

Chapter 8

Seven-Country Comparison

October 2022

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Chapter 8

Seven-Country Comparison

1. Overview

This chapter provides an overview of the descriptive statistics of the responses. The number of respondents in each country is as follows: Myanmar, n=500; Lao PDR, n=400; the Philippines, n=500; Viet Nam, n= 587; Indonesia, n=1000; Thailand, n=each 250 in 2020 and 2021; Malaysia, n=300 in 2021 and n=1050 in 2022. Additional materials are included in the Appendix 2.

Table 8.1 describes the survey period for each city. Note that this chapter combines the results from Yangon and Mandalay for the survey in Myanmar in 2020, except for the WTP results.

Table 8.1. Respondents in All Regions

Country	City	Period	Respondents
Myanmar	Yangon and Mandalay	July to August 2020	500
Lao PDR	Vientiane	July to August 2020	400
Philippines	Manila	December 2020 to April 2021	500
Viet Nam	Ho Chi Minh (CVM and DCE)	May to July 2020	587
Indonesia	Jakarta	March to May 2022	1,000
Thailand	Bangkok	June to August 2020	250
		December 2020 to March 2021	250
Malaysia	Kuala Terengganu and Kuala Nerus	February to March 2021	300
		April to June 2022	1,050

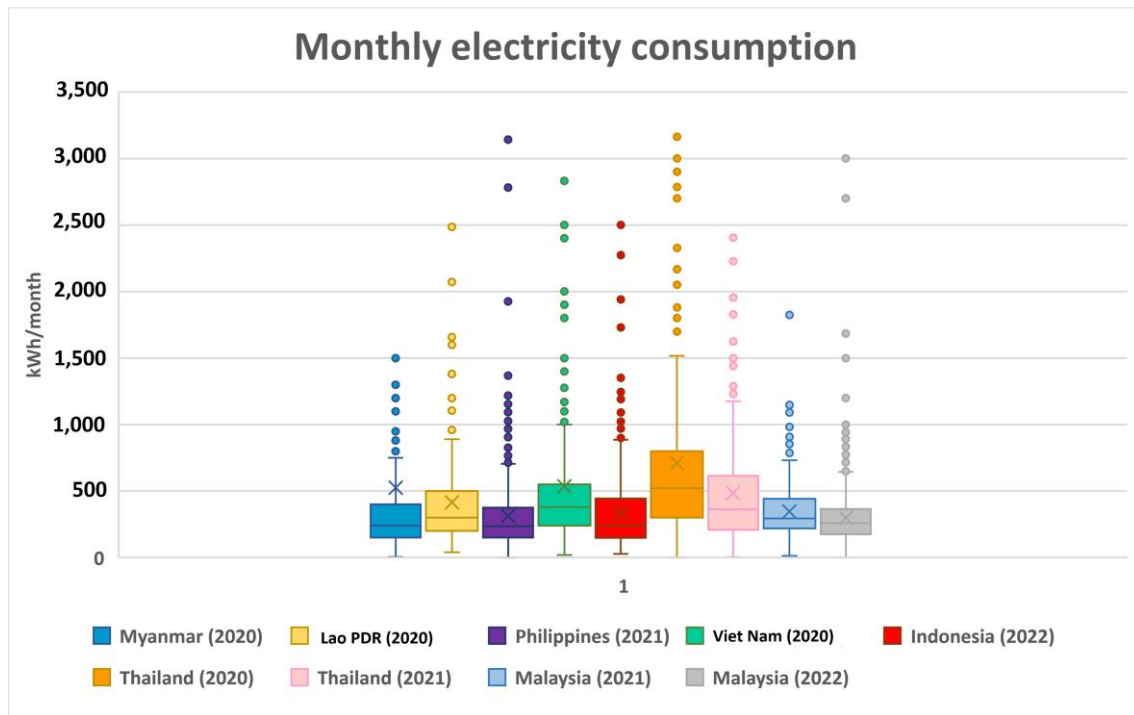
Note: Listed in ascending order of GDP per capita in 2020; (World Bank, n.d.-a).

Source: Authors' calculation.

2. Monthly Electricity Consumption

Figure 8.1 shows the electricity consumption per month in each country. The highest average was in Thailand (2020) and the lowest average was in Malaysia (2022).

Figure 8.1. Attitudes Towards Climate Change Issue



kWh = kilowatt hour.

Note: Outlier is 9 points.

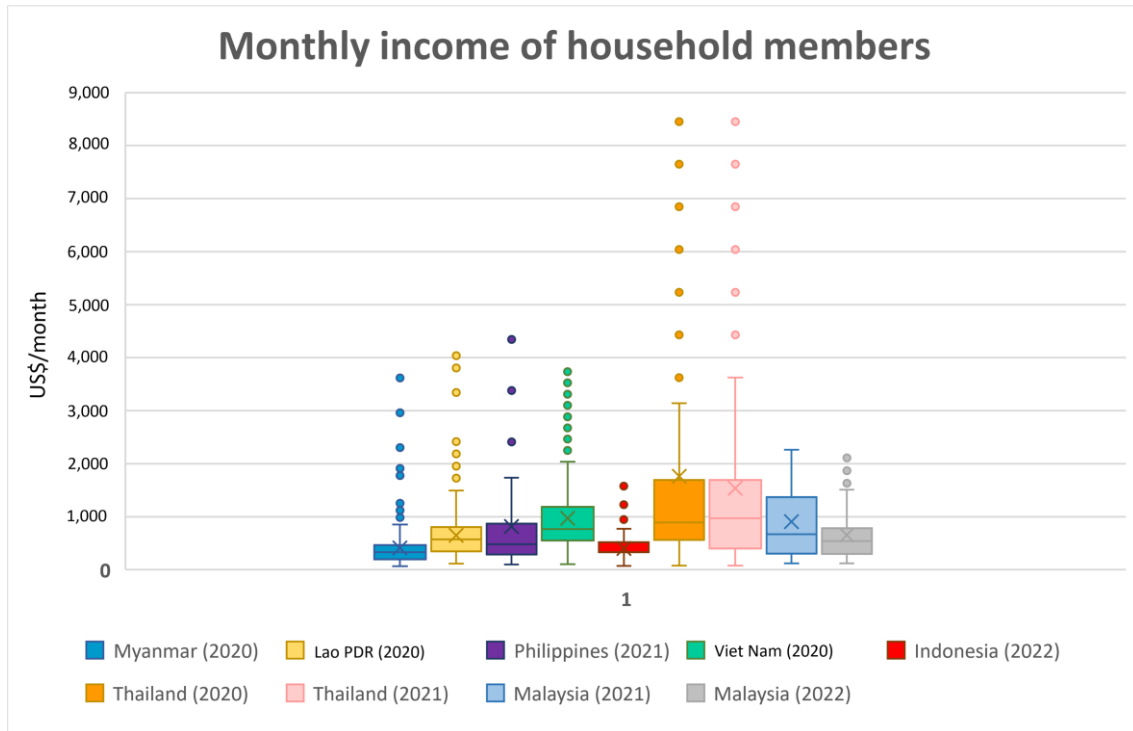
Source: Authors' calculation.

