

# Energy justice in Japan's energy transition: pillars of just 2050 carbon neutrality

Maciej M. Sokołowski\* and Satoshi Kurokawa\*\*

## ABSTRACT

Energy justice is a topic that is currently being explored by energy law experts around the world and used across several academic fields in energy research. However, we note that this concept is quite novel in Japan (there have been no substantial publications published in either English or Japanese) and could be expanded. This is especially important in light of Japan's aspirations to achieve carbon neutrality by 2050 and implement a just energy transition. In this context, the article's goal is to present the energy justice theory in a legal (energy law) and policy (climate-energy policy) framework in Japan. The article discusses the five basic types of justice, referring to Japanese energy legislation and climate-energy policy as examples. The analysis includes an assessment of the carbon neutrality pillars (seen through the prism of energy justice theory), aimed at supporting Japan in meeting its climate targets, and directions related to the use of renewable, conventional and nuclear energy sources requiring examination in terms of energy justice (due to failures of energy policy, such as lack of stakeholder recognition, local conflicts, NIMBY, etc.). Furthermore, the article demonstrates the improvements required in the legal and policy frameworks in Japan to make the application of human rights and the Sustainable Development Goals across the energy life-cycle effective. This will also include an examination of potential legal and organisational changes, and new structures and appointments in the Japanese administration.

## 1. INTRODUCTION

Energy justice is an increasingly popular theory, important in assessing the legal (energy law) and policy (climate-energy policies) agendas of the ongoing global energy transition to carbon neutrality.<sup>1</sup> In this framework, besides the above-mentioned distributive justice, procedural, restorative, recognition and cosmopolitan

\* Maciej M. Sokołowski, Faculty of Law and Administration, University of Warsaw, Warsaw, Poland.  
Email: mm.sokolowski@wpia.uw.edu.com

\*\* Satoshi Kurokawa, School of Social Sciences, Waseda University, Shinjuku-ku, Tokyo, Japan. Email: kurokawa@waseda.jp.  
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1 See L Guruswamy, 'Energy Justice and Sustainable Development' (2010) 21 *Colorado Journal of International Environmental Law and Policy* 231; D McCauley and others, 'Advancing Energy Justice: The Triumvirate of Tenets' (2013) 32 *International Energy Law Review* 107; BK Sovacool and MH Dworkin, 'Energy Justice: Conceptual Insights and Practical Applications' (2015) 142 *Applied Energy* 435; K Jenkins and others, 'Energy Justice: A Conceptual Review' (2016) 11 *Energy Research & Social Science* 174; M Lacey-Barnacle, R Robison and C Foulds, 'Energy Justice in the Developing World: A Review of Theoretical Frameworks, Key Research Themes and Policy Implications' (2020) 55 *Energy for Sustainable Development* 122.

justice are also recognised.<sup>2</sup> In practice, energy justice seeks to use these five forms throughout the energy life cycle in order to apply human rights at all stages, identifying when and where injustices in the energy sector occur and how law and policy can best respond to them. Energy justice is, therefore, an interdisciplinary tool that can deliver more direct and long-term change.<sup>3</sup>

Energy justice is also a topic currently being explored by energy law experts around the world and used across several academic fields in energy research. However, we note that this concept is quite novel in Japan (there have been no substantial publications published in either English or Japanese) and could be expanded. This is especially important considering Japan's aspirations to achieve carbon neutrality by 2050 and implement a just energy transition. The year 2030 will undoubtedly be the first checkpoint, just as 2020 was for the climate and energy agenda of the previous decade.

In this light, the article's goal is to discuss the energy justice theory in a legal (energy law) and policy (climate-energy policy) framework in Japan. To achieve this goal, we apply the five basic types of justice: procedural, distributive, restorative, recognition and cosmopolitan, using Japanese energy legislation and climate-energy policy as examples. In this way, the applied research methods are both legal and interdisciplinary, with energy justice theory serving as this article's foundation. These, along with references to previous advances in Japanese environmental, energy and climate laws and policies, enable us to evaluate energy justice in Japan as a process driven by a nexus of laws and regulatory measures.

Here, the following characteristics of energy justice (the five types of energy justice), as proposed by Raphael J Heffron and Darren McCauley, are applied:

- i. procedural justice focuses on the legal process and problems that arise from not following processes, or, more generally, if there is access to justice;
- ii. distributive justice is concerned with both the allocation of benefits from the energy sector (are energy profits distributed fairly?) and the negatives;
- iii. restorative justice entails correcting any wrongdoing committed by the energy sector;
- iv. recognition justice is concerned with the acknowledgement of the rights of various people, particularly local and/or indigenous communities; and
- v. cosmopolitan justice originates from the notion that in a globalised world, the cross-border repercussions of activities of the energy sector must be recognised.<sup>4</sup>

In terms of the article's structure, apart from this opening part, the analysis includes an overview of justice-related domains of environmental and climate action in Japan (Section 2). The centre of the study (Section 3) then examines five categories of energy justice in relation to the possibility of improving the Japanese energy transition to achieve carbon neutrality by 2050. It is followed by a review of research on energy justice, addressing the studies covering this topic, both in English and Japanese (Section 4). The discussed issues are finally recapitulated in the closing part of this paper (Section 5), containing the summary.

