Windfarms in Indonesia: local community acceptance/opposition from distributional justice and procedural justice perspectives

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Abstract

Climate change is affecting all of us and many institutions and countries have set goals for the creation of renewable energy, with wind energy being one of the potential sources. Wind energy projects are often impacted by a lack of social acceptance, which can have impacts on the feasibility of a project. This research looks into social acceptance in windfarm planning from a distributional justice and procedural justice perspective. Research shows distributional justice and procedural justice in windfarm planning lead to more social acceptance, but most research on these perspectives have until now been done in a Global North setting. Therefore, the aim of this research is to contribute to finding out whether the theoretical framework coming from current research can also be used as a tool to do research in a Global South context. Two windfarms in Indonesia have been part of the empirical research. Analysis of the data that is collected by surveys, fieldwork, and interviews resulted in some new preliminary theoretical insights. In our sample, from a distributional justice perspective mainly personal social benefits are important for social acceptance. From a procedural justice perspective, the data shows that mainly 'passive' involvement is creating social acceptance. The results could be seen as a start to Global South theory on social acceptance from a distributional justice and procedural justice perspective, but further research is needed.

Keywords: wind energy, distributional justice, procedural justice, social acceptance, local community

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1. Introduction

Climate change is affecting all of us and we see governments and organizations all around the world setting renewable energy targets to contribute to the energy transition. But at the same time we see this energy transition going hand-in-hand with various serious challenges. One of these challenge can be found in the news regularly and is about the opposition of local communities in renewable energy projects, especially wind energy projects.

1.1 Background and research context

For some governments and institutions, achieving their renewable energy goals can be considered extra challenging since not only the percentage of renewable energy in the energy mix should increase, but also the whole energy demand is increasing. The Association of Southeast Asian Nations (ASEAN) is one example of this. It is projected that countries of the ASEAN will require 2,7 times its energy demand in 2035 compared to the energy demand in 2013 to meet economic growth targets (ASEAN, 2015). More recent data confirms this by adding that energy demand in the region is expected to triple by 2050 compared to the energy demand in 2020 (ACE, 2022). And however this energy demand is increasing, ASEAN agreed on aiming for a 23% share of renewable energy in the 2025 energy mix. This while it is predicted that with the current pace of the transition, renewable energy will reach a 17,5% in the energy mix by 2025 (ACE, 2022). The biggest emitter of the ASEAN is Indonesia. It is one of the most natural disaster-prone countries in the world and therefore really vulnerable to climate change. And despite they are vulnerable to climate change, it is the 10th largest greenhouse gas emitting country and the 19th highest in terms of CO2 emissions per capita (IEA, 2020). Therefore the Indonesian government decided to follow the ASEAN goal and aim for a same share of 23% renewable energy in the energy mix of 2025, furthermore consisting out of 22% gas, 55% coal, and 0,4% oil (ADB, 2020). In addition, they set the goal of net zero emissions by 2060 or sooner (IEA, 2022). But from the most recent data, in 2021 the renewable energy share in the energy mix was 12,6% (IEA, n.d.), which is not close to the goal yet.

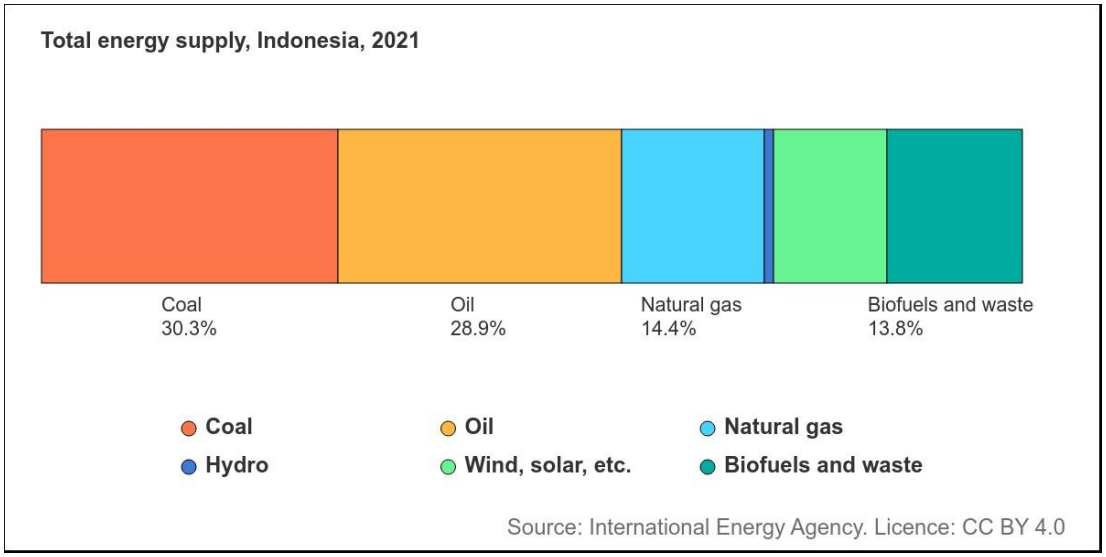

Figure 1.1: Total energy supply in Indonesia in 2021 (IEA, n.d.)

There is thus a need for renewable energy, also in terms of renewable electricity generation. Figure 1.2 shows the electricity supply in Indonesia is behind the planned capacity (Langer et al, 2021). The figure confirms again that there is a need for an increase in electricity generation from renewable energy sources and that installed capacity of renewable energy technologies is behind on the planned capacity. Indonesia is thus facing a big challenge to reach their renewable energy goals. Looking for the

possibilities to increase the amount of renewable electricity supply, wind power can be considered as a promising option. Wind power currently has a small percentage in the mix, however various studies show that there is a high potential for wind power (IEA, 2022; IESR, 2021; IRENA, 2022; Langer et al, 2023; MEMR, 2023). Wind energy can be considered as a promising option for getting closer to the planned electricity generation supply and the Indonesia's renewable energy goals.

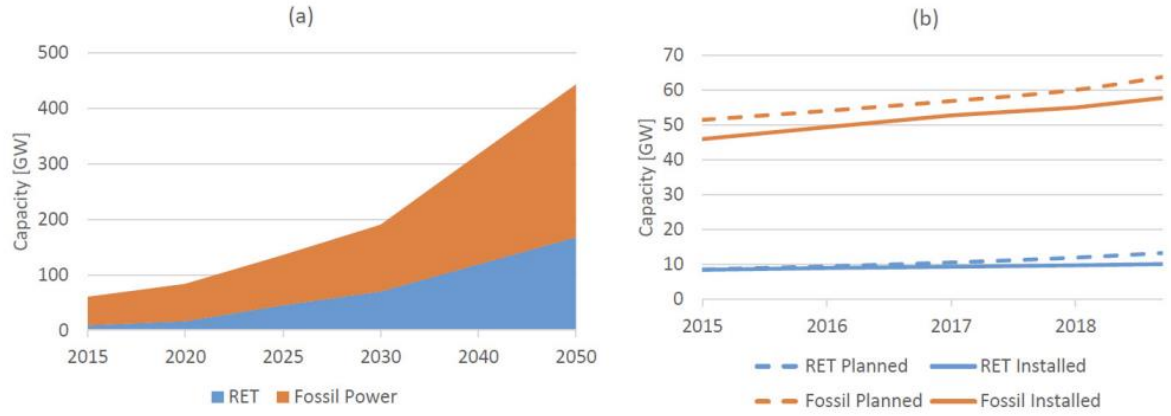

Figure 1.2: (a) shows the planned installed capacity of electricity supply based on the National Energy Plan, (b) shows the installed vs. planned capacity (Langer et al., 2021)

Wind projects appear to be a promising option, but they are also known to have high impacts on local communities. The topic of public opposition against windfarms can often be found in the news. Also in the scientific world, discussions about opposition in wind energy project are ongoing. Many research explains the opposition with the NIMBY (not in my back yard) concept (Anchustegui, 2020; Devine-Wright, 2005; Hall et al., 2013). With the increase on research on the NIMBY concept, knowledge of wind power acceptance grew dramatically (Frate et al., 2019). This increase in knowledge caused a shift from the focus on NIMBY towards a focus on explanations favouring proximity to wind turbines as a determinant for local or community opposition (Frate et al., 2019). This again led to a focus on justice perspectives, especially on distributional justice and procedural justice (Frate et al., 2019). Frate et al. (2019) mention that energy justice studies are critical to encourage a fair and equitable transition to low-carbon energy systems. Hall et al. (2013) mention that wind company representatives notice their company's vulnerability to societal acceptance issues. In addition, their study shows that concerns with regard to physical and measurable aspects offer obvious responses for improvement, but social issues represented through process-oriented and non-specific concerns are creating more challenging problems with regard to social acceptance. It agrees that emerging themes important to reach social acceptance are distributional justice and procedural justice (Hall et al., 2013).

The topic of public opposition and acceptance of windfarms is researched on a large scale, but mostly in European and North American jurisdictions (Baxter et al., 2020; Walker & Baxter, 2017a). Various studies show that public acceptance research is mainly done in developing or 'Global North' countries (Colvin et al., 2019; Devine-Wright, 2005; Hall et al., 2013). From a review it becomes clear that research in Asian, and more in particular in an Indonesian, context is lacking. An additional reason for this can be that there are simply less cases to do research in. However, high potentials and ambitions for wind power can be found and research into social acceptance is important.

1.2 Research aim

Wind energy seems to be a promising option for Indonesia to contribute to reaching its renewable energy goals. But for a successful implementation of wind energy projects in Indonesia, local acceptance is often seen as an important factor. And however many research on this topic can be found,

most is based on 'Global North' cases. For a successful implementation of wind energy in Indonesia, it is important that research on acceptance/opposition is done. The aim of this research is to find out what reasons can be found for acceptance/opposition in wind projects in Indonesia. Distributional justice and procedural justice concepts, primarily based on 'Global North' research, are used as a tool for conducting research. By looking at two existing large-scale windfarm developments in Indonesia from distributional justice and procedural justice perspectives and finding the reasons behind the local acceptance or opposition of these windfarms, the goal is to gain a better understanding and find out whether the concepts can be used as a tool to do research in a 'Global South' case or whether there are suggested theoretical changes.

1.3 Research questions

The following research question is applicable:

''What influences local opposition/acceptance in windfarm developments in Indonesia from a distributional justice and procedural justice perspective, and what lessons can be learned for social acceptance in future windfarm developments in Indonesia?''

The research question consists out of several sub-questions:

1. Are local communities supporting or opposing windfarm development in Indonesia?
2. From a distributional justice and procedural justice perspective, what are the reasons behind the acceptance or opposition?
3. What lessons can be learned for future windfarm development in Indonesia?

2. Theoretical framework and context

For being able to answer the research question, and research sub-questions, about the topic of local opposition/acceptance in windfarm planning in Indonesia, it is important to understand the context and gain knowledge about already existing theories on opposition/acceptance in windfarm developments. First, chapter 2.1-2.3 give an overview of the energy transition. By analysing literature and reports it will show the need for -as well as the challenges coming with- the energy transition. From a global perspective to a national perspective of the country of Indonesia. Thereafter, chapter 2.4-2.8 seeks to give an understanding of why acceptance of projects is important and how justice perspectives play a role in this. In 2.9, the research will show the importance of taking into account a difference between the so called 'Global North/Global South' and position this research in the discussion. Lastly, chapter 2.10 will show different hypotheses and a conceptual model resulting from the literature review.

2.1 Climate change and the global move to renewable energy

Human activities are having an impact on the world's climate since long ago. Since the 1800s, these human activities are seen as the main driver of climate change (UN, n.d.). The widely recognized 'Climate Change 2021: The Physical Science Basis' report of IPCC shows that human activities are responsible for a global temperature rise of 1,1°C since the late 1800s (IPCC, 2021). This increase in global temperature is mainly caused by greenhouse gas emissions. Main greenhouse gases that cause the world to heat are carbon dioxide and methane. The UN (n.d.-a) mention that the use of fossil fuels, especially by burning coal, oil and gas, is the main driver, accounting for 75% of global greenhouse gas emissions and nearly 90% of all carbon dioxide emissions.

Global temperature rise and climate change in general are common phenomenon, but the world is not used to the current pace of global heating. The current warming is happening at a rate that has not been seen in the past 10.000 years, and the level of atmospheric CO2 has not been this high for at least 800.000 years (NASA, n.d.). Effects of the current climate change are affecting the whole planet and people all around the world. The UN (n.d.) mention some example effects of the climate change, of which we can see many happening around the world right now. Effects mentioned are for example more severe and destructive storms by an increased evaporation of moisture, creating extreme rainfalls and floodings, and the warming of the ocean causing more cyclones, hurricanes, and typhoons. Another example is increased droughts, causing water shortages, affecting agriculture and ecosystems. In addition, agriculture is also affected by the ocean waters becoming more acidic, creating a risk of global rise in hunger and poor nutrition. Furthermore, the global heating is causing heatwaves and destructive wildfires, which we have seen happening to an extreme extent again last year (Copernicus, 2024). The examples show that the current climate change is a thread to humanity all around the world and shows that action needs to be taken.

