

# Chapter 9

## Policy Implications and Conclusions

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## Chapter 9

### Policy Implications and Conclusions

The issue of climate change continues to be on the global agenda, despite the rising concerns about energy security and hikes in energy prices. Before and after COP26 of the United Nations Framework Convention on Climate Change, governments have been strengthening their policies to achieve the goals of reducing greenhouse and CO<sub>2</sub> emissions to net zero, which will contain global warming below 1.5 or 2 degrees. Emerging countries, including Southeast Asia, are no exception. Many countries are exploring (but not necessarily committing to) net zero targets.

Climate policy is, in other words, shifting from pledges to implementation and actions. Policymakers, therefore, have to carefully craft various policy instruments to accelerate action, considering which instrument to use in what order and when. Decarbonisation entails a significant change in all aspects of society and the economy, and policies must consider the reactions of various stakeholders. It would be helpful to examine public perceptions of various policies and technological options and their WTP for new policies. On the one hand, if the cost of decarbonisation exceeds that of WTP, the public may start to oppose such policy measures. On the other hand, the public may get excited about an option they prefer.

This report presented the results of a household survey study on public perceptions and WTP for renewables and other climate-related technologies in Southeast Asia. The study first presented this year's survey findings in Indonesia and Malaysia. It then combined this with those from previous works and synthesised the perceptions and WTP values in various countries in the ASEAN. The targeted countries were chosen based on their large population sizes and diverse economic development situations.

The three-part survey was conducted from 2020 to 2022: In Myanmar, 500 samples from July to August 2020; in Lao PDR, 400 samples from July to August 2020; in Viet Nam, 620 samples from May to July 2020; in Thailand, 250 samples each, from June to August 2020 and December 2020 to March 2021, 500 samples from December 2020 to April 2021 in the

Philippines, 300 samples from February to March 2021 and 1050 samples from April to June 2022 in Malaysia. In Indonesia, 1,000 samples were collected from March to May 2022, for a total of 4,870 samples from seven countries.

DCE (discrete choice experiment) and CVM (contingent valuation method) were employed to the survey in 2020 and 2021. The survey experiment was newly employed in the 2022 survey conducted in Malaysia. Each survey was conducted by local academic collaborators. Given the heterogeneous city backgrounds, the sampling strategy was designed in consultation with local collaborators to suit the condition of each city. Our survey questions included sociodemographics, electricity consumption patterns, DCE or CVM questions on renewable WTP, and attitudes toward CDR.

A D-optimal matrix design was utilised for the DCE design. We focused on 'new' renewables, excluding large-scale hydropower: solar, wind, biomass, mini hydro, and geothermal. Each respondent was presented with a series of choice experiments, each of which presented three alternatives with different shares of renewables and types of renewables. The survey instrument was modified for each country to reflect the different energy situations, including the current renewable penetration level, the dominant type of renewables, and available renewable energy options.

In all the surveys, the public is consistently concerned about climate change, but they do not always directly think of climate change. When asked about the most pressing environmental concerns, the respondents chose issues such as global warming, air pollution, flooding, etc. Flooding could be increasing because of climate change. In addition, air pollution is related to fossil fuel combustion.

Amongst the renewable options, our series of surveys demonstrated that solar PV is considered the most environmentally friendly, except for Indonesia, where hydropower is viewed very positively. The perceived environmental friendliness is associated with the knowledge of technologies in all countries where solar PV is the most well-known. More importantly, the perceived environmental friendliness of other technologies, and in particular, bioenergy, was not on par with that of solar. This year's survey experiment with different information about renewables shows that tailoring information could help improve the perception of bioenergy.

The WTP values for increasing the share of renewable energy to 40% were positive except for a few exceptions. Although it varies by technology and country, there is a general pattern in the WTP values: the WTP for solar is generally the highest, as is the perception of environmental friendliness. The WTP for solar ranged from a minimum of -0.4% (for Indonesia in 2022) to a maximum of 25.1% (for Lao PDR in 2020). As with the perception of environmental friendliness, WTP for biomass was generally low, with the lowest in all countries except Mandalay, the Philippines, and Indonesia. The WTP for biomass ranged from a minimum of -2.7% (for Indonesia in 2022) to a maximum of 14.2% (for Lao PDR in 2020). Wind and mini hydro in most countries took intermediate values. 40%, WTP for wind ranged from a minimum of -3.5% (for Indonesia in 2022) to a maximum of 16.5% (for Lao PDR in 2020). 40%, WTP for mini hydro ranged from a minimum of 2.7% (for Thailand in 2021) to a maximum of 23.3% (for Lao PDR in 2020). Note that the negative values are for all RE in Indonesia and biomass in Malaysia. The reason for this may include special factors such as the fact that the coronavirus pandemic is now in its third year, and electricity and fuel prices are rising due to trends in the international market.

The respondents are unaware of carbon dioxide removal (CDR, or carbon removal), which ranges from tree-planting to chemical engineering absorption to enhanced weathering through spraying crushed rocks. The respondents agreed with the possible benefits and risks of CDR, including its ability to 'buy time' for more climate change mitigation and negative side effects on the environment. The degree of agreement varied from country to country, and a more fine-grained study is warranted in light of the necessity of CDR worldwide to get to net zero targets.

The respondents in all the surveyed countries suffered from income losses due to the COVID-19 pandemic. This year especially saw a double effect of the Ukrainian crisis and inflation. The respondents this year reported negative WTP values, an indication of the preference for the current condition.

The present findings may be biased because of this. The WTP could be higher, had the surveys been conducted at the time without the COVID-19 pandemic.

Our surveys elucidated how much consumers can afford to pay to switch to clean energy. Although they are willing to pay under normal circumstances, this year's survey, in particular, elucidated the difficulty of increasing costs in an unlikely event. On a more positive note, we

found that bioenergy, in particular, suffers from a poor performance image, which can be improved by better communication.

Given the differing WTP for different renewable types, the sequence of introduction of different types of renewables and the ASEAN-wide grid connection should be carefully considered. For instance, the public might better accept grid connection if it is explained to increase solar PV, at least in the short run. Also, abundant solar resources might allow for a focus on it and possibly even for exports if there's a surplus electricity generation.

Nevertheless, the current concern about inflation is a cause for concern. This year's WTP was particularly low and sometimes in the region of negative values. This has likely been influenced by global concerns about living costs, which have inevitably affected Indonesia and Malaysia. Countries are already taking policies to counteract the effect of the rising costs. All this also implies that policymakers should be very cautious about renewable measures in the short run.