3. Monthly income

Figure 8.2 shows the monthly income in each country. The highest average was in Thailand (2020) and the lowest average was in Indonesia (2022). Countries are listed in ascending order of GDP per capita in 2020, although income is not proportional to GDP per capita.

The distribution of monthly electricity consumption does not follow a similar pattern as the monthly income distribution in the seven examined regions.

Figure 8.2. Distribution of Monthly Income

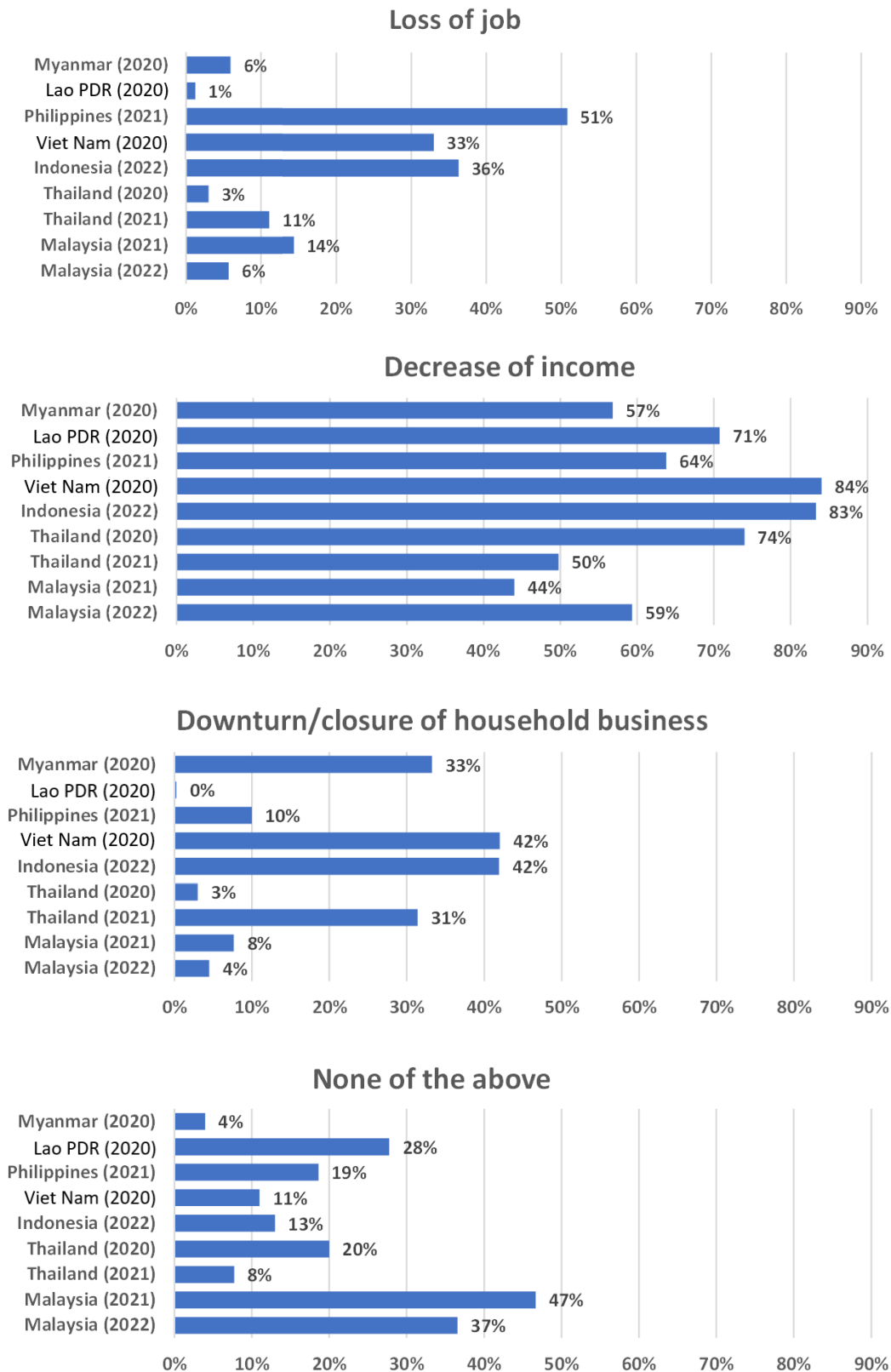


Source: Authors' calculation.

4. Effects of COVID-19

As noted, the survey was conducted during the COVID-19 pandemic. **Error! Reference source not found.** shows the results on the effects of COVID-19 on the respondents. In all countries, many respondents selected 'Decrease of income'. In the Philippines, about half of the respondents selected 'Loss of job'. In Viet Nam and Indonesia, the number of respondents who selected 'Downturn/closure of household business' was high. In Malaysia, more than 37% of respondents did not select none of 'Decrease of income' or 'Loss of job', or 'Downturn/closure of household business'.