There are global frameworks and agreements in place to fight climate change, some familiar examples can be found. Firstly, the United Nations Framework Convention on Climate Change (UNFCCC), which entered into force on 21 March 1994, and has 198 countries participating. The UNFCCC was remarkable for its time setting the goal of ''stabilizing greenhouse gas concentrations at a level that would prevent dangerous anthropogenic interferences with the climate system'' within a ''time-frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened, and to enable economic development to proceed in a sustainable manner'' (UNFCCC, n.d.). The UNFCCC resulted in for example the Kyoto Protocol, in which industrialized countries and economies in transition committed to limit and reduce GHG in accordance with agreed individual targets (UNFCCC, n.d.-a). As part of the UNFCCC, the well-known Paris Agreement was adopted at the UN Climate Change Conference (COP21) in Paris, on 12 December 2015 (UNFCCC, n.d.-b). The Paris

Agreement is widely considered as an important landmark since it is the first legally binding international treaty on climate change. 196 parties adopted the agreement of which the goal is to hold ''the increase in the global average temperature to well below 2°C above pre-industrial levels'' and pursue efforts ''to limit the temperature increase to 1,5°C above pre-industrial levels'' (UNFCCC, n.d.-b). Following the Paris Agreement, all participating parties are required to create a Nationally Determined Contribution (NDC), and update it every five year. A NDC is a climate action plan to cut emissions and adapt to climate impacts (UN, n.d.-b). The Paris Agreement can therefore be seen as important, since all parties are creating NDC's, and are thus setting goals for dealing with climate change. Although the NDC's are a good step, the goals which are set are insufficient for reaching neither the 1,5°C goal, nor the 2°C goal. The UN Environment Programme (UNEP) published the 'Emissions Gap Report 2023: Broken Record', in which they explain the current NDCs to be insufficiently ambitious to reach the Paris Agreement goals (UNEP, 2023). The report shows that current unconditional NDC's (assuming full implementation) imply a 14 GtCO2e gap for reaching the 2°C goal and a 22 GtCO2e gap for reaching the 1,5°C goal (see Figure 2.2). The report mentions that with a full implementation of the unconditional NDC's, the world is on track to limit temperature rise to 2,9°C above pre-industrial level by the end of this century (UNEP, 2023). Research by Den Elzen et al. (2022) shows that the last NDC updates between October 2020 and January 2022 have an aggregated impact on global GHG emissions of about 3,8 GtCO2e for unconditional NDC's and 3,9 GtCO2e for conditional NDC's. Overall, ambitions are raised, but it is shown that the ambitions fall short of what is needed to reach the goals of the Paris Agreement (Den Elzen et al., 2022). More ambitious targets are needed, while it is already an immense task for countries to live up to the commitments made.

Figure 2.1: The state of the Paris Agreement: countries by their participation as of April 21, 2021 (source: statisa.com)

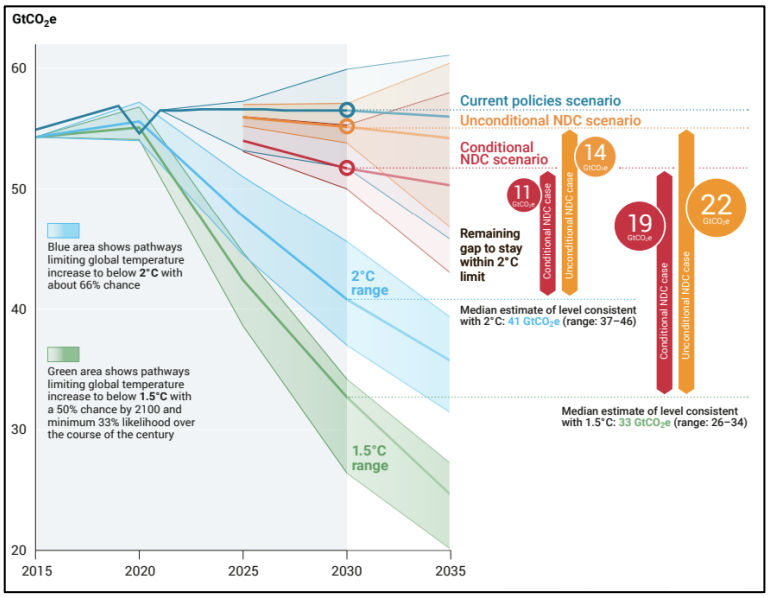

Figure 2.2: Global GHG emissions under different scenarios and the emissions gap (UNEP, 2023)

In meeting the target of limiting global temperature rise to 1,5°C degrees, the energy sector plays a major role (IEA, 2023). The single-most important lever to reduce CO2 emissions is to triple the renewable energy capacity by the end of the decade, especially seeing technologies of solar PV and wind power as driving forces (IEA, 2023). Coal-fired power generation is seen as the largest source of energy-related CO2 emissions, by tripling renewable energy capacity, these emissions could drop by half between 2022 and 2030 (IEA, 2023). Gielen et al. (2019) show that renewable energy and energy efficiency, together with electrification of end-uses, make up 94% of emission reductions. Resulting

from the increasing global awareness of the need to move to renewable energy, we see increasing ambitious renewable energy targets arising in many different international- and national settings.

2.2 Energy transition in ASEAN context

Zooming in on CO2 emissions from energy by different regions in the world, we see that the Asia Pacific region is the biggest emitter in the world (Figure 2.3). In 2021, the Asia Pacific region was responsible for 17,68 billions of metric tons of CO2 emissions, where the year after it was responsible for 17,96 billion of metric tons of CO2 emissions (Statista, 2023). This level of CO2 emission is higher than all other regions in the world combined. The data in Figure 2.3 shows that the CO2 emissions of the Asia Pacific are high compared to other regions and they are annually growing. China is the biggest emitter with accounting for nearly 60% of the Asia Pacific region in 2022, but the ASEAN countries also have a significant part in this.

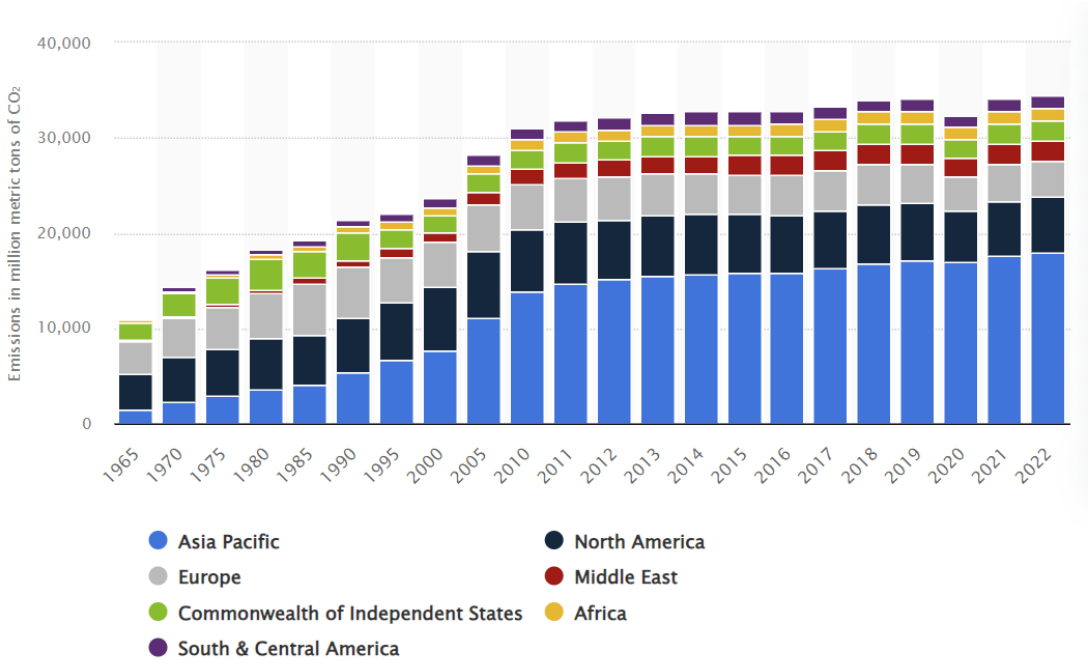

Figure 2.3: Global CO2 emissions from energy (Statista, 2023)

As shown in Table 2.1, from the Emissions Database for Global Atmospheric Research (EDGAR) data, in 2022 there was a total of 53.786,04 Mton CO2eq emitted, of which the ten ASEAN countries in total cover a 5,86% (EDGAR, 2023). To put this amount in perspective, the EU27, consisting out of the 27 EU member states, emitted a share of 6,67% (3587,80 Mton CO2eq). For a comparison with relative numbers, 2022 population data from Statista (2024) shows the ASEAN countries had around 673 million inhabitants, where the EU27 had around 447 million. This results in a GHG per capita emission of 4,66 t CO2eq/cap for the ASEAN, and an 8,03 t CO2eq/cap for the EU27. This shows that the emissions per capita are lower in the ASEAN. To contextualize these relative numbers, it should be considered that the ASEAN countries are expected to have an enormous increase in energy demand over the coming years. This increase in energy demand will be discussed in the next paragraph, as well as the need for ASEAN countries to increase their pace in the move towards renewable energy to be able to reach its goals.

Country	Mton CO2eq	% of world total
Global Total	**53786,04**	**100**
Indonesia	1240,83	2,31
Vietnam	486,16	0,91
Thailand	463,87	0,86
Malaysia	353,92	0,66
Philippines	265,3	0,49
Myanmar	169,39	0,31
Singapore	70,47	0,13
Cambodia	50,02	0,09
Laos	36,86	0,07
Brunei	14,83	0,03
ASEAN Total	**3136,82**	**5,86**
EU27	3587,80	6,67

Table 2.1: GHG Emissions by country in 2022 (EDGAR, 2023)

The Association of Southeast Asian Nations (ASEAN) is an organisation consisting out of 10 Southeast Asian countries. One of the main aims and purposes of the ASEAN is to ''accelerate the economic growth, social progress and cultural development in the region'' through partnership, adhering to the principles of the United Nations Charter. For realising the ASEAN Economic Community (AEC)'s goal of ''a well-connected ASEAN to drive an integrated, competitive, and resilient region'', energy is considered to be key (ASEAN, n.d.). Since this importance of energy, in 1999 the ASEAN started an intergovernmental organisation called ASEAN Centre for Energy (ACE). The ACE independently represents the ASEAN Member States' (AMS) interests in the energy sector (ACE, 2022) and is therefore playing a central role in the ASEAN energy sector. ACE is the main responsible party for creating the ASEAN Plan of Action for Energy Cooperation, known as APEAC. APAEC is a ''blueprint for better cooperation towards enhancing energy'' (ACE, n.d.). Sustainable and environmental friendly development are considered to be crucial for the ASEAN's energy sector (ACE, n.d.). Next to the APEAC, ACE has the main responsibility for doing analytical work which is leading to one of its flagship publications called ''ASEAN Energy Outlook''. The most recent one is ''The 7th ASEAN Energy Outlook 2020-2050'' (AEO7), which was published in 2022.

As showed in former ASEAN Energy Outlook's and the most recent AEO7 version, there is an enormous increase in energy demand taking place right now and expected to take place in the future. It mentions that energy demand in the region is expected to triple by 2050 compared to the energy demand in 2020 (ACE, 2022). In addition, to support the Paris Agreement and the UN Sustainable Development Goal 7 of ''Affordable and Clean Energy'', the most recent APAEC, called the ''ASEAN Plan of Action for Energy Cooperation (APAEC) 2016-2025 phase II: 2021-2025'' (APEAC, 2020), decided on key strategies including the goal of a 23% share of renewable energy in the 2025 ASEAN energy mix and a 35% share of renewable energy in 2025 ASEAN installed capacity. In 2018, renewable energy had a 13,9% share in ASEAN's energy mix (APAEC, 2020), and according to the scenario which is considering the AMS' national targets, renewable energy will reach a 17,5% share by 2025 (ACE, 2022). For reaching these 2025 targets, it should be taken into account that the renewable energy does not only need to increase its share in the current mix, but also that the energy demand is increasing. So the 23% share in the mix, in absolute numbers, will only become bigger over the years. There are thus big challenges ahead for the energy sector in ASEAN countries.

2.3 Energy transition in Indonesian context

What is striking from the data in Table 2.1, is that Indonesia is responsible for around 39,55% of ASEAN GHG emissions and around 2,31% of global GHG emissions (EDGAR, 2023). Table 2.2 shows that from the data from EDGAR (2023), Indonesia is ranked 7th of the world in terms of GHG emissions. From this data, which shows absolute numbers, Indonesia can be regarded as a big emitter, and this is confirmed by various additional sources. For example the UN (n.d.), who mention that Indonesia belongs to the 7 biggest emitters in the world (together with China, the United States of America, India, European Union, the Russian Federation, and Brazil) which alone are accounting for 50% of all global greenhouse gas emissions in 2020. Another source confirming this is Statista (2023a). Mentioning that in 2021, of the 10 ASEAN countries, together emitting 1,74 billions of metric tons of CO2, Indonesia has been the most emitting country with a share of around 35%, with a total of 619,28 millions of metric tons of CO2 (Statista, 2023a). But when looking at the emission per capita, Indonesia does not end up that high in emission rankings, namely 4,47 t CO2eq/cap. The EU27 emits 8,09 t CO2eq/cap, the global total 6,76 t CO2eq/cap, Netherlands 9,72 t CO2eq/cap, France 6,50 t CO2eq/cap and United States 17,90 t CO2eq/cap. In relative numbers Indonesia is thus not included in the list of highest emitters, but in absolute numbers it still is. However, Indonesia is still far away from reaching their renewable energy goals. The next paragraphs will dive deeper into this.

