty is more prevalent among women than men) at many levels of governance, from the household to national energy policy (see [Moniruzzaman and Day, 2020](#)).

4.5. Cosmopolitanism justice & policy framework

Energy policy is not just about what happens in one's own backyard. A broad category of individuals and entities impacted by its scope, as in recognition justice, needs to be included. This includes countries as well. It is particularly critical in the case of climate action, where the negligence of those on one side of the globe has an effect on those on the other. Thus, nationalism must be rejected, which is not always easy. In a world full of conflicts, including those related to energy, good cooperation in the local, regional, and global dimensions is critical. Apart from nationalism, this type of energy policy failure may result from the lack of leaders or understanding of science or basic facts. Climate denialism is just one example (see [Brulle, 2020](#)).

In this light, an international factor must be considered in national energy policies, plans, programmes, and projects. It can have a regional reference, where neighbouring countries may be impacted by an energy project in their vicinity (such as a nuclear power plant), or a global dimension, as is the case with GHG emissions. This necessitates the existence of international dialogue, and multinational organisations can serve as appropriate forums for resolving potential disputes. The same is true for international agreements, such as the Paris accord, which enables a multi-actor consensus on climate action, leading to a global legal regime with goals on sustainability and climate. The Paris Agreement is a classic example of cosmopolitan justice in action, while the US withdrawal from this regime represents a type of energy policy failure in this regard (see [Pavone, 2018](#)). Although different in effects (see [Pickering et al., 2018](#)), the earlier US decision to withdraw from the Kyoto Protocol should be viewed in the same light.

5. Conclusions & policy implications – energy policy failures & future scenarios

The future needs a just energy policy, and the world has been moving towards this goal since the 2015 Paris Agreement. The United Nations COP26 in November 2021 has further highlighted the need for justice and not leaving anyone behind as participating countries set themselves new and revised energy and climate targets. However, significant amount of work remains to be done in order to achieve this. Much is dependent on education and the development of theory and practice in this field. This also applies to discussing energy policy failure, which, despite not being presented comprehensively in the literature to this day, will become an important direction in the development of energy policy analysis in the future, transforming into research on energy policy failure(s).

Thanks to the human ability to learn from mistakes, this field would lead to a fairer energy policy, and thus to the just energy transition, by allowing the detection of different categories of failures in all phases of energy policy-making, from preparation through execution to modification, suspension, or withdrawal. As a result, it will contribute to the advancement of energy justice literature as well as the just energy transition to net zero.

The various net zero perspectives, with their milestones of 2030, 2040, 2050 or 2060 (as in the case of China), necessitate even more the establishment of a framework for energy policy failures. Naturally, the framework may evolve due to various causes (see [Sokołowski, 2022](#)). However, the five-pillar foundation of energy policy failures linked to procedural, distributive, restorative, recognition, and cosmopolitan justice, proposed in this paper, appears to be universal and longstanding.

Nonetheless, increasing examples of energy policy failures will necessitate constant monitoring, which should be more active in order to support meeting the goals of global energy and climate policies, including the SDGs and the Paris Agreement's objectives.

It is also a call for energy experts and scholars to become even more involved in actively identifying, analysing, and describing energy policy failures. "Policy failure plays an important role in informing society and its governments – often painfully – of how policies can lead to unintended consequences, how existing policies can be improved, and how to engage in more effective policy making" writes [Hudson \(2015, p. 671\)](#), concluding that, unsurprisingly, lessons learned from them are always "ex post observations". Although, "[t]here are no simple lessons from retrospective analyses" ([Mitra et al., 1995, p. 701](#)), information from retrospective policy evaluations can support decisions about subsequent policies, including how to implement and design them (see [Benneer and Coglianese, 2005](#); [Sokołowski, 2020c](#); [Wierzbowski et al., 2021](#)). As a result, each of the lessons learned has the potential to have a future impact, bringing ideas that can turn a bad situation into a good one.

Nevertheless, the lessons remain "some time" after the failures vanish quite slowly, like the grin of the Cheshire cat, just like the energy policy's context presented by Thomas in his paper ([2006b](#)). This, however, necessitates observations, which in turn necessitate observers – those who will learn from the lessons, and then, in turn, teach those lessons. We find them in future scholars on energy policy failures and open-minded policy-makers, inspiring them with the following quote: "[l]earning from experience can only be accumulated and transformed into knowledge through systematic evaluation, generalisation, and development of new theories and norms for practice", as warn [Alexander and Faludi \(1989, p. 131\)](#). We also assign them impending tasks based on the following questions. How can we tell the difference between a successful and a failed policy? When will energy policy fail? Is time the key issue? How do we identify failure in energy policy? What constitutes the failure of energy policies? Who prevented its success? What are the causes of the collapse of energy policies? Why have energy policies led to bankruptcy? What did not work? The framework of energy justice – which is a rapidly developing research and policy tool that captures injustices throughout the energy life-cycle ([Heffron et al., 2018, p. 1198](#)) – offers a useful understanding of these matters. This results from the centric nature of energy justice which, at the end of the day, is the driver behind energy policy and law ([Heffron et al., 2018, p. 1195](#)).

Finally, in addressing these questions, as well as other issues that have occurred, are occurring, and will occur with regard to energy policy, we propose a complex definition of energy policy failure: *energy policy failure is any energy policy which does not meet local, national, and international energy and climate goals across the activities of the energy life-cycle and where just outcomes are not delivered*. This, however, could also be defined merely as the one that does not reach its goals, and, in other words, is the "wrong energy policy" or – taking into account the centric nature of energy justice – "an unjust energy policy". Such unjust energy policy would be the one which mismatches its objectives: ensuring the proper functioning of the energy sector, enhancing energy security, promoting energy efficiency and RES, or reducing the impact of the energy sector on the environment and climate. Resolving energy policy failure will be crucial as society aims to reduce carbon dioxide emissions and ensure that society *en masse* moves towards a low-carbon economy in a just way.

CRedit authorship contribution statement

Maciej M. Sokołowski: Conceptualization, Investigation, Writing – original draft, Writing – review & editing. **Raphael J. Heffron:** Conceptualization, Methodology, Writing – review & editing, Supervision.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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