Figure 8.3. Effects of the COVID-19 Pandemic



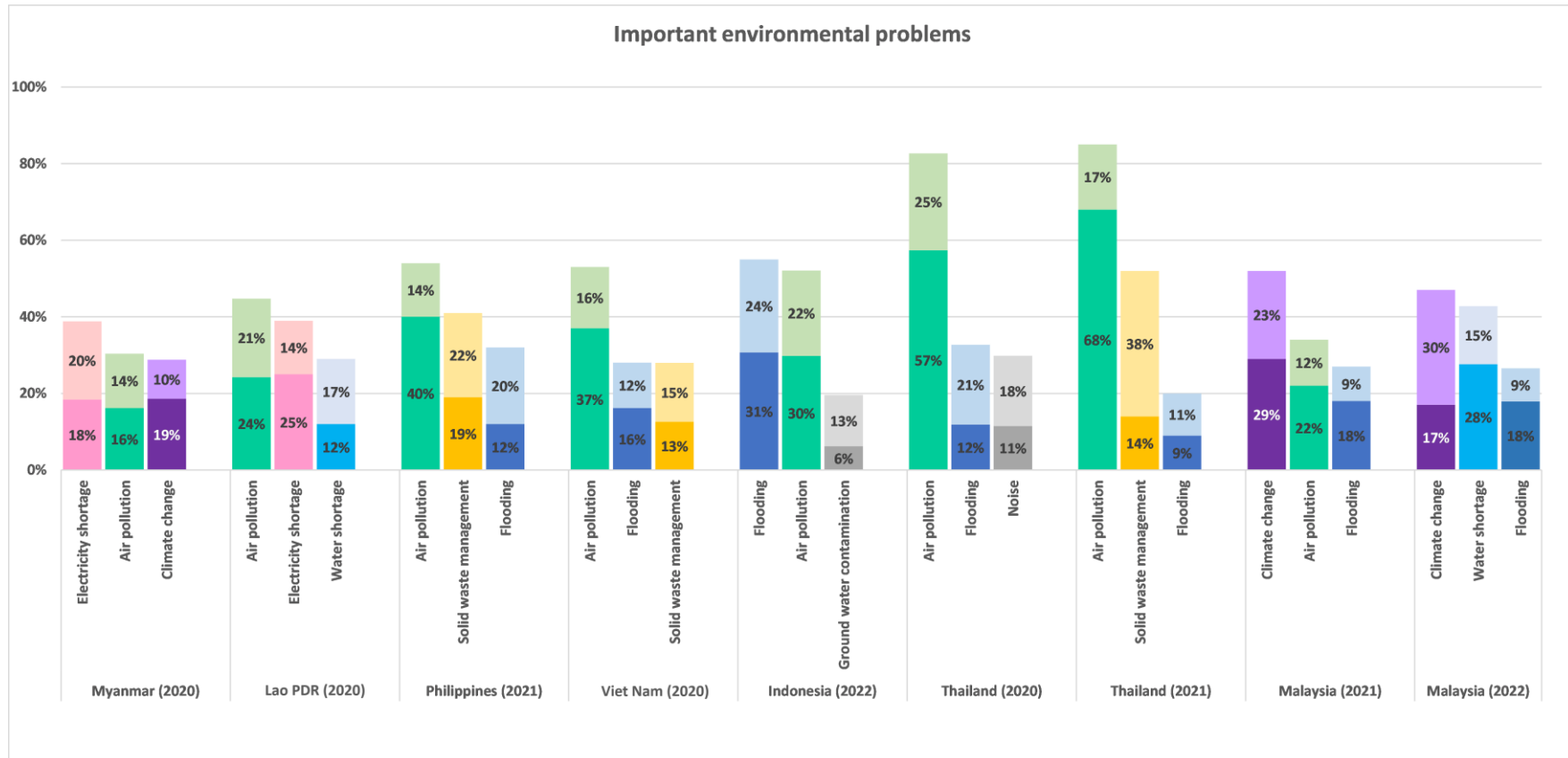
Note: Single answer for Myanmar, Lao PDR, and Thailand

Source: Authors' calculation.

5. Attitudes Towards Environmental Issues

Figure 8.4 shows the top three environmental issues in each country, based on the sum of the environmental issues that respondents consider the most and second most important. Air pollution and flooding are serious environmental problems and are amongst the top three in seven and five countries, respectively. In Myanmar and Malaysia (2021 and 2022), more than 30% of respondents selected 'Global warming and climate change' as the most and second-most important.

Figure 8.4. Perceived Importance of Environmental Issues



Note: The upper block in each bar is the second-biggest problem, and the lower block represents the biggest problem. 'Global warming and climate change' were not included in Thailand (2021)'s questionnaire.

Source: Authors' calculation.

Figure 8.5 shows the attitudes toward climate change in the four countries, with the question added from 2021. In the Philippines, respondents were more strongly concerned about the effects of climate change than in other countries. Respondents who answered ‘Strongly agreed’ to the first and second questions were 75% and 71%, respectively. For the third question, respondents in the four countries showed similar patterns. Over 70% of respondents in all four countries responded ‘I hear a lot about climate change in the news’.