Country	Mton CO2eq	% of world total
Global Total	53786,04	100
1. China	15684.63	29,16
2. United States	6017.44	11,19
3. India	3943.26	7,33
4. EU27	3587.80	6,67
5. Russia	2579.80	4,80
6. Brazil	1310.50	2,44
7. Indonesia	**1240.83**	**2,31**
8. Japan	1182.77	2,20
9. Iran	951.98	1,77
10. Mexico	819.87	1,52

Table 2.2: Top 10 GHG emitters (EDGAR, 2023)

Indonesia is, in absolute numbers, one of the biggest GHG emitters in the world. At the same time it has the second-highest level of biodiversity (Statista, 2023a) and it is known to be one of the most disaster-prone countries in the world. With the global heating, a loss of biodiversity and an increase of natural disaster can be expected, while Indonesia is a main contributor to this global heating.

Indonesia is a country with vast economic growth over the last decades. Since the start of measurement in 1968, only Korea, Singapore, and China have a higher rate of growth in per capita GDP (IEA, 2022). This economic growth goes hand in hand with a rise in emissions. Between 2000 and 2021, Indonesia's GDP has risen by more than 2,5 times, and the energy demand by 1,5 times (IEA, 2022).

Looking at the high emission levels, the country needs to do a lot of work to reach targets as set in for example the Paris Agreements and to create a sustainable and resilient country. The Indonesian government recognises this need to move towards a more renewable energy system to contribute to the global energy transition by setting targets to reduce its emissions. Indonesia's government followed the ASEAN goal of reaching a 23% share of renewables in the total energy supply by 2025 and added the goal of 31% of renewables in the total energy supply by 2050 (IEA, 2022). Furthermore, the 'Comprehensive Investment and Policy Plan (CIPP) 2023', which is a report of the Just Energy Transition Partnership (JETP) Indonesia, included updated targets of a 44% renewable energy share in the 2030 energy mix, and a 92% share of renewable energy in the 2050 energy mix (JETP, 2023). In addition, the government of Indonesia set the ambitious target of reaching net zero emissions by 2060 or sooner

(IEA, 2022). It is mentioned that to reach this net zero emissions by 2060, there are three important levers that can provide 80% of the emissions reductions needed from the energy sector, namely energy efficiency, renewables in the electricity sector, and the electrification of transport (IEA, 2022). The government also set targets to increase the electricity demand to 2500 kWh per capita by 2025 and 7000 kWh by 2050, where the electricity consumption in 2021 was less than 1000 kWh per capita (IEA, 2022). The electricity demand in 2050 is thus aimed to be 7 times as much as in 2021, which is an significant increase.

The targets are set but a lot of work needs to be done to reach these targets. As can be seen in Figure 2.4, in the energy mix of Indonesia in 2021, coal was the main supplier with 30,3%, followed by oil with 28,9%, natural gas with 14,4%, biofuels and waste with a 13,8%, whereas renewables as hydro, wind, solar, and others have a 12,6% share in the energy mix. Which is not close to the governmental 23% target of 2025.

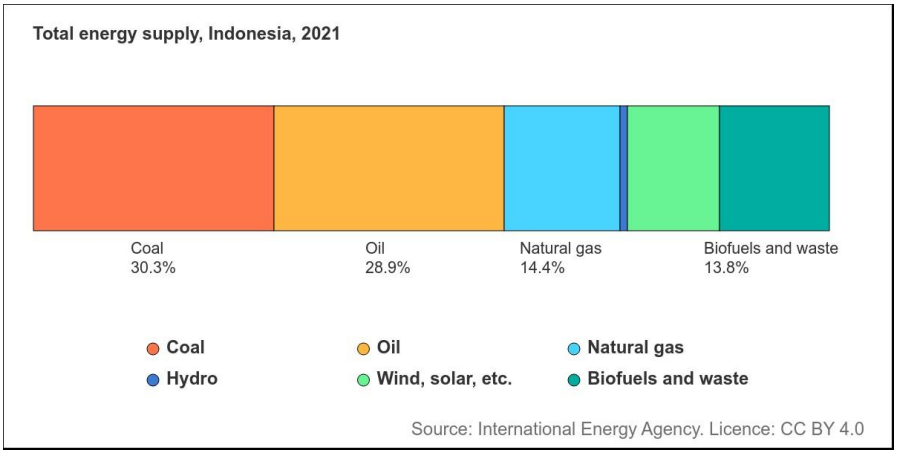

Figure 2.4: Total energy supply in Indonesia in 2021 (IEA, n.d.)

As explained, electrification is an important factor for Indonesia to reach its goals, and the government set multiple targets to drastically increase the electricity (created by renewable energy) share in the energy mix. It is important to create an understanding of why electrification is an important factor and part of the solution. Examining the current energy situation in Indonesia shows the importance of electrification.

Indonesia's CO2 emissions come mainly from the burning of fossil fuels for power generation or to fuel vehicles and machines. As can be seen in Figure 2.4, coal is responsible for 51,4% of the CO2 emissions, oil for 36,2% and natural gas for 12,5%.

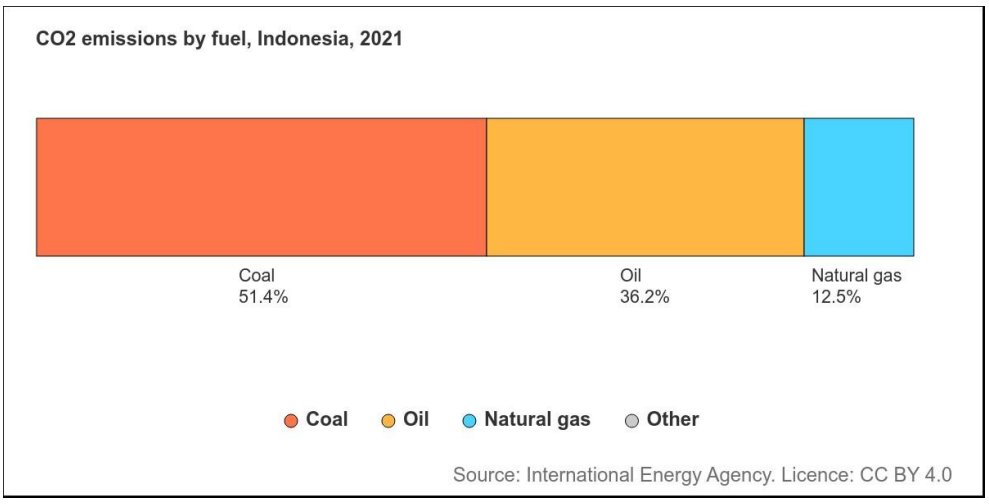

Figure 2.5: CO2 emissions by fuel in Indonesia in 2021 (IEA, n.d.)

To be able to understand these emissions in Indonesia, it is important to discover which sectors they are mainly used for. Figure 2.6 breaks down the CO2 emissions by sector. It can be seen that the sector of electricity and heat producers is responsible for 43,2% of CO2 emissions. In this sector the heat is meant with burning fuels in power plants. Heat used for industrial processes such as making paper and steel is incorporated in the industry sector, which is applicable for 23,5% of CO2 emissions. Transport coming in a second place with 24,4%. The transport sector is mostly coming from cars which are mostly reliant on oil-based fuels (IEA, n.d.).

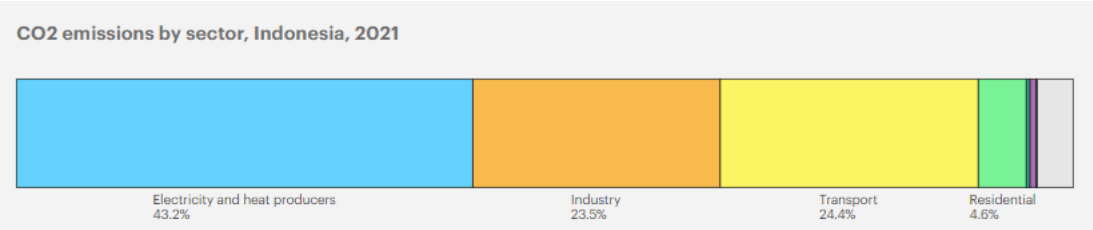

Figure 2.6: CO2 emissions by sector (IEA, n.d.)

Indonesia has multiple renewable energy sources from which electricity can be created. Statista (2023a) data shows that in addition to deforestation, the current carbon-intensive electricity generation can be seen as a main reason for the high level of GHG emissions in the country. Also taking into account the net zero target by 2060 or sooner, Indonesia has a high potential to diminish the CO2 emissions in the electricity and heat production from burning fossil fuels, by making a move towards renewable electricity generation. The current electricity generation is heavily based on coal. As can be seen in the figure below, coal is currently responsible for 61,5% of electricity generation in Indonesia (EIA, n.d.). From the data in the figure, the renewable energy sources of hydro, wind, solar, and geothermal combined are responsible for around 13,4% of electricity generation.

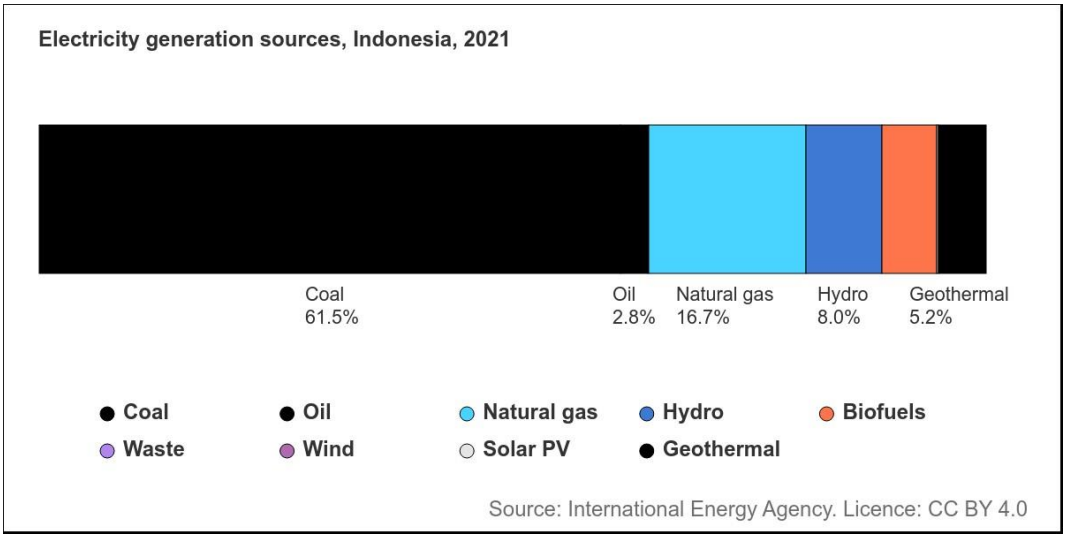

Figure 2.7: Electricity generation sources (IEA, n.d.)

Figure 2.8 is zooming in on the 13,4% share of renewables in the electricity generation mix of Indonesia in 2021. Within this mix of renewable electricity generation, we can see that it is mainly based on hydro and geothermal, whereas wind only has a 1,1% share, and solar PV even less with around 0,5% (IEA, n.d.).

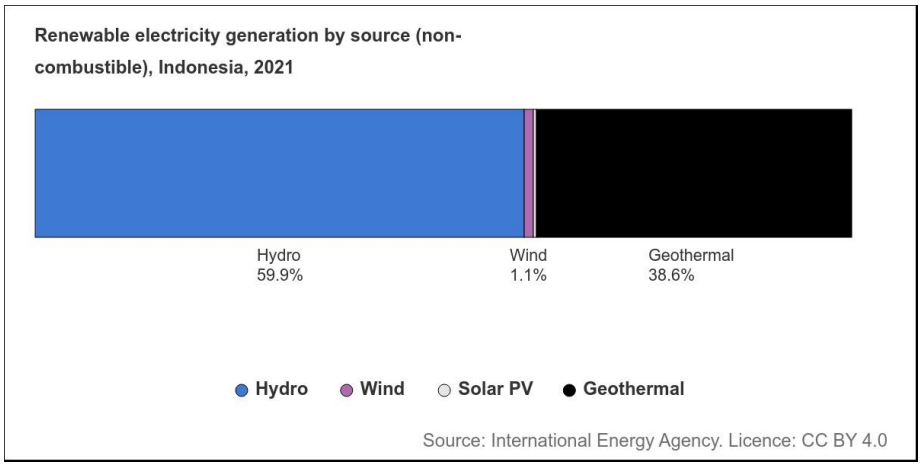

Figure 2.8: Division of renewable electricity generation by source (IEA, n.d.)