## 2. SEARCH FOR ENERGY JUSTICE IN JAPAN: FROM YONDAIKŌGAIBYŌ OF THE 1960S TO THE FUKUSHIMA 2011

The search for energy justice in Japan, as Heffron and Talus suggest, begins with environmental law.<sup>5</sup> Japan has a long history of environmental regulation and a well-established, solid legal structure to protect

2 RJ Heffron and D McCauley, 'The Concept of Energy Justice Across the Disciplines' (2017) 105 *Energy Policy* 658.

3 RJ Heffron, D McCauley and GZ de Rubens, 'Balancing the Energy Trilemma through the Energy Justice Metric' (2018) 229 *Applied Energy* 1191, 1194.

4 Heffron and McCauley (n 2).

5 See RJ Heffron and K Talus, 'The Evolution of Energy Law and Energy Jurisprudence: Insights for Energy Analysts and Researchers' (2016) 19 *Energy Research & Social Science* 1.

the environment. Its origins may be traced back to pollution caused by fast economic expansion, which was a serious issue impacting individuals. The pollution stemmed from high levels of dust from coal (Japan's main post-war energy source) recorded in the 1950s in industrial cities, and when coal was gradually replaced by oil in the 1960s, sulphur oxides emissions became an issue.<sup>6</sup> Other critical concerns were grouped under the umbrella of the 'four big pollution diseases'.<sup>7</sup> These were 'Itai-itai disease', 'Minamata disease', 'Niigata Minamata disease' and 'Yokkaichi asthma'—the most prominent pollution problems in Japanese history.<sup>8</sup>

In response to the surge of environmental problems, including the four big pollution diseases, the 1967 Basic Law for Environmental Pollution Control ('1967 Basic Law')<sup>9</sup> was adopted.<sup>10</sup> It was one of Japan's first 'basic laws'—a new form of ground legislation specifying the fundamental role of various actors in the implementation of key policy frameworks, such as environmental protection.<sup>11</sup> Less than a year later, the 1967 Basic Law was followed by the 1968 Air Pollution Control Act,<sup>12</sup> soon revised (1970), strengthened and supplemented by regulations governing total emissions of sulphur oxides and nitrogen oxides.<sup>13</sup> This approach was largely impacted by social pressure stemming from serious health issues and environmental pollution trials, including those related to Yokkaichi asthma.<sup>14</sup> Moreover, one should note procedural improvements providing so much needed national coordination, as only 19 of the 47 prefectures had their own pollution control legislation when the 1967 Basic Law was passed.<sup>15</sup>

Apart from domestic activities connected with air quality and other types of environmental pollution, it is important to notice Japan's global actions related to greenhouse gas (GHG) emissions and then climate action—a critical component of understanding the energy justice framework, with its cosmopolitan aspect.<sup>16</sup> It is worth noting the changes that occurred in Japan in the late 1980s, with the crucial event being the international Noordwijk Ministerial Conference in 1989 which resulted in a shift in Japan's attitude toward international climate concerns, and its commitment to emissions reduction targets.<sup>17</sup> In the early 1990s, the Action Programme to Arrest Global Warming<sup>18</sup> set the Japanese basic position in terms of participating in the creation of an international framework to address global warming,<sup>19</sup> influencing Japanese position presented at the 1992 Earth Summit held in Rio de Janeiro.<sup>20</sup> Further commitments were brought by the Kyoto

- 6 See T Terao, 'Industrial Policy, Industrial Development and Pollution Control in Post-War Japan: Implications for Developing Countries' in T Terao and K Otsuka (eds), *Development of Environmental Policy in Japan and Asian Countries* (Palgrave Macmillan 2007); H Imura, 'Japan's Environmental Policy: Past and Future' in H Imura and MA Schreurs (eds), *Environmental Policy in Japan* (Edward Elgar Publishing 2005) 21–22.
- 7 In Japanese: 四大公害病 [*yondaikōgaibyō*].
- 8 M Kuroda and H Shimadera, 'Looking to the Future Based on the History of Water and Atmospheric Environmental Issues in Japan' in T Saijo (ed), *Future Design: Incorporating Preferences of Future Generations for Sustainability* (Springer 2020).
- 9 Basic Law for Environmental Pollution Control (Act No 132, 3 August 1967). In Japanese: 公害対策基本法 [*kōgai taisaku kihon-hō*].
- 10 Y Nakanishi, 'Introduction: The Impact of the International and European Union Environmental Law on Japanese Basic Environmental Law', *Contemporary Issues in Environmental Law: The EU and Japan* (Springer 2016) 2.
- 11 M Tani, 'Japan's Environmental Policy: Policy Update 059' (2015) <<https://www.rieti.go.jp/en/special/policy-update/059.html>> accessed 20 September 2021.
- 12 Air Pollution Control Act (Act No 97, 10 June 1968). In Japanese: 大気汚染防止法 [*taiki osen bōshi-hō*].
- 13 Overseas Environmental Cooperation Center, 'Air Pollution Control Technology Manual' (Overseas Environmental Cooperation Center 1998) 37.
- 14 *ibid.*
- 15 T Ushiyama, 'Environmental Pollution Control in Japan – Development and Characteristics' (1981) 1 *Waseda Bulletin of Comparative Law* 12, 13.
- 16 Heffron and Talus (n 5) 8.
- 17 See G Fermann, 'Japan's 1990 Climate Policy Under Pressure' (1993) 24 *Security Dialogue* 287, 291; Y Kawashima, 'Japan and Climate Change: Responses and Explanations' (2001) 12 *Energy & Environment* 167, 169.
- 18 'Action Programme to Arrest Global Warming' (Tokyo, 23 October 1990).
- 19 Y Shindo, T Hakuta and H Miyama, 'The Present Status of Carbon Dioxide Removal in Japan' (1992) 33 *Energy Conversion and Management* 773.
- 20 See S Lauber, 'Japan and International Environment Law—Economy Over Environment?' (1993) 13 *Japanese Studies* 37, 41.

