

PERCEIVED FEASIBILITY AND DESIRABILITY OF JAPAN'S DECARBONIZATION TRANSITION: EXPERT PERSPECTIVES

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Overview

After Japan's 2050 carbon neutrality pledge was announced (Government of Japan, 2021), the long-term goal itself has been hotly debated. The direction of Japan's decarbonization transition is highly contested, with people wondering feasibility of such an ambitious climate target (TDB, 2021). However, feasibility and desirability are mixed in people's minds, with the former being more normative and the latter more descriptive. Moreover, the evaluation or assessment of decarbonization transition feasibility is difficult. Limited previous literature mainly conducted historical analogies or expert assessment methods. Are the mitigation pathways towards carbon neutrality in Japan feasible? The answer still needs insights from experts.

In this study, a semi-structured interview survey was conducted to collect the perspective of over 100 experts on the feasibility and desirability of carbon neutrality in Japan. Through the survey, we expected to answer the following research questions:

i) How do experts perceive the feasibility and desirability of decarbonization transition? Any differences among expert groups from different disciplines? How is the agreement level?

ii) What are the barriers to decarbonization transition in Japan? How do experts assess each of them? Which barriers present the greatest risk to the decarbonization transition?

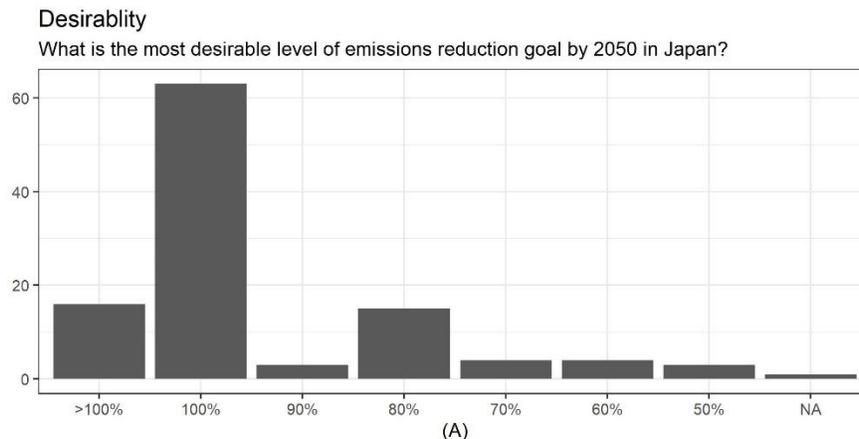
The results will contribute to a better understanding of the most important barriers of decarbonization transition in Japan, as well as the multi-dimensional feasibility towards carbon neutrality.

Methods

Our method consists of two steps: (1) construction of the interview questions, and (2) interviews with experts. For (1), we conducted interviews with a small-scale convenient sampling (10 experts) to collect key soft constraints on the feasibility of decarbonization (the option for barriers). Based on that, together with a literature review and discussion, we developed the survey instrument. For (2), we screened out experts with relevant knowledge from the Web of Science, funding database, and IPCC author list. Currently we have conducted over 90 semi-structured interviews, including ongoing snow-ball samples.

Results

Based on interviews and a literature review, 22 factors were extracted from multiple aspects including geophysical, technological, economical, institutional, and socio-cultural constraints as the potential barriers toward decarbonization transition. The figures show the experts' desirability (Figure 1A), perceived feasibility (Figure 1B), and the probability and impacts of all barrier items that hinder the achievement of Japan's 2050 climate goal (Figure 2).



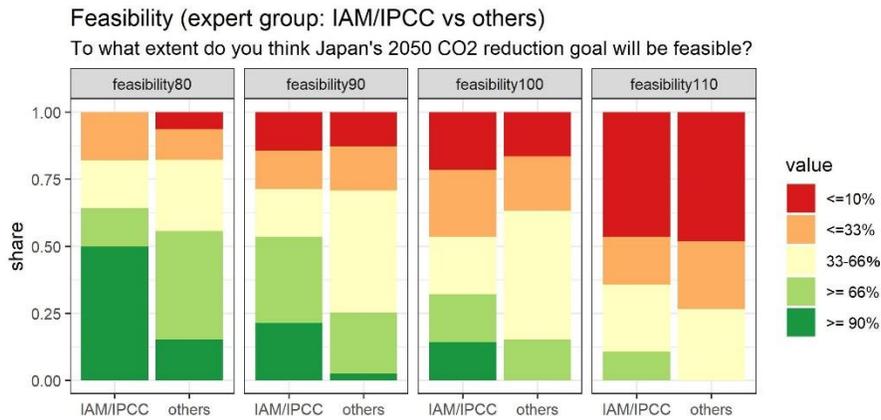


Figure 1. The desirability (A) and feasibility (B) of Japan's 2050 CO₂ emission reduction goal

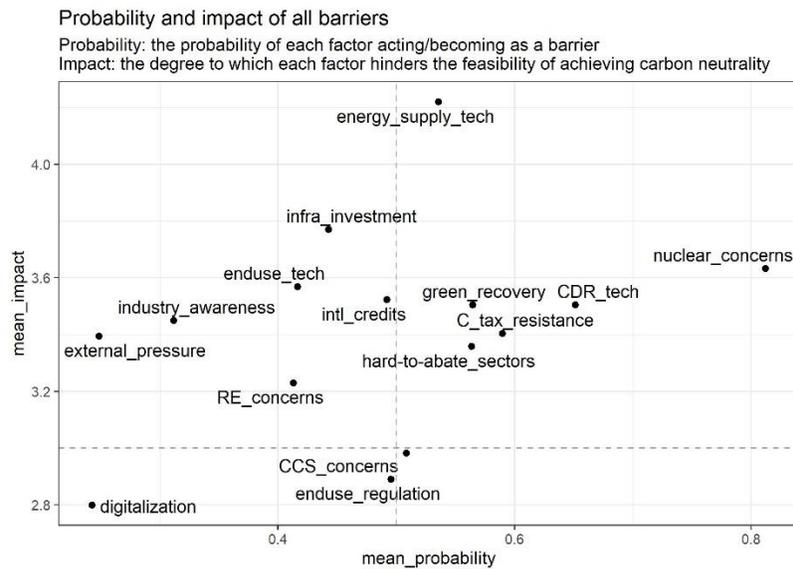


Figure 2. The probability and impact of barriers

Further, we are also investigating/summarizing: i) the differences of perceived feasibility among expert groups (by discipline, by modelers/non-modelers, by working experience); ii) the barriers with the largest risks; iii) experts' comments on the possible solutions to the barriers.

Conclusions

Although the assessment of the system feasibility of decarbonization transition can be complicated, we demonstrated the viability of probabilistic feasibility assessment by expert interviews. It is possible for experts to conduct a more nuanced assessment by evaluating a list of barriers. Considering these technological, economical, institutional, and socio-cultural constraints, the assessment of feasibility was far beyond a binary answer. However, we also found that the dimension reduction of our 22 barriers is almost impossible; underlying the multi-dimensional nature of feasibility, which runs counter to the prevailing debate in the media.

References

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