In addition, the Indonesian government is pushing the transition in transport to electric vehicles, which is mentioned as an important part of reaching it's net zero goals (IEA, 2022). Both are mentioned before as 2 of the 3 main levers that can provide around 80% of emissions reduction. It is not only moving the current electricity generation towards renewable generation, but also adding more electricity demand by electric cars for example. Also the growing economy will create an increase in electricity demand, for example by the addition of huge quantities of energy consuming appliances, machines, factories, and infrastructure (IEA, 2022). This economic growth is for example also creating an expected addition of 22 million air conditioners by 2030 (IEA, 2022). Since next to all the new and extra buildings, the economic growth makes that one-in-three households are expected to be able to have an air conditioning, whereas now this number is one-in-ten households (IEA, 2022). Electrification is expected but electrification does not necessarily reduce emissions if it does not go hand-in-hand with the decarbonization of the electricity generation sources.

In the net zero emissions scenario target, solar PV and wind have a large role to play and should reach the installed capacity of more than 25 GW in the power mix by 2030 (IEA, 2022). Whereas now these two account for less than 1% in the power mix (IEA, 2022). The National Energy Plan (RUEN) had the goal of 8,3 GW of solar and wind to come online by 2025. Indonesia is thus not on track to meet these targets (Burke et al., 2019).

One of the renewable energy sources with a high potential of contributing to the needed electricity generation in Indonesia is wind energy. Langer et al. (2021) show that there is a high potential for wind power. They mention that theoretical and technical potentials of onshore wind power are 113,5 GW and 30,8 GW with and 60,6 GW and 18,1 GW without forest and conservation areas. The latter technical potential of 18,1 GW would cover 22% of Indonesia's electricity demand in 2018, but they mention this number ''might be considered too conservative''. This consideration is explained because restrictions for areas as forest and conservation are not clear, the assumed capacity densities might be too pessimistic, and the omission of offshore wind in some areas would increase the onshore wind potentials. This is confirmed by more recent research from Langer et al. (2023), in which they argue that onshore wind in Indonesia can cover more than 50% of the 2030 electricity demand in the country. The potential of wind power is also mentioned by different institutions. For onshore wind the Ministry of Energy and Mineral Resources (2023) of Indonesia mentions a potential of 60,4 GW, the International Renewable Energy Agency, known as IRENA, mentions a potential of 19,6 GW (IRENA, 2022), the International Energy Agency (IEA) mentions the potential of onshore wind to be 500 GW (IEA, 2022), the Institute for Essential Services Reform (IESR) mention the potential to be 105,04 GW (IESR, 2021).

The different potentials are described in Table 2.3. We see that the potentials have a significant difference per source but one key-message that can be gained from all, is that Indonesia is currently far away from reaching any of these potential with an installed capacity of 154 MW (IRENA, 2022). Wind energy has only a 1,1% share in the renewable electricity generation in Indonesia (Figure 2.8; IEA, n.d.) and a lot can thus be gained.

Institution	Onshore wind potential (in GW)	Source
Ministry of Energy and Mineral Resources	60,40	(MEMR, 2023)
International Renewable Energy Agency	19,60	(IRENA,2022)
International Energy Agency	500,00	(IEA, 2022)
Institute for Essential Services Reform	105,04	(IESR, 2021)

Table 2.3: Potential of onshore wind energy by different institutions

One of the main challenges of this energy transition is known to be the demand of space for certain renewable energy sources. For example, gas fired electricity stations can be constructed in a certain area and have enough space on that plot to generate a big amount of electricity, whereas renewable energy technologies as solar PV and wind turbines take up more space for the same amount of electricity generation. Van Zalk & Behrens (2013) show that renewable energy systems require a greater surface area than non-renewable energy systems. They mention that across a large heterogenous group of studies, some implications became clear. First, renewable energy systems differ greatly from non-renewable energy systems in power density. Secondly, increase of renewable energy will increase land-use. The main take-away from the research is that renewable energy sources are more space demanding than non-renewable sources. The rise of renewable energy comes with a spatial planning issues since it is creating conflicts with for example agriculture, protection of nature/biodiversity, and many other land use functions. The report of the Just Energy Transition Partnership Indonesia also mentions this, as it argues that the realization of the potential of onshore wind in Indonesia is depending on the availability of land for the construction given the fact that there would be competition for land to be used (JETP, 2023). In addition, the greater required physical space for renewable energy sources also comes with an increase in visibility. With for example wind turbines in the sky and solar PV on large ground areas.

The rise in demand of space and visibility result in a situation where more stakeholders and communities are affected by renewable energy sources. The competition over land use and different land functions creates conflicts. This results in opposition towards certain land uses, for example towards renewable energy. One of the main challenges is the opposition of local stakeholders who do not like the idea of for example wind turbines because it might influence them directly and they feel negative consequences from it. This component of opposition in renewable energy projects has become a crucial factor in the energy transition.

2.4 Opposition and acceptance in wind energy planning

In the current energy transition, we see opposition against many renewable energy projects. Especially opposition in wind energy projects can be commonly seen. Examples of these protests against construction of wind turbines can be found in the news and are shown in Figure 2.9. Baxter et al. (2020) mention that while opposition and acceptance operates at varies scales, especially local opposition has been effective and widespread enough to influence national policies on energy and planning around the world. Therefor, social support should be considered as a decisive factor in windfarm projects.

Figure 2.9: Examples from (news) sites of different protest against construction of wind turbines by local communities (sources, from left to right: stopthesethings.com; dairynewsaustralia.com; globalnews.ca; tubantia.nl)

Gaining acceptance in renewable energy project has become an important topic. Some could assume that gaining acceptance is not too difficult since there is many research showing that in general, there is a high level of support for the move towards renewable energies and renewable energy technologies (Gareiou et al., 2021; Segreto et al., 2020; Sütterlin & Siegrist, 2017; Wüstenhagen et al., 2007). Zooming in on specifically wind, many research shows that, in general, the technology of wind energy itself can count on social acceptance and support. However, at the same time wind energy is often found to be rejected locally by communities living around the wind energy development areas (Langer et al., 2016; Klok et al., 2023). Despite people's support for a certain renewable energy technology, the majority do not want it close to their residence (Gareiou, 2021; Sütterlin & Siegrist, 2017). Hall et al. (2013) describe that on a wider scale there are positive gains from windfarm developments, but the negative impacts that create opposition and conflict can especially be found on the local scale.

For this research, it is important to define the concept of 'local community' and to clarify what is considered to be a local community. Baxter et al. (2020) explain a distinction between two kind of local communities. Firstly, they mention the 'community of place', the community that are experiencing negative impacts of the windfarms as for example loss of their view or noise nuisance. Secondly, they mention the 'community of interest', which can be described as a group which is not directly affected by the negative externalities but is still interested in the projects because of for example investment reasons. The local opposition as mentioned above by for example Hall et al. (2013) refers to the communities directly impacted by the windfarm developments, so the 'communities of place'. Wüstenhagen et al. (2007) describe social acceptance of renewable energy innovation in a triangle. The triangle consists out of socio-political acceptance (for example of technologies and policy and by public or policy makers), market acceptance (for example consumers and investors), and community acceptance (for example local communities directly affected by the implementation). This is argued to be close to the 'community of place' as mentioned by Baxter et al. (2020). In this research, 'local community' refers to the community as described in the triangle (Wüstenhagen et al., 2017) and the 'community of place' as described by Baxter et al. (2020). Both are about the communities that are directly affected. Different sources refer to these directly affected local communities as the communities that live within 2 km of a turbine (Bauwens & Devine-Wright, 2018; Walker & Baxter, 2017a; Walker & Baxter 2017b).

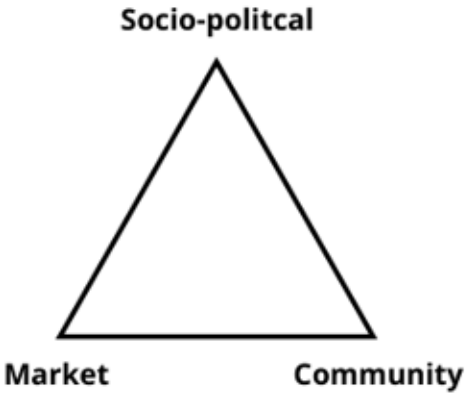

Figure 2.10: The social acceptance triangle as described by Wüstenhagen et al. (2007)

Local opposition has long been explained with the NIMBY-concept. The NIMBY-concept stands for ''Not In My Backyard'' and aims to describe people to be in favour of a particular facility, but just not wanting it near them (Haggett, 2011). But over the last years it has been widely discussed by a lot of academics

that this concept is too simplistic and inaccurate (Bidwell, 2016; Devine-Wright, 2005; Haggett, 2011; Pellegrini-Masini, 2020; Wolsink, 2006). There are many examples of wind energy developments facing pushbacks from local communities, which in literature is now increasingly explained by two factors. Namely, restrictions of local powers and about disagreement on the equitable distribution of outcomes of these projects (Walker & Baxter, 2017a). The origin of these two factors can be explained by looking at an article published in 2008.

In 2008, Gordon Walker and Patrick Devine-Wright published a short article called "Community renewable energy: What should it mean?'' (Walker & Devine-Wright, 2008). This article is considered to be ground breaking in the academic field and mentioned to be a key way-marker. To underpin the statement of this article being a way-marker, the number of citations is checked. The article has been cited 1279 times on Google Scholar and is still widely recognized and used in research until today. Of these citations on Google Scholar, 138 are articles published in 2023, and at the moment of writing, the article is cited 48 times in 2024. This underpins that it is still seen as relevant until today. Walker & Devine-Wright (2008) discuss the distinction between community renewable energy projects compared to other renewable energy projects. It makes a distinction between two dimensions: the process, and the outcome. The process dimension is about who is developing the project, who is involved and who has influence. The outcome dimension is about how the outcomes of a project are distributed and who benefits most from it, in economic or social terms. These process and outcome dimensions are placed in a figure (Figure 2.11). An energy project which is run by a distant and closed company, not involving local people and neither creating benefits for them, then both process and outcome would not be locally focussed and the project would be placed in the bottom left corner of the figure. And however in their paper, the goal is to understand what makes a project a ''community'' project, research argues that it is directly linked to local acceptance. Baxter et al. (2020) mention that there is little doubt that community-based wind energy development is associated with a relatively higher level of local support. They mention that when the process is 'open and participatory' and thus on the top of the figure, it creates acceptance. At the same time they mention that when the outcome is 'local and collective', it also creates acceptance. These two assumptions would indicate that when a project is 'open and participatory' and 'local and collective', it could be recognized as being on the top right corner of the figure. Therefore, a project which could be placed on the top right of the figure arguably creates the most acceptance. Baxter et al. (2020) explain that under the conceptualization of Walker & Devine-Wright, we can assume that projects in the upper right corner of the figure are more locally acceptable. Walker & Devine-Wright (2008) talk about the top right corner being ''for'' (outcome) and 'by'' (process) local people. In the article of Baxter et al. (2020), where Walker & Devine-Wright are both co-authors, they mention that these ''by'' and ''for'' refer to distributional justice and procedural justice. Outcome is argued to be related to distributional justice, whereas process is mentioned to be related to procedural justice.

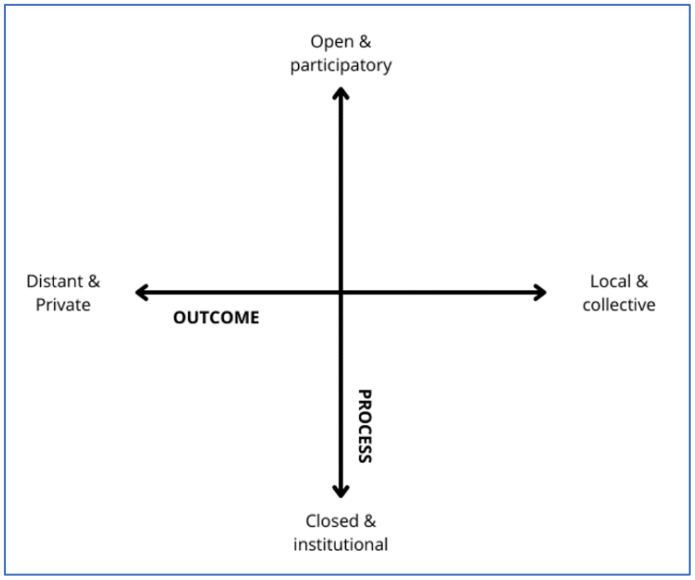

Figure 2.11: The process and outcome dimensions placed in one figure (Walker & Devine-Wright, 2008)

2.5 Justice in renewable (wind) energy planning

Distributional justice and procedural justice are both concepts within the broader concept of energy justice. The topic of energy justice is broad and involves many topics. Jenkins et al. (2016) describe energy justice research to seek to apply justice principles to energy policy, energy production and systems, energy consumption, energy activism, energy security, the energy trilemma, political economy of energy, and climate change. Sovacool & Dworkin (2015) describe that energy justice gives us a way to better assess and resolve energy related dilemmas. They define an ''energy-just world'' as ''one that equitably shares both the benefits and burdens involved in the production and consumption of energy services, as well as one that is fair in how it treats people and communities in energy decision-making''. Jenkins et al. (2021) show that there are a lot of different theoretical approaches undertaken within energy justice literature, but distribution- and procedural justice are the two most commonly used. With distributional justice found in at least 52% of the reviewed literature, and procedural justice in at least 46% (Jenkins et al., 2021). Distributional justice and procedural justice are also linked to the process-outcome figure as discussed before (Figure 2.11). In addition, as discussed before a lot of opposition can be found in windfarm planning specifically. Frate et al. (2019) mention that distributional justice and procedural justice can be considered as important topics in creating acceptance in windfarm planning. From the literature, the two perspectives are discussed to be important in windfarm acceptance. Both perspectives will be described more in depth below.