Figure 8.5. Attitudes Towards Climate Change Issue

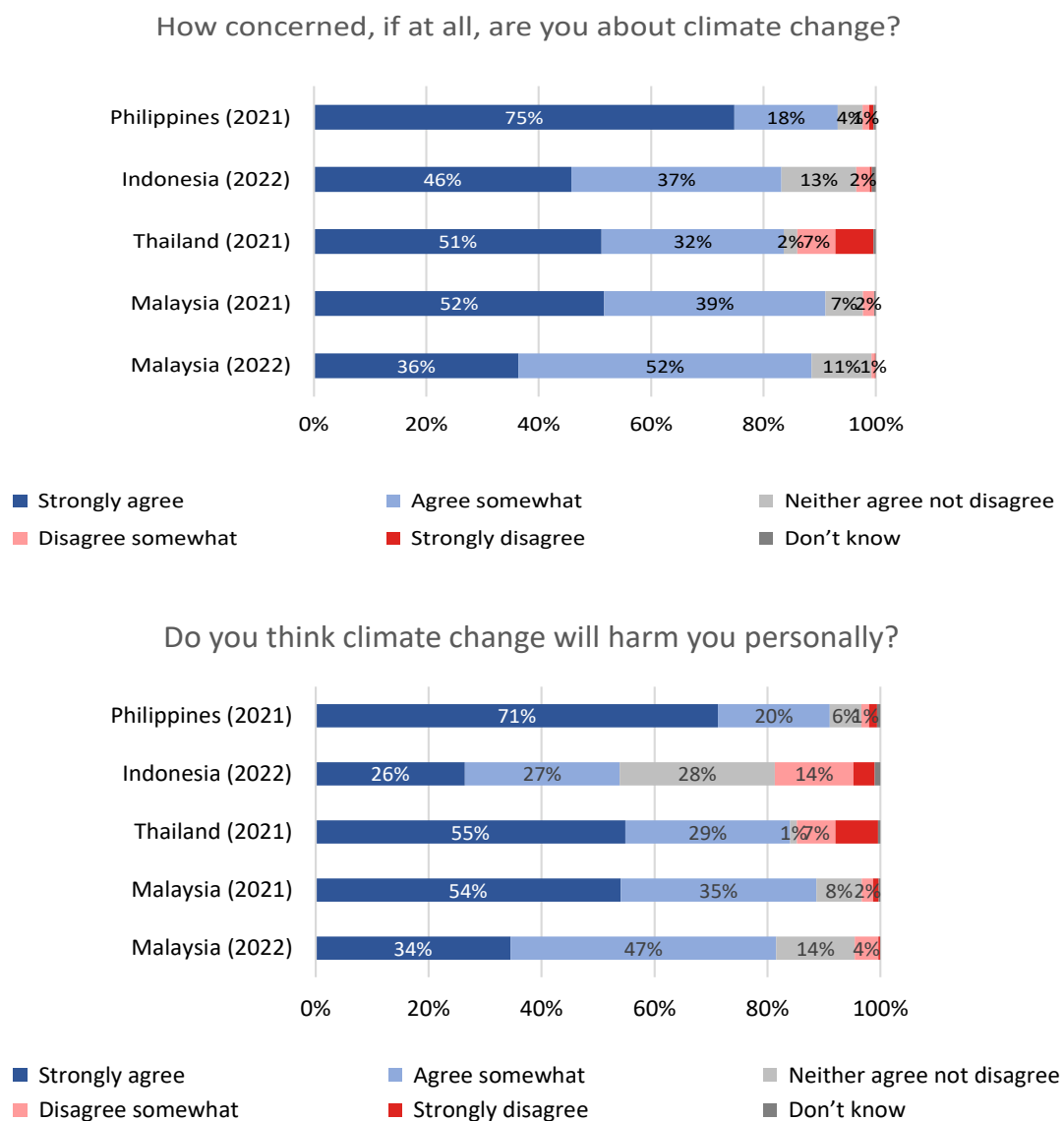
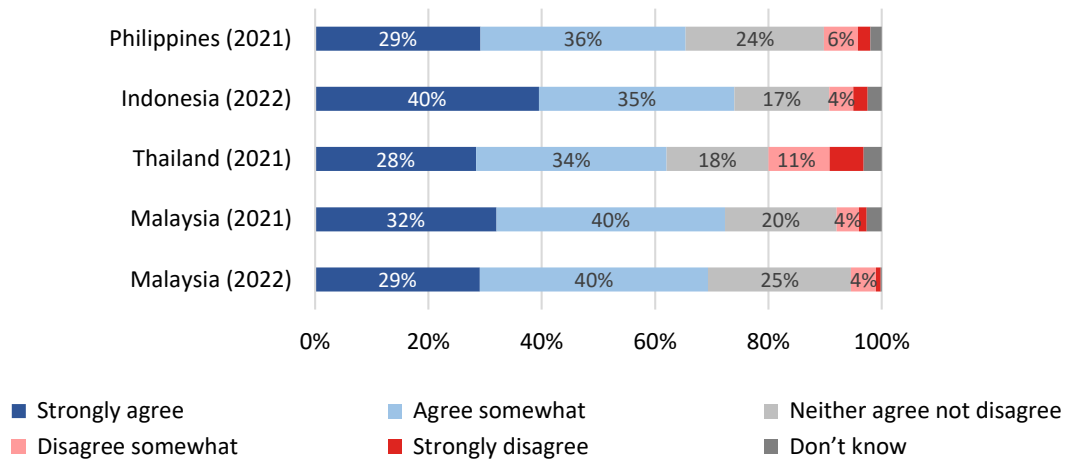
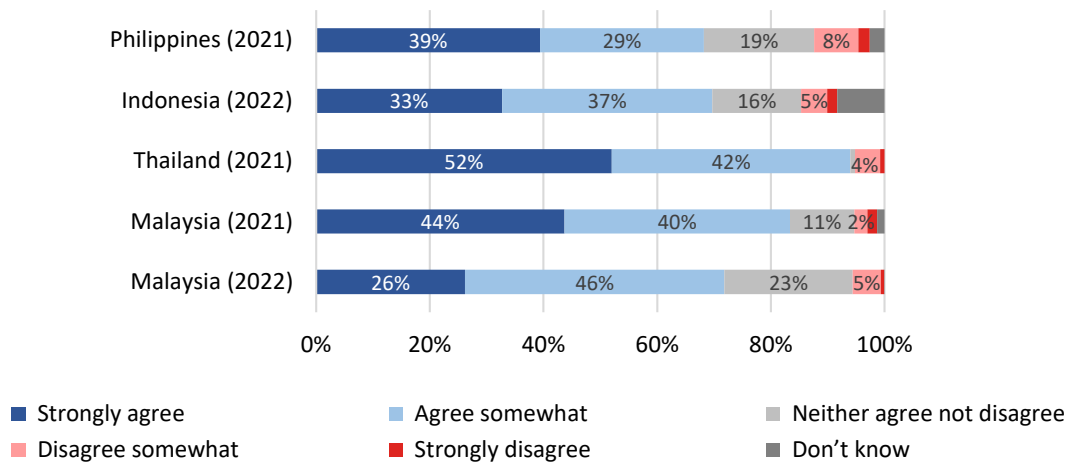


Figure 8.5. (continued)

Science and technology will eventually solve our problems with climate change.