Protocol<sup>21</sup> which obliged Japan to reduce GHG emissions by an average of 6 per cent below the 1990 levels for the first commitment period of 2008–2012. To meet this national reduction goal, Japan established the Kyoto Protocol Target Achievement Plan<sup>22</sup> which addressed measures to be taken to reduce energy-related GHG, with the main focus on voluntary activities,<sup>23</sup> and the significant role of the nuclear sector,<sup>24</sup> treated as an important technology relating to global warming countermeasures.<sup>25</sup>

All of that changed on 11 March 2011, when the Great East Japan Earthquake triggered a destructive tsunami, resulting in a nuclear accident that seriously damaged Fukushima nuclear power plant.<sup>26</sup> Following the accident, Japan began to reconsider its legislation and energy policies<sup>27</sup> with the role of nuclear power<sup>28</sup> in the energy sector, not only by reforming it, but, most importantly, conducting 'a green energy revolution', leading to 'a society not dependent on nuclear power in earliest possible future',<sup>29</sup> under the new governments and new energy law approach.<sup>30</sup> However, December 2012 elections saw a shift in Japanese politics, with the Democratic Party of Japan losing and the Liberal Democratic Party forming the cabinet led by Prime Minister Shinzo Abe, who returned to power focusing on strengthening the economy under the slogan of 'Abenomics'.<sup>31</sup> In April 2014, the Third Strategic Energy Plan — providing 70 per cent of electricity coming from zero-emission energy sources in 2030, mainly nuclear (supplemented by renewables) — was revised.<sup>32</sup> This was followed by the Fourth Strategic Energy Plan adopting a new policy framework which anticipated that the use of coal-fired energy sources will be 're-evaluated as an important base-load power supply'.<sup>33</sup>

### 3. POST-FUKUSHIMA FRAMEWORK ON ENERGY JUSTICE IN JAPAN'S ENERGY TRANSITION

In July 2018, the Strategic Energy Plan was amended again, and its fifth version was adopted,<sup>34</sup> extending energy planning through 2050 and bringing a vision of decarbonisation, which, however, required additional studies.<sup>35</sup> Complementing this framework is the Long-Term Strategy Under the Paris Agreement which provides a more detailed description of the 2050 vision declaring a decarbonised society as Japan's ultimate goal, to be achieved

- 21 Kyoto Protocol to the United Nations Framework Convention on Climate Change (adopted on 1 December 1997, entered into force on 16 February 2005).
- 22 'Kyoto Protocol Target Achievement Plan' (Tokyo, 28 May 2005, partially revised 11 July 2006, totally revised 28 March 2008).
- 23 See MA Schreurs, 'Multi-Level Governance and Global Climate Change in East Asia' (2010) 5 *Asian Economic Policy Review* 88, 91.
- 24 Y Tiberghien and MA Schreurs, 'Climate Leadership, Japanese Style: Embedded Symbolism and Post-2001 Kyoto Protocol Politics' in K Harrison and L McIntosh Sundstrom (eds), *Global Commons, Domestic Decisions: The Comparative Politics of Climate Change* (MIT Press 2010) 145.
- 25 'Kyoto Protocol Target Achievement Plan' (n 22) 53.
- 26 See MM Sokolowski, 'Priorities of Energy Policy of Japan Under Abenomics' in M Sitek and M Łeski (eds), *Opportunities for Cooperation Between Europe and Asia* (WSGE 2015).
- 27 Heffron and Talus (n 5) 6.
- 28 See BC McLellan and others, 'Analysis of Japan's Post-Fukushima Energy Strategy' (2013) 2 *Energy Strategy Reviews* 190; T Homma and K Akimoto, 'Analysis of Japan's Energy and Environment Strategy After the Fukushima Nuclear Plant Accident' (2013) 62 *Energy Policy* 1216; J Portugal Pereira, G Troncoso Parady and B Castro-Dominguez, 'Japan's Energy Conundrum: Post-Fukushima Scenarios from a Life Cycle Perspective' (2014) 67 *Energy Policy* 104; K Komiyama and Y Fujii, 'Assessment of Post-Fukushima Renewable Energy Policy in Japan's Nation-Wide Power Grid' (2017) 101 *Energy Policy* 594.
- 29 This, however, required ensuring 'sufficient electric supply from fossil fuels' in a transition period, 'Innovative Strategy for Energy and the Environment' (Tokyo, adopted on 14 September 2012) 2.
- 30 See RJ Heffron and K Talus, 'The Development of Energy Law in the 21st Century: A Paradigm Shift?' (2016) 9 *The Journal of World Energy Law & Business* 189, 197.
- 31 See N Yoshino and F Taghizadeh-Hesary, 'Three Arrows of "Abenomics" and the Further Remedy for the Japanese Economy' in N Yoshino and F Taghizadeh-Hesary (eds), *Japan's Lost Decade: Lessons for Asian Economies* (Springer 2017).
- 32 R Vance, D Henderson and L Moore, *Impacts of the Fukushima Daiichi Accident on Nuclear Development Policies* (Organization for Economic Co-Operation and Development 2017).
- 33 'Strategic Energy Plan' (Tokyo, April 2014).
- 34 *ibid* (Tokyo, July 2018).
- 35 *ibid* 118–21.