2.6 Distributional justice

As explained before, the perspective of distributional justice can be linked to the outcome of the project. Which is positioned on the horizontal axis in the outcome-process figure (Figure 2.11). Distributional justice can be described as the justice regarding how costs and benefits are shared (Hall et al., 2013). Local acceptance is affected by whether the local community perceives there is a fair distribution of benefits. If the local community considers the distribution of benefits to be unfair, it can even ''damage a community's social well-being'' (Hall et al., 2013). In addition, Frate et al. (2019) argue that opposition from local communities originates from the perception that they are not benefitting from windfarms. For local support in windfarm development it is thus important to have a fair distribution of benefits. Distributional justice can be categorized into two perspectives; economic benefits and social benefits (Walker & Devine-Wright, 2008).

Looking at economic benefits, Frate et al. (2019) mention the perceived fairness of the introduction and distribution of benefits such as tax revenues and individualized or shared lease payments. Furthermore, Hall et al. (2013) found that local communities criticize the fact that commercial windfarms only provide direct benefits to the turbine hosts, rather than nearby neighbours, which created a situation that host people are in favour of windfarm developments, while the adjoining properties will be affected by the impacts without having the benefits. Different models are created to respond to these kind of issues related to perceived unfair distribution of economic benefits. Members of local communities came up with the model of a compensation for all people within a certain radius who are affected by sound and visual impact. Langer et al. (2016) argue in their research that the more the citizens are financially involved, so if they get financial benefits, the more they will accept the project. On the other hand, Hall et al. (2013) argue that communities are more expecting ways of compensation that provide long-term revenues. These long term revenues could be more social benefits.

Social benefits are for example compensation in terms of contributions to local activities, infrastructure investments, funding to local government for public works or public events, or other benefits that create broader economic stimulation in their community (Hall et al., 2013). These examples are also related to investments and could be seen as economic benefits, however the difference is that these

are not direct financial compensations but indirect through investments that give social benefits. In addition, Anchustegui (2020) mention the example of payments to funds and scholarships.

Another option for distributing benefits to local communities is by involving them in the profits or allowing them to have a right of co-ownership of the facility (Hall et al., 2013). Sharing in the profits of windfarms is possible windfarms that are funded by investors, or which are based on creating certain profits (on the long term), which is the case in most countries. For example by giving dividends or shares to local communities from the power sales, so they (partly) own the projects. Baxter et al. (2020) describe different ways of this community ownership, but their research also shows that a community ownership model can create perceived unjust distribution of benefits. For example the question of which communities are involved, as well as in what way and to what extent they have ownership.

There are thus many different directions and options in creating a just distribution of benefits. Anchustegui (2020) argues that community benefits play a key role when it comes to creating acceptance of renewable energy projects, and the many models and compensation methods appear to agree on this. But there can also be found arguments that giving benefits to communities is creating opposition since some people will see it as bribing, 'blood money', or a way to 'buy' planning permission (Anchustegui, 2020; Walker & Baxter, 2017a). To prevent that from happening, windfarm planners and developers need to have a close look at what the local communities are expecting.

2.7 Procedural justice

Procedural justice can be linked to 'process', so the vertical axis of the outcome-process figure (Figure 2.11). As described before, studies argue that when this process is open & participatory and there is a more direct and substantial involvement of local people in a project, it contributes to a higher degree of local community acceptance (Baxter et al. 2020; Walker & Devine-Wright, 2008). Bell & Rowe (2012) describe procedural justice as ''fairness in the process of decision-making and policy-making''. More recently, Van der Horst et al. (2021) refer to procedural justice as transparency, legitimacy and fairness in decision making processes, necessitating inclusive and appropriate stakeholder involvement. Frate et al. (2019) show that many authors agree on the statement that involving local communities in the decision making process is a means to improve wind power acceptance. Hall et al. (2013) argue that there should be satisfactory engagement involving open, participatory decision making to create local acceptance. They also advocate for some main principles which they argue to be the 'realms of procedural justice', especially ''honesty and transparency'', and ''full and unbiased information''. Frate et al. (2019) argue that procedural justice is accomplished or attained by sharing of information, participation in decisions making opportunities, the ability to influence outcomes, and relations with project developers. Local communities have a strong desire to be involved, but it should be in the right stage of the project (Hall et al.,2013). Consultation after a plan is already made, is a trigger for opposition (Wolsink, 2007), while involving them before making plans will make affected people be heard and result in a greater change of acceptance, because it is assumed to be legitimate and just.

2.8 Distributional justice vs. Procedural justice

Hall et al. (2013) mention that concerns with regard to physical and measurable aspects offer obvious responses for improvement, but social issues represented through process-oriented and non-specific concerns are creating more challenging problems with regard to social acceptance. This statement about 'process-oriented' concerns could be interpreted as the procedural justice perspective which then is argued to be a perspective which is harder to measure. The term ''sufficient involvement'' is for example hard to physically measure. On the other hand, it could then be argued that getting benefits (distributional justice) would be an aspect which is easier to measure. Distribution of benefits can for example be linked to physical measurable aspects, as (certain amounts of) money. This implies that

distributional justice is less challenging to reach than procedural justice. However, both distributional justice and procedural justice perspectives are about perceptions. Both perspectives come with certain factors (as discussed in 2.6 and 2.7) which are arguably leading to social acceptance of windfarms. It can be different for every person within a local community what they perceive to give justice. This research therefore does not agree with the above, mentioning that creating distributional benefits would be less challenging because the factors would have physical measurable aspects. In both perspectives, the perception of individuals plays an important role. Therefore, no distinction is made between how challenging a certain perspective is compared to the other.

2.9 Global North to Global South

The concepts discussed above about distributional justice and procedural justice, are concepts of which a lot of research can be found. But it is striking that most research with regard to these topics, is done in developed countries, the so-called 'Global North'. Frate et al. (2019) mention this by saying that especially in the 'Global South', a lack of research with regard to distributional justice and procedural justice in windfarm development projects can be seen. This is also argued by Van der Horst et al. (2021) who mention that both research into energy justice as well as into social acceptance is originated in the Global North, and research in the Global South is lacking.

For this research, it is important to touch upon the concepts of 'Global North' and 'Global South'. The discussion of what is the 'Global North' and what is the 'Global South' can be considered as a sensitive topic and a study area by itself. Many different definitions can be found. In the academic world there is a lot of disagreement on the meaning of the concepts 'Global North' and 'Global South'. Definition of these concepts is touchy subject and involving too much in the discourse on these topics is not the aim of this study. However, it is important to position this research in the discussion. A simplistic definition of the concepts is given, without going too much in depth and mixing in the discourse. This research therefore defines the Global North to be the ''developed economies'' and the Global South the be the ''developing economies''. Trying to give an as much as possible unbiased division, a classification from the international organisation of the United Nations is chosen. The United Nations Conference on Trade and Development (UNCTAD) divided countries into the two categories. They divide the two categories of ''developed economies'' and ''developing economies'', subsequently linked to ''Global North'' and ''Global South'' (UNCTAD, 2018). The division is shown in Figure 2.12 (UNCTAD, 2022).

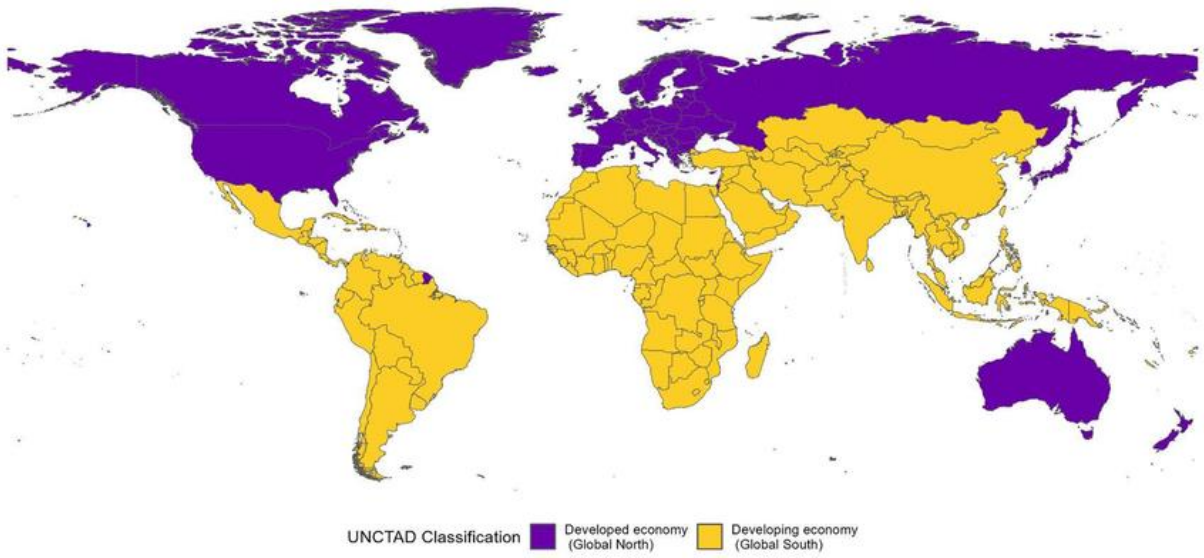

Figure 2.12: The UNCTAD classification of developed- and developing economies (data: UNCTAD, 2022; figure showed by Buil-Gil et al., 2024)

Looking at literature about distributional justice and procedural justice, this research argues in favour of the comments that the research in the Global South is lacking. The topic of public opposition and acceptance of windfarms is researched on a large scale but mostly in European and North American jurisdictions (Baxter et al., 2020; Walker & Baxter, 2017a). Another reason for this could be that for example in Indonesia there are only 2 windfarms. In addition, Devine-Wright (2005) mentions that public perception research on wind energy is mainly undertaken in developed countries such as USA, Canada, UK, Denmark, Germany, Sweden, and The Netherlands. Furthermore, we find research on social acceptance of windfarms in Australia (f.e. Hall et al., 2013; Colvin et al., 2019), but from a review it becomes clear that research on the topic in the Global South context is lacking. More recent research into social acceptance in windfarm planning shows the same pattern of the research taking place in the Global North. Bessette & Crawford (2022) show an analysis of wind acceptance research, analysing 114 case in United States and Canada, Jenkins et al. (2016) use examples from Germany, Scotland, Ireland, North America, and Norway, Klok et al. (2023) study cases in The Netherlands, Walker & Baxter (2017a; 2017b) study cases in Canada, and more examples can be given. But research in Global South cases related to social acceptance and justice in wind energy projects is missing.

2.10 Conceptual model

From literature reviewed in this chapter, we can see that there is a global need and ambition to move to renewable energy. With global frameworks as for example the Paris Agreement, we see that regions, as for example the ASEAN, and countries all around the world are setting renewable energy targets. Indonesia is the highest emitter of the ASEAN and has set ambitious renewable energy goals. However, the country is behind on reaching these targets. Zooming in on this specific case of Indonesia we see that they have a high potential for different renewable energy sources, with wind energy being one of them. To be able to make use of this high potential of wind energy, social acceptance became an important topic over the recent years. Local opposition against wind energy projects can currently be found in many places and is having big impacts on the realisation of windfarms. And despite the many research on local acceptance on especially distributional justice (outcome) and procedural justice (process), hardly any of them involves, or is based on, Global South research, and thus also hardly any on Indonesia. It is relevant and important to do research on social acceptance in wind energy projects in Indonesia, to contribute to the field of wind energy developments in Indonesia and in that way to help in reaching their potential and their renewable energy goals. In this chapter, the concepts of

distributional justice and procedural justice are discussed. This resulted in certain assumptions. But these assumptions are thus mainly based on Global North research. Since in for example Indonesia, which is considered to be Global South, wind energy can contribute to reaching their renewable energy goals, it is important to see whether these distributional justice and procedural justice factors are equally leading to acceptance. A conceptual model has been created out of the different factors discussed in this chapter. The aim of this research is to contribute to answering the question whether this conceptual model can be used as a tool to do research in a Global South case, as for example Indonesia. At the moment of writing, there are only two windfarms in Indonesia and therefore generalising results for a whole country or even for the Global South does not seem suitable. However, this research can be seen as a starting point for further research in Indonesian or Global South cases and can contribute to the academic field of distributional justice and procedural justice in windfarm planning in a Global South setting.

General assumptions on the topic are that people, in general, support a move to renewable energy and wind energy as a renewable energy source, but often do not support having them close to their residence. Looking at the assumptions related to distributional justice, from the literature it can be expected that there will be more local acceptance in wind energy projects;

- if people are benefitting from the windfarm;
- if people find the distribution of benefits fair;
- if people get financial benefits;
- if people get social benefits.

From a procedural justice perspective, more local support can be expected;

- if people believe to be sufficiently involved during the whole process;
- if people believe to be sufficiently involved during the process before the plans were made;
- if there is honest and transparent information sharing;
- if there is full and unbiased information;
- if people get opportunities to participate in decision making;
- if people believe that planners/developers sufficiently listened and incorporated the local community opinion;
- if people have a good relationship with the company/developers.