I hear a lot about climate change in the news.

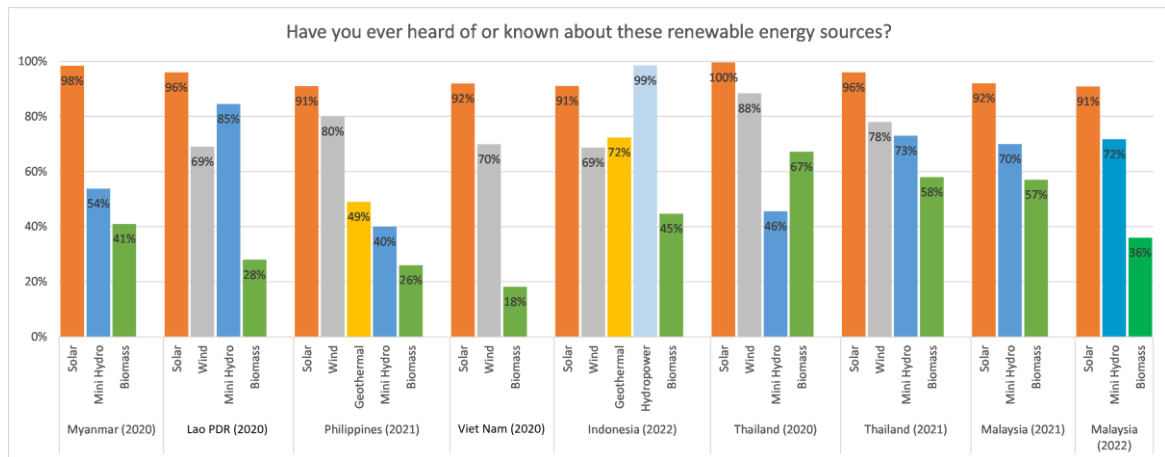


Source: Authors' calculation.

6. Attitudes Towards Types of Renewable Energy

Figure 8.6 shows people's knowledge about renewable energy sources. Solar was the most popular except in Indonesia, with over 90% answering 'Yes' in all countries. Biomass was least well known in all countries except Thailand in 2021, especially in Viet Nam, where only 18% of respondents answered 'Yes'.

Figure 8.6. Knowledge About Renewable Energy Sources

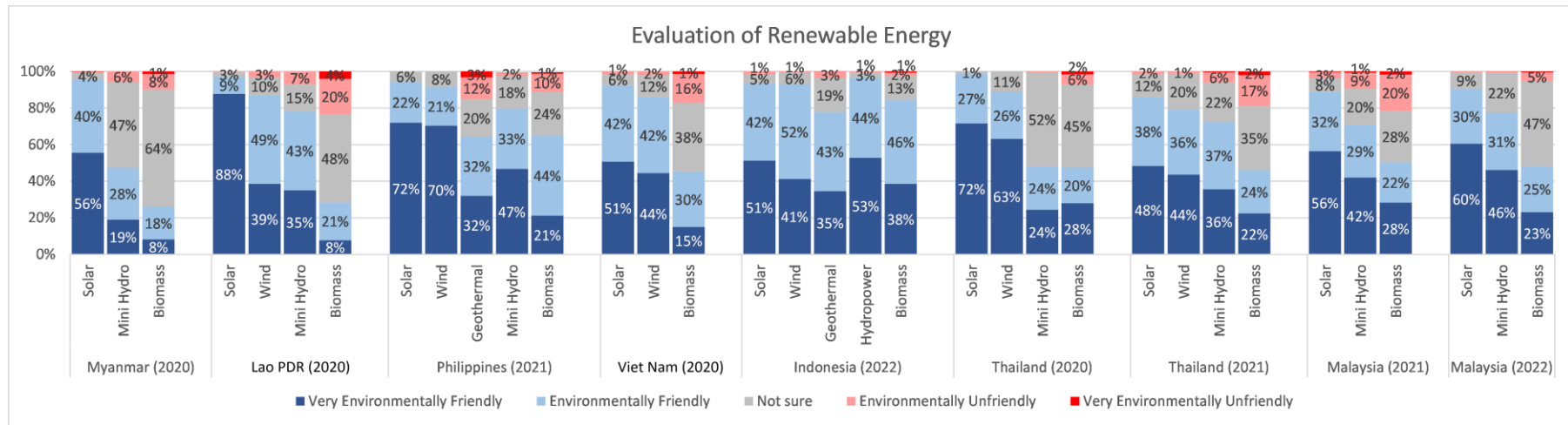


Note: Indonesia is a large-scale hydropower

Source: Authors' calculation.

Figure 8.7 shows the proportions of respondent evaluations regarding RE types. The high valuation of renewable energy is proportional to the level of recognition. In all regions except Indonesia, solar energy was considered most environmentally friendly. In Lao PDR, 88% responded 'very environmentally friendly'. Respondents expressed more concerns regarding biomass in Lao PDR and Malaysia in 2021 (more than 20% responded 'environmentally unfriendly' and 'Very Environmentally Unfriendly').