as soon as possible in the second half of the 21<sup>st</sup> century, with the long-term goal of reducing GHG emissions by 80 per cent by 2050.<sup>36</sup> Finally, in October 2020, then Prime Minister Yoshihide Suga, officially announced that Japan will reduce GHG emissions to zero, achieving a carbon-neutral, decarbonised society by 2050. In October 2021, under the new administration of Prime Minister Fumio Kishida, the sixth version of the Strategic Energy Plan was adopted, offering the basis for actions designed to reach 2050 carbon neutrality.<sup>37</sup>

Although energy justice is not directly reflected there, we believe that it can, and should, play a larger role in Japan's energy transition to reach carbon neutrality by 2050, if Japan wishes to do it in an inclusive way, where no one is left behind. This, however, requires some practical improvements, related to the five categories of energy justice. In this regard, energy law may be a significant factor in remodelling the energy sector, and a source of energy justice.<sup>38</sup> Fukushima 2011 could lay the groundwork for implementing energy justice in Japan. The country's energy policy appears to be taking into account this factor more and more in the approach it has introduced so far. Nonetheless, there are several examples where broad areas of law, rather than energy-related laws, have played a key role in legal decision making, where the legal remedy was derived from tort law rather than any principles or theories of energy law itself.<sup>39</sup> The legislature and the courts are equally to blame: the courts have been sluggish to adopt new principles, while legislatures have failed to take necessary measures to promote energy transition.<sup>40</sup>

In this regard, the 2018 Plan, instead of including justice as an aspect, contains the phrase 'ensuring fairness' while addressing the approach to compensation for those harmed by the 2011 Fukushima accident. Still, more than 10 years afterwards, the use of nuclear power remains an energy conundrum being challenged not only by energy policies, but also through judicial actions. This includes the restarting of post-Fukushima nuclear power plants (NPPs) and compensation for the March 2011 calamity. Both, in a natural way, refer to procedural justice, as proposed under the energy justice framework.<sup>41</sup> However, as evidenced by the 2011 Fukushima-related court proceedings, this concept is not noticeable in practice.

The efforts of pro-nuclear actors to restart nuclear power stations, temporarily shut down after March 2011, sparked a rush of lawsuits filed in district courts across Japan: 30 lawsuits were filed against commercial NPPs between 2011 and 2020.<sup>42</sup> In December 2020, the Osaka District Court ruled in favour of about 130 plaintiffs who claimed that the NPP's Units 3 and 4 are vulnerable to a major earthquake and invalidated the government's approval of safety measures for two reactors at Kansai Electric Power Company's Oi nuclear plant in Fukui Prefecture.<sup>43</sup> In March 2021, the Mito District Court suspended the Unit 2 of Tokai NPP, located northeast of Tokyo (Ibaraki Prefecture), owing to the lack of evacuation plans and safety concerns.<sup>44</sup> These are only a few recent examples of judgements from a list of cases regarding NPPs that have been heard in more than 20 different courts around Japan.<sup>45</sup>

The number of post-Fukushima lawsuits filed in the 9 years following March 2011 is double that of the preceding four decades.<sup>46</sup> The 2011 Fukushima disaster, with its all consequences, continues to have an

36 'The Long-Term Strategy Under the Paris Agreement' (Tokyo, 11 July 2019) 15.

37 'Strategic Energy Plan' (Tokyo, 3 October 2021).

38 Heffron and Talus (n 30) 201.

39 RJ Heffron and others, 'A Treatise for Energy Law' (2018) 11 *The Journal of World Energy Law & Business* 34, 36.

40 *ibid.*

41 Heffron and McCauley (n 2).

42 F Koppenborg, 'Nuclear Restart Politics: How the "Nuclear Village" Lost Policy Implementation Power' (2021) 24 *Social Science Japan Journal* 115, 123.

43 T Endo, 'Court Retracts NRA Approval of Safety Measures at Nuclear Plant' *Asahi Shimbun* (4 December 2020) <<https://www.asahi.com/ajw/articles/13989665>> accessed 20 September 2021.