These assumptions are put in a conceptual model below (Figure 2.13). This conceptual model summarises the framework and is the basis for the empirical part of this research.

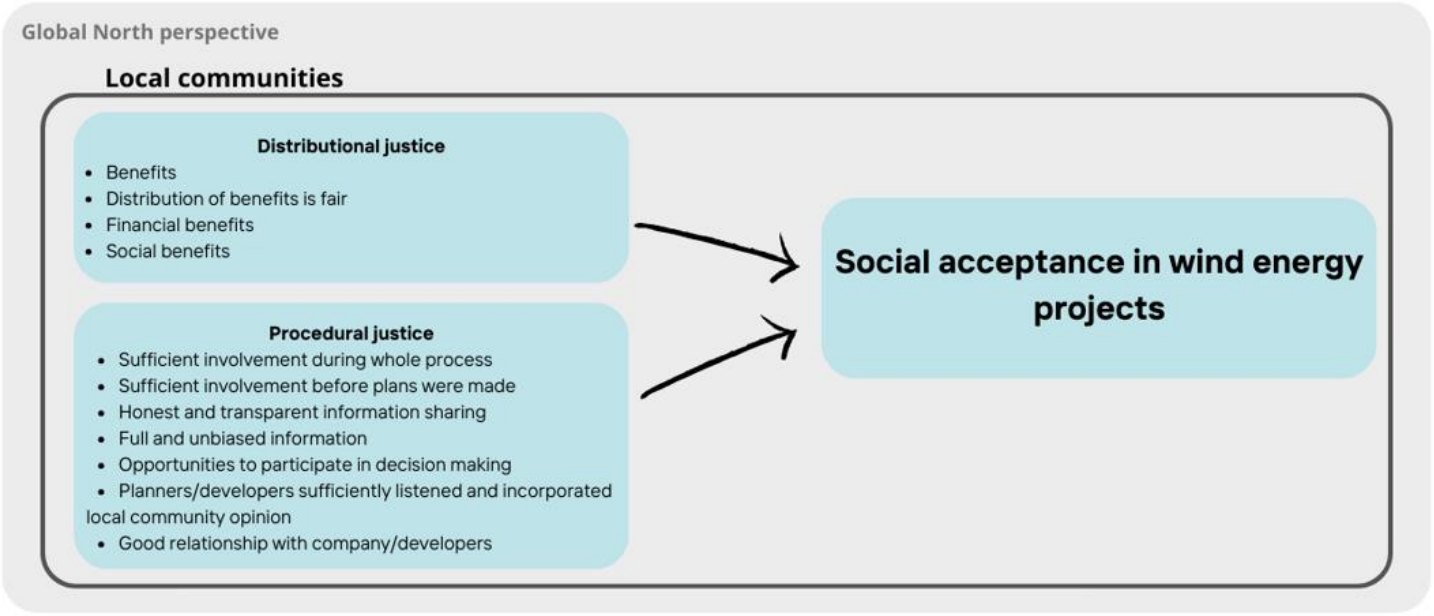

Figure 2.13: Conceptual model showing the factors of distributional justice and procedural justice which are expected to lead to a higher degree of social acceptance in wind energy projects by local communities (based on Global North research)

3. Methodology

This chapter is discussing the methods used in this research. It goes deeper into how the conceptual model, as described in chapter 2, is used as a tool to do research in two windfarms in Indonesia. This chapter explains which methods are used and why, what data is collected, and how it is analysed. First, it discusses the research strategy and different hypotheses linked to the assumptions from the conceptual modal. Second, the methods of data collection are explained more in-depth. After that, it explains how the collected data is stored and how it is analysed. Lastly, it will go into the ethical considerations of the research.

3.1 Research strategy

For answering the research question about what influences local opposition/acceptance in windfarms in Indonesia and what lessons can be learned for social acceptance in future windfarm developments, empirical research is done in Indonesia. The literature review in chapter two resulted in a conceptual model about social acceptance from distributional justice and procedural justice perspectives. This conceptual model includes different assumptions about distributional justice and procedural justice influencing social acceptance in windfarm developments. From the assumptions in the model, different hypotheses are created. By testing the hypotheses, the goal is to find whether the conceptual model can be used as a tool for research in Indonesia. The hypotheses resulting from the conceptual model are shown below in Table 3.1 and Table 3.2 below. Reviewing both the distributional justice header and the procedural justice header in Figure 2.13 from top to bottom, the following hypotheses have been created:

Hypotheses: distributional justice perspective
1. If people are benefitting from the windfarm, it will result in support
2. If people find the distribution of benefits to be fair, it will result in support
3. If people get financial benefits, it will result in support
4. If people get social benefits, it will result in support

Table 3.1 Hypotheses created from the assumptions in the conceptual model related to distributional justice

Hypotheses: procedural justice perspectives
1. If there is sufficient involvement during the whole process, it will lead to support
2. If there is sufficient involvement during the time before the plans were made, it will lead to support
3. If there is honest and transparent information sharing, it will lead to support
4. If there is full and unbiased information, it will lead to support
5. If people get opportunities to participate in decision making, it will lead to support
6. If people believe that planners/developers sufficiently listened and incorporated the local community opinion, it will lead to support
7. If people have a good relationship with the company/developers, it will lead to support

Table 3.2 Hypotheses created from the assumptions in the conceptual model related to procedural justice

For being able to answer the question whether the hypotheses can be accepted or rejected in the study, quantitative data is collected and tested for statistic correlations. To substantiate the results from the hypotheses testing, qualitative data is collected. Both quantitative and qualitative data are also used to find possible additional theoretical insights. Furthermore, fieldwork is conducted to get to know the area better and to facilitate data collection. To answer the research questions, a set of three methods

has thus been chosen: fieldwork, surveys, and interviews. The decision for and description of the different methods , as well as how they will be used to answer the research question, will be elaborated on in the next chapter on data collection methods (chapter 3.2).

For being able to answer the question about local acceptance in Indonesian windfarm developments, the research is conducted among local communities around windfarms in Indonesia. At the moment of writing there are two windfarms in Indonesia. To give an as complete view as possible, both windfarms in Indonesia are selected for the study. As discussed in chapter 2, local communities around these windfarms are considered to live within a 2 kilometres range of the wind turbines. Therefore data collection is done in a range of 2 kilometres around both two windfarms in Indonesia. The windfarms itself will be discussed more in depth in chapter 4.

3.2 Data collection methods

This chapter will dive deeper into the different data collection methods used.

Chapter 2 consists out of a literature review. The chapter discusses the importance of social acceptance in windfarm development. As shown in the conceptual model, distributional justice and procedural justice are important for creating social acceptance in windfarm development, but research is Global North oriented. To reach the high potential of wind energy in Indonesia, social acceptance can be seen as an important factor. It is important to find out whether the conceptual framework can also be used as an instrument for conducting research in an Indonesian perspective. Since research in Global South is lacking, there are not many research cases that could give a good view of the situation in Indonesia. Therefore, data is collected in Indonesia to be able test the hypotheses that resulted from the conceptual model.

The literature in the review is mostly retrieved from searching on internet, and especially using Google Scholar, with terms and combinations of words as (social) acceptance, renewable energy, wind energy, local acceptance, local opposition, distributional justice, procedural justice, and energy justice. Also from the articles that are found and read, snowballing is done which lead to discovery of more relevant articles.

Since research in the Global South is lacking and data that can be used for answering the hypotheses is not yet available in an Indonesian context, primary data is collected. Primary data collection is described as the data that are collected for the first time, and are original and fresh (Mazhar et al., 2021). Driscoll (2011) describes three main research methods for primary data; observation; interviews; and surveys. Looking at the assumptions we want to test in our cases, observation does not seem to be a suitable data collection method. Both interviews and surveys seem to be more appropriate options. Driscoll (2011) mentions that surveys can best be used if you ‘’want to learn about a general trend in people’s opinions, experiences, and behaviour’’. Surveys are mostly used to get a relatively small amount of information from a wider public with the hope of making a general claim. Surveys are often in the form of a short questionnaire and can aim to collect quantitative data as well as qualitative data. Interviews are best used when you want to learn more detailed information about specific topics by a smaller amount of people, mostly experts (Driscoll, 2011). Interviews can mostly be considered as a method to collect qualitative data.

Surveys

This study aims to find out whether the hypotheses can be accepted or rejected in the context of the two windfarms in Indonesia. Linked to what was mentioned in the last paragraph by Driscoll (2011), in this research, surveys appear to be suitable to get a relatively small amount of information about the windfarms from many people from the local communities around them. Therefore, surveys are the

main data collection method. Small questionnaires, consisting out of 23 questions which in total averagely only takes some minutes to answer, are done to collect the data.

In aiming to give as representative as possible results from the community, the data collection method is kept simple so many people can fill it in, to increase the validity of the data collection, and people are willing to fill it in. For example to keep it accessible for residents with different (educational) backgrounds. The goal of aiming for this accessibility for all residents, by keeping the survey simple, is to keep the barrier to participate low and in this way to decrease the chance of people refusing to participate. This contributes to the aim of creating a sample that provides a view of the population that is as representative as possible.. This increases the reliability of the outcome. The population is the local communities within 2 kilometres of the two windfarms in Indonesia.

Figure 3.1: Photo impression of conducting the research (these participants agreed to pictures being taken and used)

A Likert-scale is one of the most used scales in questionnaires and is considered to be a good option when try to keep things simple and straightforward (Johns, 2010). Since the aim is to keep the survey simple, using the Likert-scale seems well-suited for this study. The questions for the questionnaires can also be referred to as ''items''. There are multiple scales of doing the Likert data collection: it can be for example 5 or 7 points. For this research, it is decided to do a 5 point Likert-scale to keep it simplified. The middle of the scale, so value ''3'', is neutral. Knowing from cultural insides, is that sometimes topics are sensitive to talk about or people do not want to give any opinion on it. Therefore, an extra option is added to choose if people specifically do not want to show an opinion about a topic or do not want to answer: option 0. This is called option 0 to make sure that option 3 'neutral' is still in the middle of the scale. This option 0 makes sure that respondents feel safe and do not feel pressured to answer.

The final scale looks as the follows:

0	I do not want to give an opinion/I do not want to talk about it
1	Strongly disagree
2	Disagree
3	Neutral
4	Agree
5	Strongly agree

Table 3.3: The scale as used in the surveys

To test the hypotheses (Table 3.1 and Table 3.2), the questions for the survey are directly related to them. The surveys can be found in Appendix A (Indonesian language) and Appendix B (English language). It is important to understand the link from the hypotheses to the actual survey questions. Therefore, the tables below is linking the hypotheses to the different survey items related to them. Table 3.4 is about the hypotheses related to distributional justice influencing social acceptance,

whereas Table 3.5 is related to the hypotheses about procedural justice influencing social acceptance. The tables show the hypotheses, with the linked survey items below them. The goal of collecting the quantitative data with these items is to be able test the hypotheses. The data is analysed with SPSS. Later in this chapter, this analysis will be discussed.

Hypothesis 1: *If people are benefitting from the windfarm, it will result in support*
B1: I get benefits from the windfarms
A3: I support the windfarm in my own area
Hypothesis 2: *If people find the distribution of benefits to be fair, it will result in support*
B2: I believe the distribution of benefits between the developers/company and the local community is fair
A3: I support the windfarm in my own area
Hypothesis 3: *If people get financial benefits, it will result in support*
B3: I get financial benefits from the windfarm
A3: I support the windfarm in my own area
Hypothesis 4: *If people get social benefits, it will result in support*
B4: I get social benefits from the windfarm (for example education or investments in the area)
A3: I support the windfarm in my own area

Table 3.4 Linking hypotheses related to distributional justice to survey questions (survey in Appendix A and Appendix B)

Hypothesis 1: *If there is sufficient involvement during the whole process, it will lead to support*
C1: I have been sufficiently involved in the whole planning/development process
A3: I support the windfarm in my own area
Hypothesis 2: *If there is sufficient involvement during the time before the plans were made, it will lead to support*
C2: I have been sufficiently involved before plans were made
A3: I support the windfarm in my own area
Hypothesis 3: *If there is honest and transparent information sharing, it will lead to support*
C3: During the planning process, there has been honest and transparent information sharing from the developers
A3: I support the windfarm in my own area
Hypothesis 4: *If there is full and unbiased information, it will lead to support*
C4: During the planning process, I got full and unbiased information about the plan
A3: I support the windfarm in my own area
Hypothesis 5: *If people get opportunities to participate in decision making, it will lead to support*
C5: I had the opportunity to participate in decision making of the plan
A3: I support the windfarm in my own area
Hypothesis 6: *If people believe that planners/developers sufficiently listened and incorporated the local community opinion, it will lead to support*
C6: I believe the planners/ developers sufficiently listened to, and incorporated the opinion of the local community in the plan
A3: I support the windfarm in my own area
Hypothesis 7: *If people have a good relationship with the company/developers, it will lead to support*
C7: I have a good relationship with the company/developers
A3: I support the windfarm in my own area

Table 3.5 Linking hypotheses related to procedural justice to survey questions (survey in Appendix A and Appendix B)

In addition to the items in the survey that are linked to the hypotheses, the survey also includes questions that are more general or that could result in any additional findings. Besides the quantitative items, the survey involves two open items as well. Namely, the question whether they experience any negative externalities of the windfarm and an option to add any additional comments in the end. Both are qualitative and they aim to, possibly, underpin the results from the hypotheses testing and gain any additional insights.