Figure 8.7. Attitudes Towards Renewable Energy



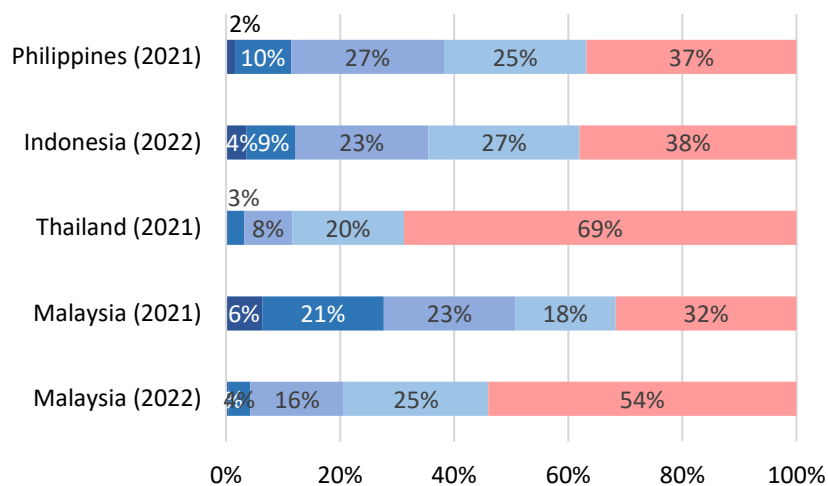
Source: Authors' calculation.

7. Attitudes Towards Carbon Dioxide Removal Technologies

- I know a great deal about carbon dioxide removal technologies
- I know a fair amount about carbon dioxide removal technologies
- I know just a little about carbon dioxide removal technologies
- I have heard of carbon dioxide removal technologies but know almost nothing about it
- I have not heard of carbon dioxide removal technologies before today

Figure 8.8 shows people's knowledge of carbon dioxide removal (CDR) technology. In the Philippines, Indonesia, and Malaysia in 2021, 27%, 23%, and 23% of respondents, respectively, answered 'I know just a little about (CDR)', with over 60% of respondents saying they have at least heard of it. However, in Thailand and Malaysia in 2022, more than half of the respondents had never heard of it.

Figure 8.8. Knowledge of CDR Technologies



- I know a great deal about carbon dioxide removal technologies
- I know a fair amount about carbon dioxide removal technologies
- I know just a little about carbon dioxide removal technologies
- I have heard of carbon dioxide removal technologies but know almost nothing about it
- I have not heard of carbon dioxide removal technologies before today

CDR = carbon dioxide removal

Source: Authors' calculation.

Figure 8.9 shows the attitudes towards the risks and benefits of CDR options in the four countries. The Philippines was more neutral than the other countries, with about 30% 'undecided' and more than 20% 'don't know' for all questions. The highest support came from Malaysia, where 71% of respondents answered either 'Strongly agree' or 'Agree somewhat' to the statement of '[CDR] technologies could help [...] provide more time to reduce emissions'. The lowest support came from Indonesia, where 73% of respondents answered either 'Strongly agree' or 'Agree somewhat' to the statement 'There may be negative impacts of [CDR] technologies on the environment'.