44 'Tokai Nuclear Plant Ordered to Halt for Lack of Evacuation Plans' *Kyodo News* <<https://english.kyodonews.net/news/2021/03/a1683cef5f2a-breaking-news-japan-court-orders-suspension-of-tokai-nuclear-plant.html>> accessed 20 September 2021. This verdict was ultimately overturned in the upper court.

45 Koppenborg (n 42) 124–27.

46 *ibid.* 123.

impact on Japan's legal system. To some degree, this can be compared to the history of court trials linked to environmental problems in the 1960s, which resulted in lawsuits ultimately won by those affected by the pollution. The post-Fukushima lawsuits filed across the country, and the rulings yielding inconsistent outcomes — as compensation cases assign and absolve liability, at the same time requiring and not requiring Japan and Tokyo Electric Power Company to pay for damages— call for a clear reference to energy justice. This concerns the link to restorative justice, which seeks to rectify any wrongdoing committed by the energy sector, in line with the 'polluter pays' principle,<sup>47</sup> as under the environmental law.<sup>48</sup> As Kikuchi underlines '[e]ven after the Fukushima crisis, the courts have sought to avoid judicial intervention not only in government decisions on the safety of nuclear power plants, but also in nuclear energy policy itself.'<sup>49</sup>

Moreover, apart from access to court in the energy-related cases (procedural justice), as those represented by post-Fukushima proceedings, the March 2011 accident needs linking to another element of energy justice theory.<sup>50</sup> This concerns restorative justice, which includes the issue of decommissioning. It stems from the fact that both the former site of the Fukushima NPP, with the resolution of the problem of contaminated water treatment,<sup>51</sup> and other non-active nuclear power plants will no longer be operated. The plans to send contaminated water into the ocean seem to be especially contentious.<sup>52</sup> It appears that this issue could be resolved on the basis of cosmopolitan justice, in which the cross-border consequences of energy-related actions must be considered at global level.

This is also associated with future decommissioning of power plants in Japan (restorative justice), and post-Fukushima NIMBY and local conflicts, in which the rights of local opponents of NPPs or conventional power plants (coal) collide with the plans of energy companies and the central government. First, this brings recognition justice—as advocated by the energy justice framework,<sup>53</sup> with local inhabitants becoming empowered players in the investment process (at least at the level of consultations). We believe there is more room for different stakeholders to participate in Japan's energy transition, to make the application of human rights and the Sustainable Development Goals across the energy life-cycle effective.<sup>54</sup> This affects both the energy consumers and local communities, and, if addressed appropriately, could result in a positive synergistic effect. Recent amendments (May 2021) to the Act on Promotion of Global Warming Countermeasures,<sup>55</sup> aimed at reaching carbon neutrality in Japan by 2050, with the legal framework for the regional decarbonisation promotion projects, may facilitate achieving this effect.<sup>56</sup> Still, energy communities, that are an important element of this synergy, are not recognized in Japanese legislation, while such recognition, with a direct regulatory framework on energy communities or *enekomi*,<sup>57</sup> could accelerate the citizen-driven energy transition in Japan.<sup>58</sup>

47 See MM Sokolowski, 'Burning out Coal Power Plants with the Industrial Emissions Directive' (2018) 11(3) *The Journal of World Energy Law & Business* 260, 261.

48 Heffron and Talus (n 5) 5.

49 M Kikuchi, 'Changing Dynamics of the Nuclear Energy Policy-Making Process in Japan' (2021) 31 *Environmental Policy and Governance* 116.

50 Heffron and McCauley (n 2).

51 See T Yamanishi and others, 'Discussions on Tritiated Water Treatment for Fukushima Daiichi Nuclear Power Station' (2020) 76 *Fusion Science and Technology* 430.

52 See B Nie and others, 'Anthropogenic Tritium: Inventory, Discharge, Environmental Behavior and Health Effects' (2021) 135 *Renewable and Sustainable Energy Reviews* 110188, 2.

53 Heffron and McCauley (n 2).

54 See RJ Heffron, 'Applying Energy Justice into the Energy Transition' (2022) 156 *Renewable and Sustainable Energy Reviews*, 111936.

55 Act on Promotion of Global Warming Countermeasures (Act No 117, 9 October 1998). In Japanese: 地球温暖化対策推進法 [*chikyū-ūondankataisaku suishin-hō*].

56 MM Sokolowski, 'Models of Energy Communities in Japan (Enekomi): Regulatory Solutions from the European Union (Rescoms and Citencoms)' (2021) 30 *European Energy and Environmental Law Review* 149.