Interviews

The research also aims to find out the reasoning behind the acceptance or opposition from distributional justice and procedural justice perspectives. In addition to testing the hypotheses, in-depth interviews are conducted with multiple representatives who have been or are currently involved in the windfarm developments. This is done to collect data that can help explain certain results from the hypotheses testing. Examples of community representatives that are interviewed are head of the village, head of the province, and head of the provincial planning agency. In addition, representatives of the responsible companies are interviewed to give a broader overview of how the local community is taken into account and involved. This can be people that are currently in their function, as well as people that were having a relevant function in times of planning and construction. The data collected with the interviews is qualitative data. Next to explain results from the hypotheses testing, the data is also used to find any additional insights.

Fieldwork

In addition to the data collection methods of doing surveys and interviews, fieldwork is done. In this study, fieldwork is mainly used to facilitate the data collection methods of doing surveys and interviews. Before doing the surveys, fieldwork is done to get to know the area, the places where to do the surveys, and to get contacts for doing the interviews. This also included for example having informal meetings with head of the villages, or other important public figures, to get their support in doing the research. The fieldwork is used to pave the way for doing the surveys and the interviews.

Figure 3.2: Informal meetings to get to know the research area (from left to right: the author, government representative, and the translator)

This study is thus using three different data collection methods. Quantitative data is used to test the hypotheses, whereas qualitative data is used to, where possible, give underpinning argumentation and find any additional insights. In this way this study aims to find whether the conceptual model can be used as a tool to do research in social acceptance in windfarms in Indonesia/the Global South. A total of 54 surveys have been completed, as well as a total of 11 interviews.

3.3 Data storage

The questionnaires are printed and filled in on paper. After the collection, the data is processed in SPSS. Furthermore, the paperwork is saved as a backup. The respondents are informed that the information is anonymous. The respondents are informed about this by handing out 'Respondent Forms', which can be found in Appendix C (Indonesian language) and Appendix D (English translation). Because of a culture of building informal relationships in Indonesia, the interviews were sometimes informal and sometimes formal. Taking into consideration the importance of informal relationships and the building of trust, it is mentioned that there would be no transcripts made to make sure that the respondents

feel safe to talk openly. During the interviews, notes are made. The author realises that this decision diminishes the controllability/replicability of the data collection. However, the decision is made because it is expected to contribute to gaining useful information and improving the validity of the information. As will be explained in the ethical discussion in chapter 3.6, a translator was used. The notes are stored on the authors' device, which is password protected.

3.4 Data analysis

To find whether the hypotheses, based on the assumptions in the conceptual model, can be accepted or rejected in the cases of this study, the data is analysed to see whether there are statistic correlations to be found. A correlation test can show whether certain factors (as for example financial benefits) are influencing the acceptance of the windfarm. There will thus be a correlation test between the data from one question in the survey and the data from another question in the survey. The goal is to find out whether the answer to one question, can provide insights into the probability of a certain answer on a different question. As explained before in this chapter, the data is collected on a 5-point Likert-scale. As explained by Jamieson (2004), we consider our scale to be an ordinal level of measurement, because the categories have an order but the intervals between values are not presumed equal. Between ordinal and interval level of measurements, there are different analysing methods. Jamieson (2004) mentions that data from a Likert-scale is often analysed as it is interval data, resulting in a use of parametric test, which he argues cannot be used in analysing ordinal data. Since the data in this research is considered to be ordinal, a non-parametric test is used. A Spearman's rho correlation test is a non-parametric correlation test and therefore in the data analysis of this research, this test will be applied. For a correlation test for interval data, a parametric test as the Pearson correlation could be used. The Spearman's rho correlation test is used to find out whether there are significant correlations found between different items and therefore shows whether the different hypotheses can be accepted or rejected.

Nevertheless, in the academic world, over the years there has been many research and different opinions on whether or not a parametric test could be used for Likert-scale data. For example, a widely cited article by Norman (2010) argues that parametric statistics can be used with Likert-scale data. He argues that the Pearson correlation test would thus also be suitable for this research. Joshi et al. (2015) searched for an explanation of this division in the academic world whether a Likert-scale is considered to be ordinal or interval, and which analysing methods to use (parametric or non-parametric). They argue that to answer this, the question should be about two things: whether the data is equivalent and equidistant. Both sides agree that data from a Likert-scale is equivalent: ''points on a scale are not close enough to consider them equal''. The opinions differ when it comes to equidistant. Is strongly disagree to disagree the same distance as disagree to neutral? An equal distant between them would create the assumption that the data can be considered to be interval data. A widely cited article by Joshi et al. (2015) describe that whether the data from a Likert-scale can be considered as ordinal- or interval data, depends on how the data is used in the analysis. They refer to the questions as items, and they mention that when the goal is to make one overall score for one respondent by combining the results of all items, the data can be considered to be interval data (linked to a parametric test). But when the aim is to analyse single items by all respondents, then it can be considered ordinal (linked to a non-parametric test). This is shown in Figure 3.3. Since the aim of our data is to analyse single items (questions) with results from all respondents, the data is considered to be ordinal and therefore the decision of using a non-parametric test has been made. This thus substantiates the use of the Spearman's rho correlation test.

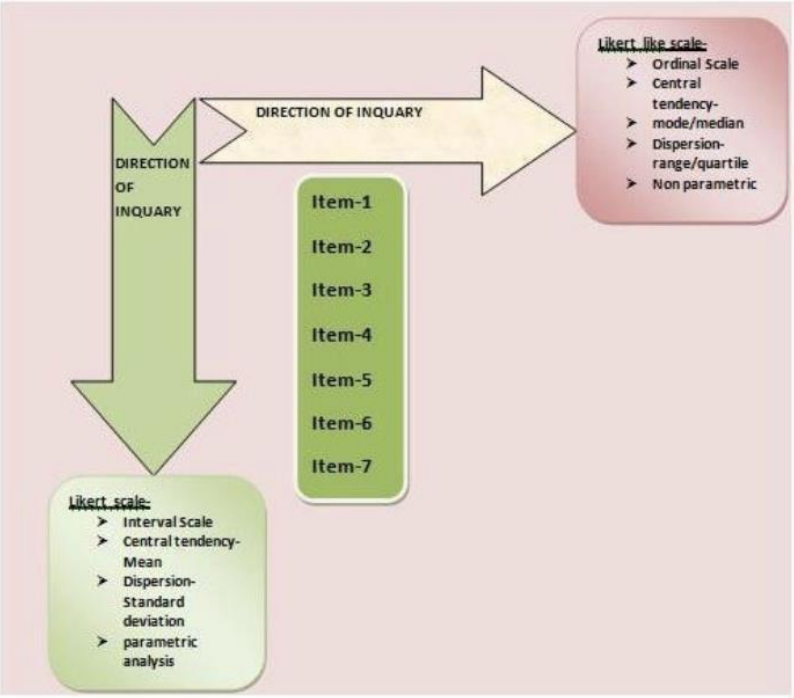

Figure 3.3: Choice of analysis of Likert-scale data as described by Joshi et al. (2015)

The Spearman's rho correlation test tells us about the strength and direction that exist between two variables. The correlation coefficient can show a positive number which means a positive correlation, or a negative number which means a negative correlation. Moreover, the test in SPSS provides a significance level to determine whether the observed correlation is statistically significant. If the significance level (or p-value) is less than 0,05, it can be assumed that a significant correlation is found with a chance of 5% that accepting the hypothesis is wrong. If the significance level (or p-value) is less than 0,01, it can be assumed that the chance is 1% that accepting the hypothesis is wrong. In this research, both p-values are considered to be significant. In addition, the correlation coefficient results from running the test. The Spearman's rho correlation test will be conducted using SPSS software.

3.5 Research approval

It should be noted that all necessary research permits needed for doing research in the area are successfully applied for. This involves approval of University Gadjah Mada and of the governmental institutions and planning agencies in Indonesia. Since the research was executed in Indonesia, it had to comply with Indonesian rules and regulations. All necessary permits have been issued and can be found in Appendix E.

3.6 Ethical considerations

It is important to discuss the different choices that are made with regards to ethical considerations.

From a carbon footprint perspective, it would be preferred to do both the questionnaires and interviews in an online setting, since it would prevent travelling to the site. However, the decision to do fieldwork was made because of several factors. Some factors are that the questionnaire response was expected to be higher by visiting the site in person. There were not many possibilities found of distributing the questionnaire without going there, not everyone in the area is connected to internet or electricity and has possibilities of filling in online questionnaires, and a presence would make sure that the data collection is done in the right way as intended by the researcher. In addition, the goal of the paper is to make a contribution to windfarm developments in Indonesia which would support developments in the field and contribute to realising more renewable energy in the end.

The researcher is aware of the possibilities of the topic being a difficult topic to talk about because of it's link to national policies and thus national politics. It is therefore made clear to participants that the survey is anonymous and that their name will not be used in the research. A respondents form has been given out and is added in Appendix C (Indonesian language) and Appendix D (English language). What was also noticed during the data collection is that participants often expected the researcher to be a representative of the development companies or governmental bodies. Therefore it has been made clear that it is an independent research not linked to any of the parties involved in the development of the windfarm.

The research was also challenged by a language barrier because of the researcher not being able to speak the language of the people in the research area. Options for translators have been discovered in cooperation with professors from different universities, for example a university based in the island of Sulawesi. However, it has been decided to take a colleague student of the University of Gadjah Mada, Yogyakarta, as a translator because of his knowledge of the subject and scientific background. The translator is a MSc in Urban and Regional Planning with a good and informal connection to the researcher so there can be an open conversation between the researcher and the translator to reduce the change of misunderstandings during the translation process.

Because of the generally high percentage of Islamic inhabitants, the celebrations of the end of Ramadan (Eid-al-Fitr) took place around the research dates and these have been taken into account during the planning of the research trip.

4. Results and discussion

This section discusses the outcomes of the surveys and the interviews. First it will discuss the background of the windfarms in Indonesia. After that, the data from the surveys and interviews is analysed and the results are discussed. The aim is to find out whether, from our data, the conceptual model with assumptions made in the literature review (chapter 2), can be used as a tool to do research in an Indonesian or Global South setting. Findings from interviews will be used to support findings from the analysis of the surveys. Next to testing the hypotheses, the data will also be analysed to see whether there are any additional findings.

4.1 Background of the two windfarms

In this part, an overview is given of the two windfarms in Indonesia. At the moment of research, there are only two windfarms in Indonesia, for this research it is decided to do research in both areas since to get an as complete as possible view. Both are located on the island of Sulawesi (Figure 4.1).

Figure 4.1: Location of Sulawesi on the map of Indonesia (amazingsulawesi.com)

Zooming in on Sulawesi, the island consists out of 6 provinces. Sulawesi Utara, Gorontalo, Sulawesi Tengah, Sulawesi Barat, Sulawesi Tenggara, and Sulawesi Selatan (Figure 4.2). The last one (also called Sulawesi South) is the province in which the two windfarms are located.

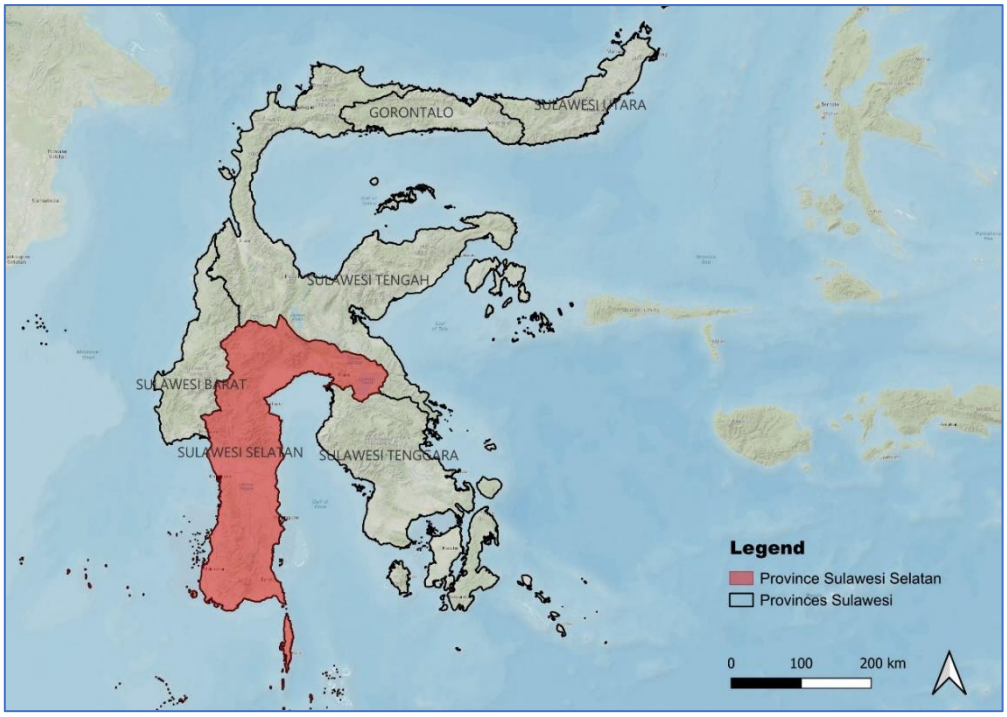

Figure 4.2: Provinces of Sulawesi with Sulawesi Selatan (South Sulawesi) highlighted

The province Sulawesi Selatan is consists out of 21 regencies (''kabupaten'') and 3 city municipalities (''kota''). The windfarms that are both located in Sulawesi Selatan, are located in kabupaten Sidenreng Rappang (also known as Sidrap) and kabupaten Jeneponto. The kabupaten exist out of a number of districts (''kecamatan''). Jeneponto and Sidrap both have 11 kecamatan. Each kecamatan consists out of multiple villages. These villages can be rural villages (''desa'') or urban villages (''kelurahan''). Jeneponto is totalling 82 desa's and 31 kelurahan, whereas Sidrap consists out of 68 desa's and 38 kelurahan. The two kabupaten are shown in Figure 4.3.