Figure 8.9. Attitudes Towards CDR Technologies

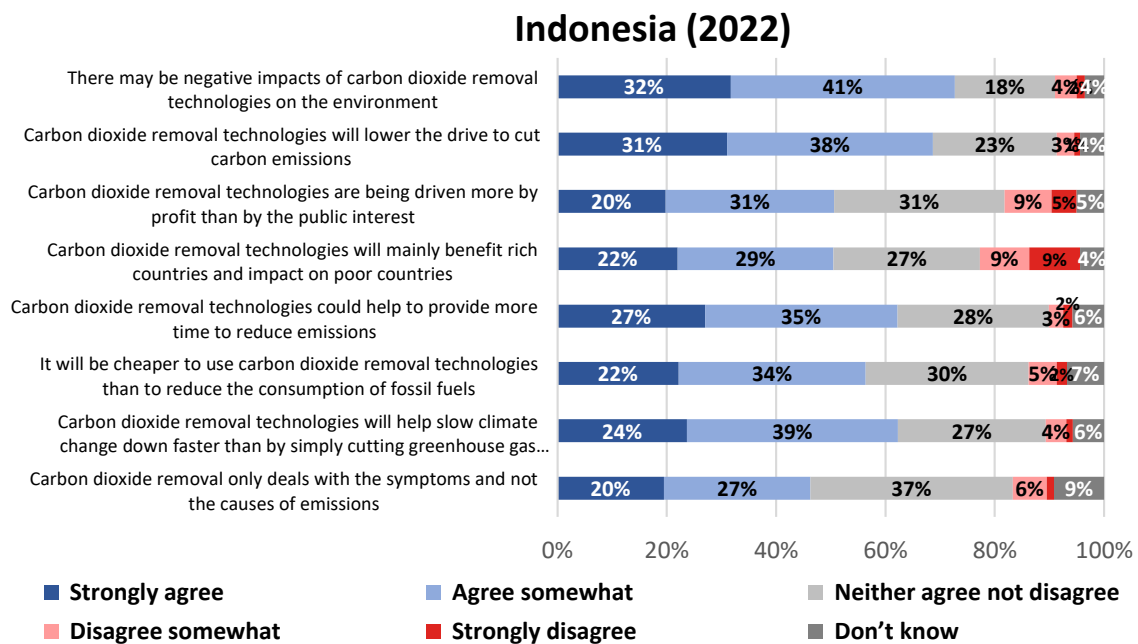
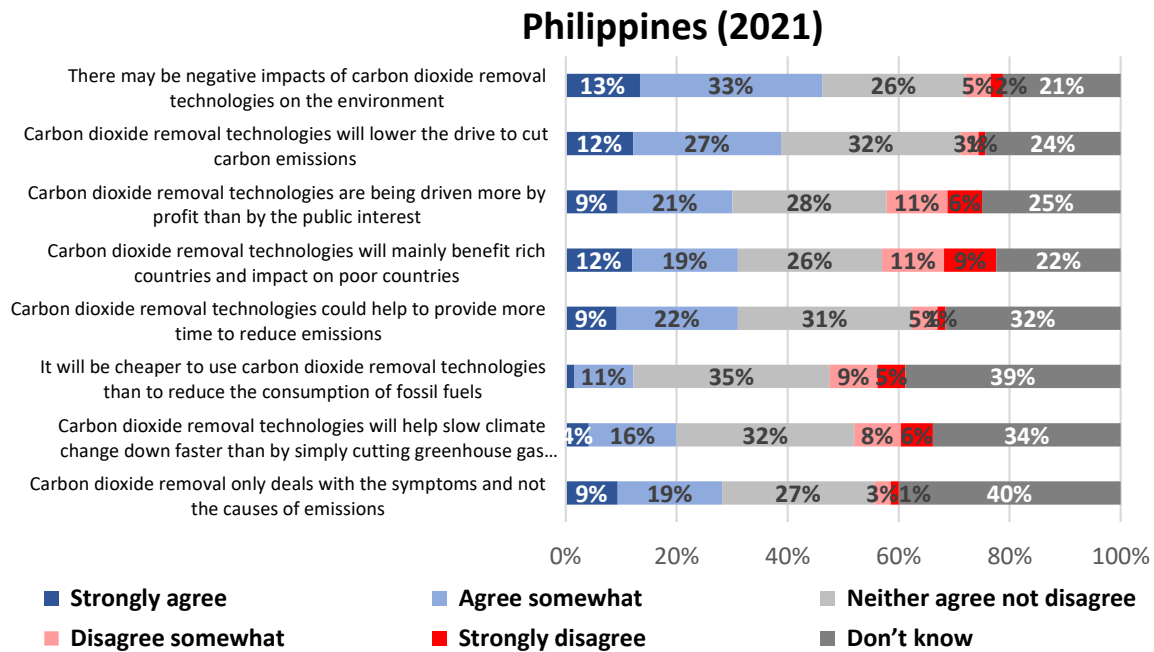
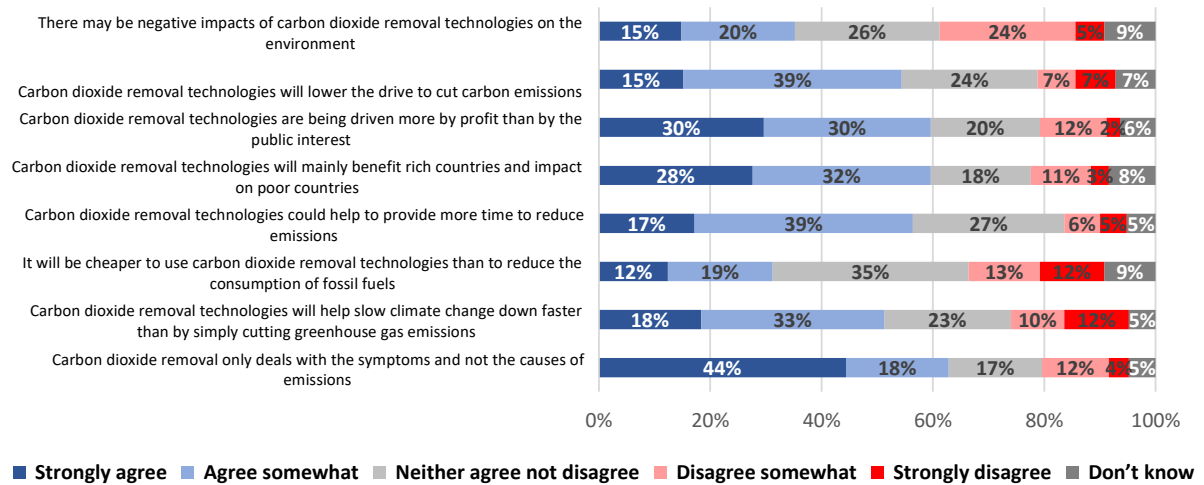
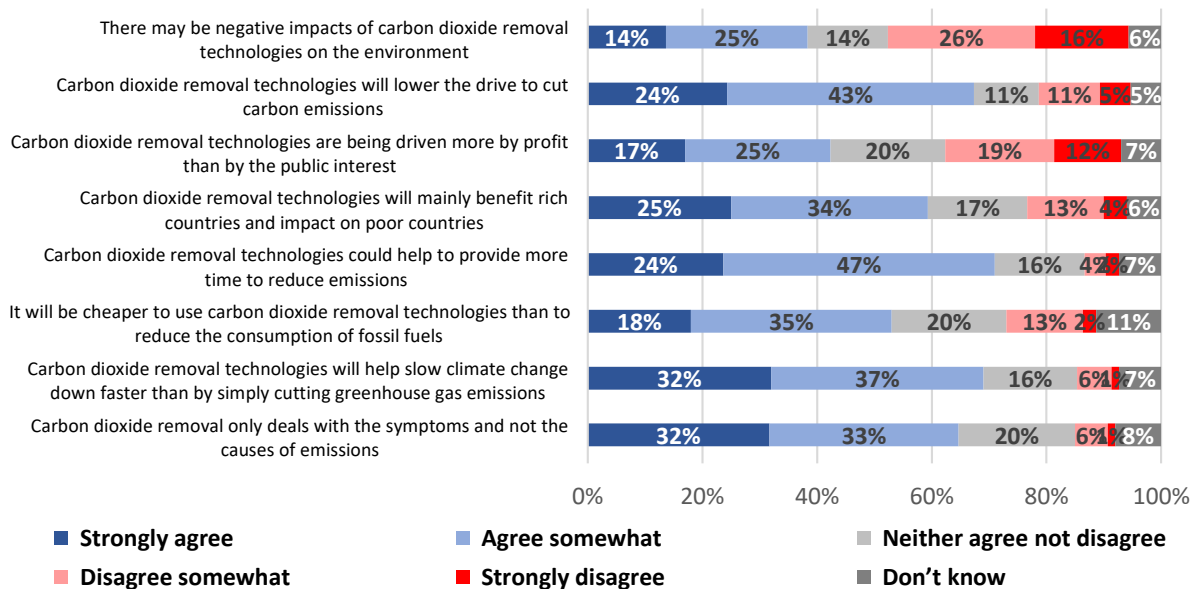


Figure 8.9. (continued)

Thailand (2021)



Malaysia (2021)