57 In Japanese: エネコミ [*enekomi*] or エネルギーコミュニティ [*enerugikomiyuniti*].

58 Sokolowski (n 56).

Second, with respect to NIMBY, one should also emphasize distributive justice, which, in the Japanese context, is driven by the division between metropolitan areas consuming significant amounts of electricity, and rural areas housing major thermal power plants and NPPs supplying electricity to urban areas. The former benefit from the latter's burdens, causing an imbalance in profit allocation. However, the new legislation strengthens the community's powers, requiring that electricity be consumed where it is generated. This promotes the use of renewable energy, increases disaster resilience and reduces energy disparities between urban and rural areas. Here, other elements of distributive justice could be distinguished, for instance, by designing a just support scheme under which these types of structures could be provided with a dedicated system of support, such as a tariff supporting small energy communities utilising renewable energy sources, or a separate bidding process for a long-term contract limited to energy communities with technology baskets (solar, wind, biomass, hydro, geothermal sources).<sup>59</sup>

Finally, let us come back to procedural justice. Apart from court cases, there were numerous procedural challenges relating to internal relations between different Ministries and agencies in the Japanese administration's structure, including fights over concepts and methods for climate and energy policies created by them, as seen in the past. Different Ministerial visions over the Japanese climate targets influenced the final shape of the documentation adopted and then used in climate negotiations. These activities were not always fully transparent and well-coordinated. For instance, in the 1990s, 15 ministries and agencies were involved in climate talks over the Japanese position for the 1991 Geneva Climate Change Conference, with a conflict line over CO<sub>2</sub> targets and its character running between the Ministry of International Trade and Industry and the Environment Agency.<sup>60</sup>

In this regard, the Japanese administration still has a lot of room for development through coordinating procedures and boosting openness of activities linked to the discussed areas. Elevating the Minister of the Environment to the position of Deputy Prime Minister, establishing the Ministry of Climate or even creating a separate body for energy justice (following in the footsteps of American solutions, where President Biden appointed an academic to the administration for energy justice)<sup>61</sup> could boost energy transformation processes. In the context of process openness, it is worthwhile to streamline the issue of ongoing consultations by striving to reach not only the typical industrial stakeholders, traditionally involved in policy creation,<sup>62</sup> but also individual consumers—energy prosumers, which could enhance the inclusiveness of the 2050 vision.

#### 4. RESEARCH ON ENERGY JUSTICE IN JAPAN: THIS IS JUST A BEGINNING

Surprisingly, despite solid environmental legislation and a long-established agenda for climate action, there has been little attention in Japan to the expanding field of energy justice. Even the political and regulatory shock caused by the Fukushima disaster did not pique interest in this subject. In this light, energy justice is a topic that does not arise widely in Japanese literature, although it seems to be gaining traction.

The term 'energy justice' did not emerge in academic journals until 2017, when a few publications on the topic began to appear. In this context, a Special Issue edited by Shinichro Okushima,<sup>63</sup> who collected several papers featuring energy justice, should be noted. For the first time in Japanese, Okushima elaborated on the notion of energy justice, discussing it as social justice in relation to energy challenges,<sup>64</sup> and

59 See MM Sokolowski, 'Renewable and Citizen Energy Communities in the European Union: How (Not) to Regulate Community Energy in National Laws and Policies' (2020) 38 *Journal of Energy & Natural Resources Law* 289, 296.

60 Fermann (n 17) 291.

61 See RJ Heffron, *The Challenge of Energy Justice: Correcting Human Rights Abuses* (Palgrave Macmillan 2021) 82.

62 See MM Sokolowski, 'Artificial Intelligence and Climate-Energy Policies of the EU and Japan' in DM Bielicki (ed), *Regulating Artificial Intelligence in Industry* (Routledge 2022).

63 S Okushima, 'Forward to Special Issue on Energy Justice [特集の序文エネルギー正義について]' (2017) 87 *Science Journal [科学]* 1009.

64 *ibid.*

referring it to energy poverty, vulnerable energy consumers, and climate policy.<sup>65</sup> Interestingly, other papers selected by Okushima in the aforementioned Special Issue do not include the term 'energy justice'. This concerns, for example, Kohta Juraku's paper on Japan's high-level radioactive waste disposal strategy,<sup>66</sup> and Makoto Watanabe's study on investments in thermal power plants in the context of climate change.<sup>67</sup> In this context, it should be noted that 'climate justice' is gaining momentum in Japanese legal writings. We see a link here with the Paris Agreement,<sup>68</sup> which previously employed this wording.<sup>69</sup>

In addition, publications in Japanese literature refer to 'energy poverty' or 'fuel poverty', albeit there is only a handful of them. Apart from Okushima's paper, which focused on Japan's fuel poverty—which worsened following the Fukushima nuclear power plant accident in 2011,<sup>70</sup> Taro Mori et al., by referring to research and policies in the UK, looked at fuel poverty in the northern part of Japan (Hokkaido).<sup>71</sup> Other studies, such as those written by Risa Kato,<sup>72</sup> Masatake Uezono<sup>73</sup> or Nomura Munenori and Shinichi Kusanagi,<sup>74</sup> reviewed overseas experiences with energy justice, particularly regarding energy poverty. Apart from these Japanese-language studies, there are some English-language works on energy poverty. These papers explore energy poverty, focusing on the period around the 2011 Great East Japan Earthquake,<sup>75</sup> analyse fuel poverty in Japan in the context of cooling costs during summer,<sup>76</sup> or offer geographical characteristics of energy poverty in Japan, assessing it through direct measurement of energy service use.<sup>77</sup> Recent studies report energy poverty among college students<sup>78</sup> or investigate the causes of energy poverty in Japan, taking into account the position of vulnerable energy consumers.<sup>79</sup> Their findings demonstrate that energy poverty has worsened in Japan since the 2000s, owing to the severe impact of the Fukushima

