

# REGIONAL ATTITUDE-DRIVEN JUST ENERGY TRANSITION

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## Overview

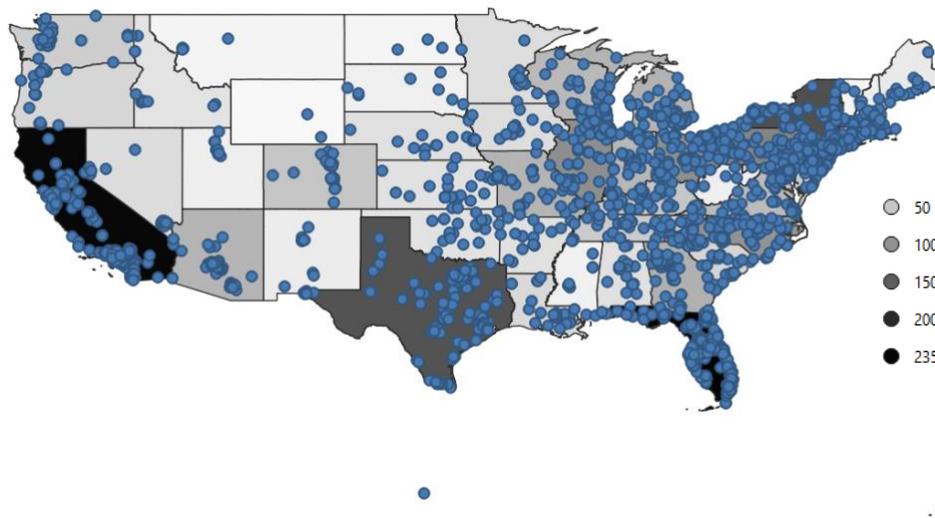
Since the preamble of the Paris Agreement explicitly highlighted the importance of taking into account a Just Transition while pursuing climate action (UNFCCC, 2015), it has culminated in significant academic and societal attention. Although it first emerged as labor unions advocated for the creation of green jobs during the low carbon transition (Stavis and Felli, 2015), the topic has expanded to a much broader framework of justice (Walker, 2009; Wang and Lo, 2021). In addition to understanding the distribution of benefits and ills, the research community calls for further work on the recognition and procedure justices with more geographical granularity (Walker, 2009).

Recognising the difficulty in reaching international deep coordination (Keohane and Victor, 2016) and national consensus, sub-national actions are opportune in leading climate progress (Hsu et al., 2019). In the US, with evidences of effective state-level climate actions (Hultman et al., 2019), state-driven strategies may not impose additional cost compared to a federal transition pathway (Peng et al., 2021).

This work evaluates the following questions: (1) how can quantitative models recognise the effect of state-level public perception on climate policies? (2) what's the difference between such attitude-driven transition pathways and those determined based on techno-economic feasibilities? (3) how would these pathways distribute the socio-economic benefits and burdens?

## Methods

We use survey data on the public support for social (e.g. minimum wage), environmental (e.g. carbon tax), and economic (e.g. retaining fossil fuel workers) policies in a climate policy package (Bergquist et al., 2020). The spatial granularity of the respondents are presented in Figure 1.



**Fig. 1:** Spatial representation of survey data in blue dots. The grey shading of each state indicates the number of responses in that state roughly corresponding to the legend. Data Source: Bergquist et al., 2020.

The impact of these public perception data on policies and nation-wide low carbon transformation pathways are evaluated using the Global Change Analysis Model (GCAM), a dynamic recursive Integrated Assessment Model (IAM) with spatial granularity in the USA (GCAM-USA). Assuming that the public perception data represents the

views of the states, more ambitious policies will be used in states with more public support on respective policy types.

## Results

This analysis will present low carbon transition pathways influenced by public attitude data under different policy types in the US, in comparison with pathways driven by techno-economic assumptions only. We will show the state-level distribution of cost burden and socio-economic benefits, such as the creation of jobs and GDP growth. Recognising that existing non-federal commitments in the US only cover to 51% of the national emissions (Kennedy et al., 2021), we will highlight states with further ambition potentials and those that are near the tipping points of cultural shifts towards higher climate ambitions. In addition to the technologies and sectors most essential to the transition regionally, this work will also present policy priorities at the state level.

## Conclusions

This work presents a framework to improve how factors linked to the concept of “recognition justice” (Wang and Lo, 2021) are reflected in quantitative modelling by coupling insights from survey data with an IAM. With growing urgency of the climate transition, climate policies and transition pathways that recognise the needs and public perception would hold more traction as well. While this work does not replace meaningful stakeholder engagement in the implementation stage, it adds social and political dimensions to conventionally techno-economic transition pathways and informs about the alternatives to achieving a net zero economy. This work focuses on the US, but the framework can also be implemented in other regions in the world as similar survey data and modelling tools are developed. The development of new quantitative techniques to expand the scope and understanding of justice is essential in the future research agenda of the just energy transition.

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