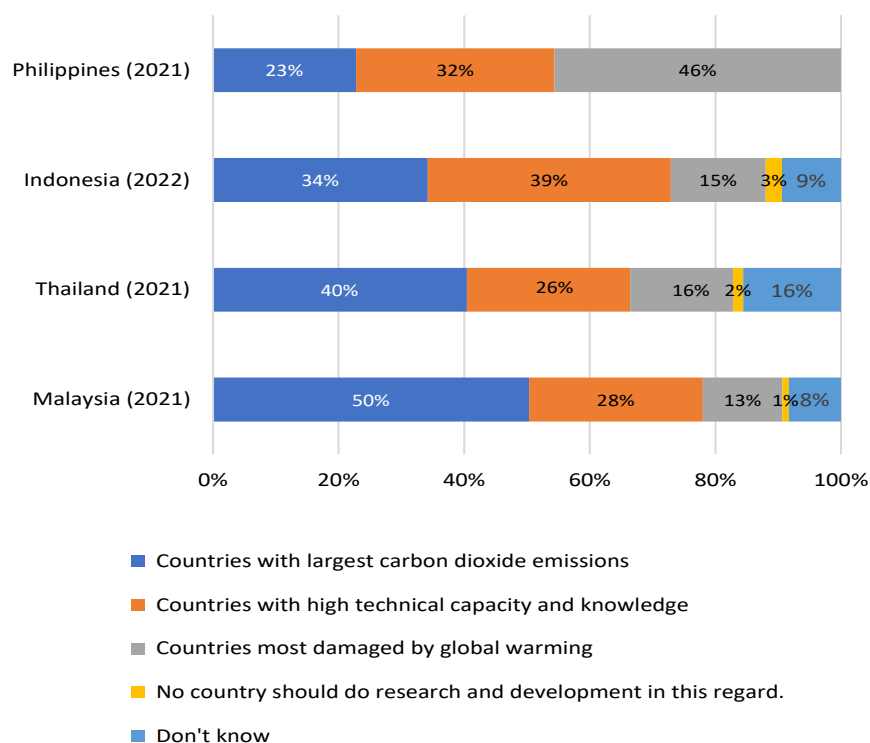
Note: Malaysia in 2022 is not listed because the question was reviewed.

Source: Authors' calculation.

Finally, Figure 8.10 shows the attitudes towards the future of CDR research and development in the four countries. In the Philippines, the highest share of respondents (46%) answered that the countries that would be most damaged by global warming should be foremost in developing such technologies. In Indonesia, the highest share of respondents (37%)

answered that the countries with the highest technical capacity and knowledge should be foremost in developing such technologies. In Thailand and Malaysia, the highest share of respondents answered that the countries with the largest carbon dioxide emissions should be foremost in developing carbon removal technologies, with 40% and 50% respectively.

Figure 8.10. Answer to ‘In Your Opinion, What Countries Should be at the Forefront in the Development of Carbon Removal Technology?’



Note: ‘No country should do research and development in this regard’ and ‘Don’t know’ were not included in the questionnaire for the Philippines.

Source: Authors’ calculation.

8. WTP Estimations

- I know a great deal about carbon dioxide removal technologies
- I know a fair amount about carbon dioxide removal technologies
- I know just a little about carbon dioxide removal technologies
- I have heard of carbon dioxide removal technologies but know almost nothing about it
- I have not heard of carbon dioxide removal technologies before today

Table 8.2 shows the estimation of the mean WTP in the percentage of monthly electricity bills in United States dollars (US\$) when increasing the RE share. The WTP values for increasing the share of renewable energy to 40% were positive except for a few cases. 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 (also called mini-hydropower or small-scale hydropower) took intermediate values in most countries. The 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). The 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 found for all RE in Indonesia and biomass in Malaysia. The reason for the negative WTP 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.

Table 8.2. Willingness to Pay Estimates for Renewable Energy Types in 40% of Monthly Electricity Bill

	status quo	Solar % of monthly electricity bill (US\$)	Wind % of monthly electricity bill (US\$)	Mini Hydro % of monthly electricity bill (US\$)	Biomass % of monthly electricity bill (US\$)
Myanmar (2020) Yangon	0%	24.9% (5.3)	-	20.5% (4.3)	9.5% (2.0)
Myanmar (2020) Mandalay	0%	14.2% (9.6)	-	10.8% (7.3)	10.9% (7.3)
Lao PDR (2020)	0.025%	25.1% (9.4)	16.5% (6.2)	23.3% (8.7)	14.2% (5.3)

Philippines (2021)	30%	17.3% (8.7)	9.3% (4.7)	8.6% (4.4)	9.8% (5.0)
Viet Nam (2020)	7%	14.0% (7.3)	12.2% (6.4)	-	11.4% (5.9)
Indonesia (2022)	11%	-0.4% (-0.1)	-3.5% (-1.1)	-	-2.7% (-0.8)
Thailand (2021)	9%	5.5% (4.4)	3.2% (2.6)	2.7% (2.2)	2.5% (2.0)
Malaysia (2021)	6%	7.6% (2.1)	-	6.5% (1.8)	4.6% (1.3)
Malaysia (2022)	17%	7.8% (1.8)	-	3.3% (0.8)	-1.7% (-0.4)

Note 1: The official exchange rate by the World Bank in 2019 was used for conversions (US\$1 = MK1,518 = KN8,679 = P51.8 = D23,050 = Rp14,147.67 = B31.1 = RM4.1). (World Bank, n.d.-b)

Note 2: The mean monthly electricity bills are as follows: Myanmar (Yangon, 21.2 US\$/month; Mandalay, 67.4 US\$/month); Lao PDR, 37.4 US\$/month; Philippines, US\$50.5/month; Viet Nam, 52.2 US\$/month; Indonesia, US\$31.2/month; Thailand, US\$79.0/month; Malaysia (2021), US\$27.1 /month; Malaysia (2022), US\$23.2/month.

Note 3: The status quo of renewable share is different across the cities: Myanmar, 0%; Lao PDR, 0%; the Philippines, 30%; Viet Nam, 7%; Indonesia, 11%; Thailand, 9%; Malaysia (2021), 6%; Malaysia (2022), 17%.

Note 4: The WTP results for Thailand in 2020 are excluded due to statistical insignificance.

Source: Authors' calculation.