- 65 S Okushima, 'Energy Poverty, Energy Vulnerability and Energy Justice: Present Situation and Future Issues in Japan [エネルギー貧困・エネルギー脆弱性・エネルギー正義: 日本における現状と課題]' (2017) 87 Science [科学] 1019.
- 66 K Juraku, 'Fundamental Problem of High-Level Radioactive Waste Disposal Policy in Japan: Critical Analysis Following to the Publication of Nationwide Map of Scientific Features for Geological Disposal by the Japanese Government [日本の高レベル放射性廃棄物処分政策が抱え込む根源的課題: 政府による「科学的特性マップ」の提示を受けて]' (2017) 87 Science [科学] 1010.
- 67 M Watanabe, 'World Money That Decodes Climate Change Risk: Japan is Going Back in Time [気候変動リスクをよみこむ世界のマネー: 日本は時代に逆行している]' (2017) 87 Science [科学] 1027.
- 68 Paris Agreement to the United Nations Framework Convention on Climate Change (adopted on 12 December 2015, entered into force on 4 November 2016).
- 69 See J Asuka, *Climate Justice: Global Warming and World Politics, Economy and Philosophy* [クライメート・ジャスティス 温暖化対策と国際交渉の政治・経済・哲学] (Nihon Hyoronsha 2015); M Usami, *Climate Justice: Normative Theory of Fighting against Climate Change* [気候変動: 地球温暖化に立ち向かう規範理論] (Keiso Shobo 2019).
- 70 Okushima (n 65).
- 71 T Mori, T Ozawa and A Tamakoshi, 'Research on the Actual Conditions of Fuel Poverty in Cold Regions [寒冷地における Fuel Poverty の実態把握に関する研究]' (2017) 44 Sumisoken Research Papers [住総研研究論文集] 133.
- 72 R Kato, 'Toward the Integration of Environment, Economy and Welfare: Rethinking Ecological Modernisation and Energy Poverty [環境・経済・福祉の統合に向けて: エコロジーの近代化からエネルギー貧困まで]' (2020) 67(3) Economic Science [経済科学] 29.
- 73 M Uezono, 'Policy Integration Between Global Warming Measures and Energy Poverty Measures—German Energy Saving Diagnosis System [地球温暖化対策とエネルギー貧困対策の政策統合: ドイツの省エネ診断制度を事例に]' [2017] 43 Journal of Economics [経済科学論集] 63.
- 74 N Munenori and S Kusanagi, *The Truth About Electricity and Gas Liberalization* [電力・ガス自由化の真実] (Energy Forum [エネルギーフォーラム] 2017).
- 75 S Okushima, 'Measuring Energy Poverty in Japan, 2004–2013' (2016) 98 Energy Policy 557.
- 76 T Tabata and P Tsai, 'Fuel Poverty in Summer: An Empirical Analysis Using Microdata for Japan' (2020) 703 Science of the Total Environment 135038.
- 77 S Okushima, 'Understanding Regional Energy Poverty in Japan: A Direct Measurement Approach' (2019) 193 Energy and Buildings 174.
- 78 A Nazarahari, N Ghotbi and K Tokimatsu, 'Energy Poverty Among College Students in Japan in a Survey of Students' Knowledge, Attitude and Practices Towards Energy Use' (2021) 13 Sustainability 8484.
- 79 R Castaño-Rosa and S Okushima, 'Prevalence of Energy Poverty in Japan: A Comprehensive Analysis of Energy Poverty Vulnerabilities' (2021) 145 Renewable and Sustainable Energy Reviews 111006.



accident, with mother–child and single-elderly households particularly vulnerable to the negative effects of rising energy prices.<sup>80</sup> However, these circumstances do not contribute to stimulating interest in the problem of energy poverty in Japan, both in terms of research<sup>81</sup> and regulatory remedies.<sup>82</sup> This is in contrast to the regulatory approach to energy poverty, for example, in the European Union.<sup>83</sup> ‘Energy poverty is not commonly discussed in Japan today, but it will become a more important consideration in the future’, conclude Yoshie Yagita and Yumiko Iwafune in one of the most recent papers on this topic.<sup>84</sup>

Nonetheless, despite the scarcity of Japanese literature directly addressing energy justice, the issues surrounding it have been explored in Japan for a long time. This includes dam development for hydro-power needs, NPPs siting and, more recently, climate policy. Due to the sensitivity and concerns accompanying the nuclear bombings of Hiroshima and Nagasaki, nuclear energy in Japan has been a prominent topic of discussion from a legal standpoint involving justice. Furthermore, the location of NPPs has been seen through the prism of environmental justice. People’s attention is now drawn to the location of a used nuclear fuel disposal facility, which is being debated from the perspective of intergenerational ethics.

In summarising the literature review on the issues of energy justice in Japan, we would like to refer to a work by Andrew Chapman and Shinichiro Okushima, which looks at energy poverty in Japan and connects it to the concept of a just transition.<sup>85</sup> These authors distinguish (just) low income (addressed in Japan by a policy agenda) and energy poverty households (not provided with dedicated policies), especially evident in their awareness and attitude towards the low-carbon energy transition, reporting that ‘basic low-income policy will not engender an inclusive low-carbon energy transition in Japan, and the policy agenda must be expanded to achieve this goal.’<sup>86</sup> Furthermore, according to Chapman and Okushima, solar sources will play a significant part in the Japanese energy transition; nevertheless, this will necessitate adjustments in the distribution of solar benefits driven by the feed-in-tariff to make this transformation more inclusive in Japan.<sup>87</sup>

The research presented here, albeit preliminary in terms of the development of the discussion on energy justice in Japan, contains various points of reference, some of which have already been mentioned in this section. However, the origins of energy justice go much deeper. Some of its components have long been present in Japan’s environmental protection agenda and climate action, while some have been missing, as discussed in this article.

## 5. CONCLUSION

While energy justice is now being researched by energy law scholars all over the world, and employed in a variety of academic domains in energy research, it is still a novel concept in Japan. However, we believe that this research field has a significant potential and will continue to grow as a result of its role in ensuring a just energy transition in which no one is left behind. This is especially important in view of Japan’s goals of

80 S Okushima, ‘Gauging Energy Poverty: A Multidimensional Approach’ (2017) 137 *Energy* 1159.

81 Nazarahari, Ghotbi and Tokimatsu (n 78) 2.

82 Okushima (n 77) 183.

83 See S Bouzarovski, ‘Energy Poverty in the European Union: Landscapes of Vulnerability’ (2014) 3 *Wiley Interdisciplinary Reviews: Energy and Environment* 276; S Bouzarovski, *Energy Poverty: (Dis)Assembling Europe’s Infrastructural Divide* (Palgrave Macmillan 2018); J Sokolowski and others, ‘A Multidimensional Index to Measure Energy Poverty: The Polish Case’ (2020) 15 *Energy Sources, Part B: Economics, Planning, and Policy* 92; J Sokolowski and others, ‘Energy Poverty Between Energy Paradigms in Poland’ in G Jigla and others (eds), *Perspectives on Energy Poverty in Post-Communist Europe* (Routledge 2020); L Papada and D Kaliampakos, ‘Being Forced to Skimp on Energy Needs: A New Look at Energy Poverty in Greece’ (2020) 64 *Energy Research & Social Science* 101450.

84 Y Yagita and Y Iwafune, ‘Residential Energy Use and Energy-Saving of Older Adults: A Case from Japan, the Fastest-Aging Country’ (2021) 75 *Energy Research & Social Science* 102022, 10.

85 A Chapman and S Okushima, ‘Engendering an Inclusive Low-Carbon Energy Transition in Japan: Considering the Perspectives and Awareness of the Energy Poor’ (2019) 135 *Energy Policy* 111017.

86 *ibid* 8.

87 *ibid*.

reaching carbon neutrality by 2050, and conducting a just energy transition. It is also important in terms of dealing with the past, such as compensating for the impacts of 2011 Fukushima.

Despite the fact that there has not been a significant amount of research on energy justice in Japan, its traces can be seen in previous approaches to environmental and climatic justice, which have been recognised in Japan. However, using modern theories on energy justice that provide five basic types of justice: procedural, distributive, restorative, recognition, and cosmopolitan as examples, it is possible to record the present interlinks to energy justice in Japanese energy legislation and climate-energy policy. Although energy justice is not explicitly addressed in Japanese policies and legislation, it is possible to embed its most significant features and stimulate improvement by making broader references to it. This applies to both court cases and the country's energy law and the administration in charge of energy and climate.

Still, some enhancements would be beneficial to the overall direction of the Japanese energy transition. This relates to the legal and policy frameworks in Japan that enable the successful application of human rights and the Sustainable Development Goals throughout the energy life cycle: from the planning phase of energy installations to the decommissioning stage.<sup>88</sup> The improvements include potential legal and organisational changes in the Japanese administration, such as structures and appointments (Energy Justice Director, a stronger role of the Minister of Environment or, eventually, the Minister of Climate), changes in renewable tariffs (to make it more just and improve profit distribution), policies on energy poverty (recognition of these categories of energy consumers), and international dialogue driven by energy justice.

These aspects may become part of the policy debate in Japan, and the recent changes in Japanese leadership may hasten this process. This, though, necessitates the development of the pillars of Japan's carbon neutrality by 2050. The change, however, will not be possible without more research and policy debate.<sup>89</sup> This should be completed as quickly as possible since the future requires a just energy policy and energy law.<sup>90</sup> The 2030 perspective will be the first major test showing the opportunities and limitations of reaching the 2050 agenda. This has a universal dimension, and it applies not just to Japan, but also to other countries' climate and energy laws and policies.

88 RJ Heffron, 'Energy Multinationals Challenged by the Growth of Human Rights' (2021) 6 *Nature Energy* 849.

89 See MM Sokółowski, *Energy Transition of the Electricity Sectors in the European Union and Japan: Regulatory Models and Legislative Solutions* (Palgrave Macmillan 2022).

90 See MM Sokółowski and RJ Heffron, 'Defining and Conceptualising Energy Policy Failure: The When, Where, Why, and How—the Search for the Just Solutions' (2022) *Energy Policy* 112745.