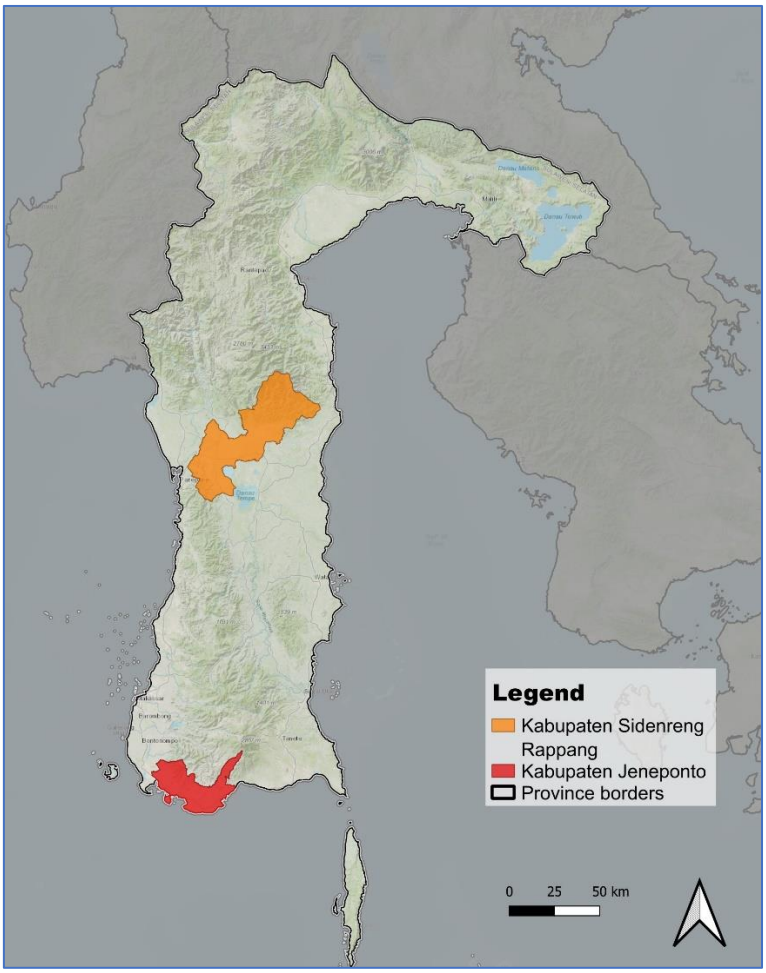

Figure 4.3: Location of kabupaten Sidenreng Rappang (Sidrap) and Jeneponto in the province Sulawesi Selatan

Windfarm 1: Tolo 1 Windfarm, Jeneponto

Tolo 1 windfarm is a windfarm consisting out of 20 turbines, with a total installed capacity of 72MW. The 64 metres-long blades are attached at a hub height of 133 meters. The construction work began in June 2017 and the windfarm got the status of commercial operation in May 2019. The wind turbines have been placed on a map as can be seen in Figure 4.5. The Tolo 1 windfarm is developed and operated by Vena Energy, an international company focussing on sustainable energy projects. Vena Energy mentions that they are giving benefits to the local community with the windfarm development, especially focussing on local recruitment and Corporate Social Responsibility (CSR) initiatives. During a presentation, they mentioned that during the construction of Tolo 1, a total of 938 workers were involved of which 581 workers were local recruits. To be precise, 137 workers from villages in which the project is located, 113 from other villages in the Jeneponto area, and 331 workers from other areas

in the South Sulawesi province. Furthermore, they mentioned that since the beginning they have had talks with the head of the desa. The CSR initiatives of Vena Energy mainly focus on three areas. The first area is education; Vena Energy build a kindergarten which offers free education for local children. Secondly, they focus on the environment by building a nursery facility and by organising tree planting activities. And thirdly, they focus on agriculture and livelihood by for example giving trainings for waste management, agricultural practices, and food packaging. The community manager of Vena Energy working in the Tolo 1 windfarm said that they came up with the different CSR initiatives by ‘‘doing a need analysis’’.

Figure 4.4: An interview was conducted at the Vena Energy office

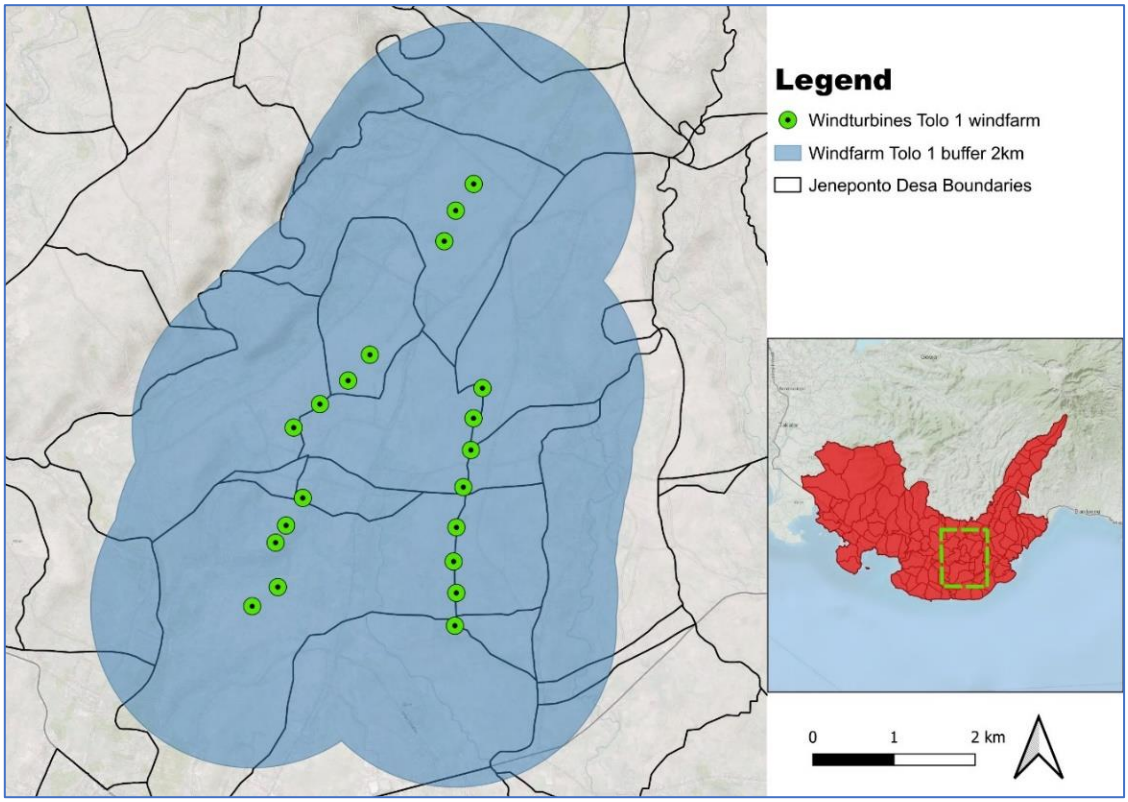

Figure 4.5: Map showing the location of the wind turbines of Tolo 1 windfarm, including a buffer of 2 km around them

Before conducting surveys, a fieldwork day was planned to explore the area so a plan could be made for the most fair way of doing the research and getting as representative as possible results. After looking into maps and seeing the area in person, together with a local government representative, it became clear that the windfarm is mainly consisting out of two corridors of wind turbines in between three corridors of housing and villages. These ‘‘three corridors’’ (as also called by many people in the area) inside the buffer area can be considered to be quite intensively inhabited, consisting out of multiple villages (as can be seen in Figure 4.6).

Figure 4.6: Aerial pictures to give an example of the corridors, part of the middle corridor (left) and part of right corridor (right), and an example picture from the street inside the right corridor (own picture)

It was decided to take these three corridors with housing as main research areas. To ensure that not all data comes from one village, it was decided to take some points along these corridors where the surveys could be done. This is shown in Figure 4.7. The red dots are pinning out an estimate of the research areas. It should be taken into account that these are not precise locations but more estimations of an area where the researcher went around and conducted surveys.

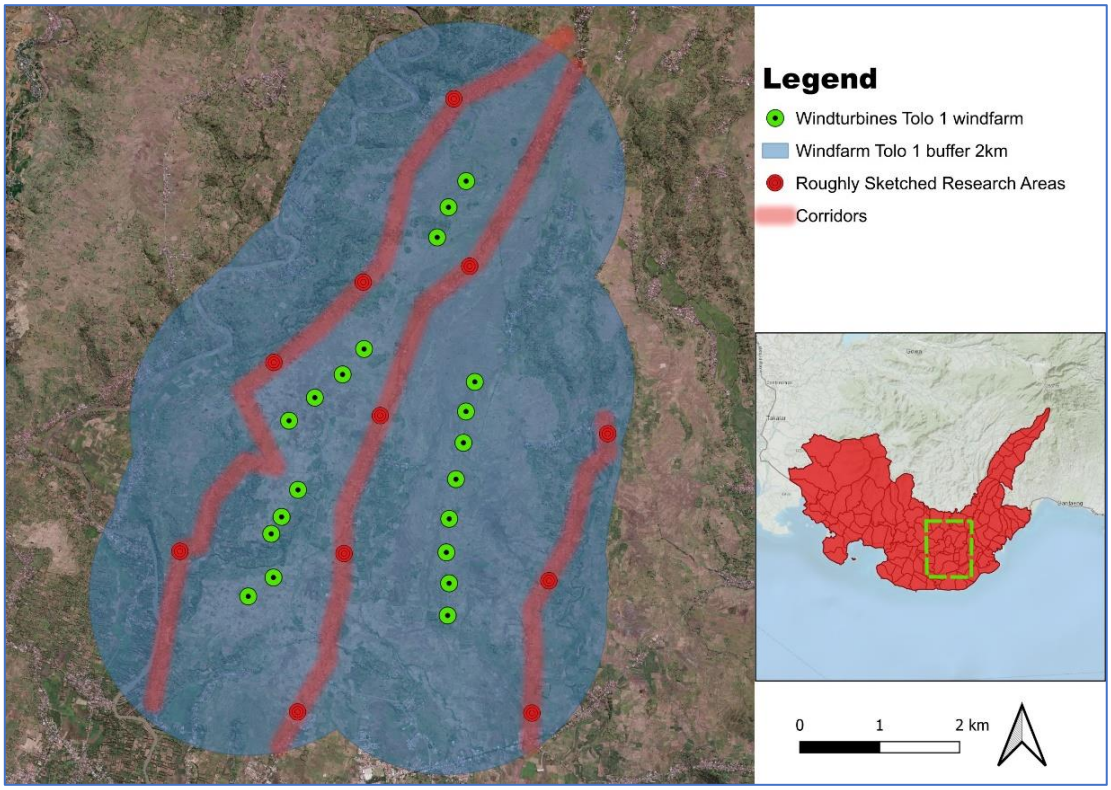

Figure 4.7: Map of the area including the three corridors and the place around where research is done (roughly sketched research areas)

Windfarm 2: Sidrap Windfarm, Sidenreng Rappang

The Sidrap Windfarm development consists out of 30 turbines with a total installed capacity of 75 MW (Figure 4.8). Which makes it Indonesia's biggest windfarm. In contrast to Tolo 1, Sidrap Windfarm is located in a less inhabited area. It is located in a hilly area along some windy ridges, shown in Figure 4.9. And even tough the area is less inhabited, there still are some villages to be found. These villages can be considered as small settlements since they consist out of a small number of houses. These settlements often have no connection to internet and sometimes no connection to electricity or water supply. The windfarm is developed by UPC Renewables. Development of the windfarm started in 2013, whereafter the windfarm received the operational status in April 2018. Since the start of the development in 2013, UPC incorporated the local communities by a Stakeholder Engagement Program. The program is meant to ''incorporate community inputs, feedback, and concerns related to the project'', as mentioned by a UPC representative. Their community involvement strategy is focussed on a long-term and sustainable approach. They used a ''consultative process to identify and select the programs and activities that will be supported under its CSR program''. A stakeholder coordination meeting was held which resulted in the selection of programs in the CSR. Also UPC mentions this monitoring has been happening throughout all stages of the development, and despite the project is now running, they are still maintaining relationships with the stakeholders by different engagement activities, like village visits, community forums, and formal stakeholder meetings. CSR programs in this area have been for example by creating a water connection in a village, as well as providing electricity boxes for free so houses are connected to the electricity grid.

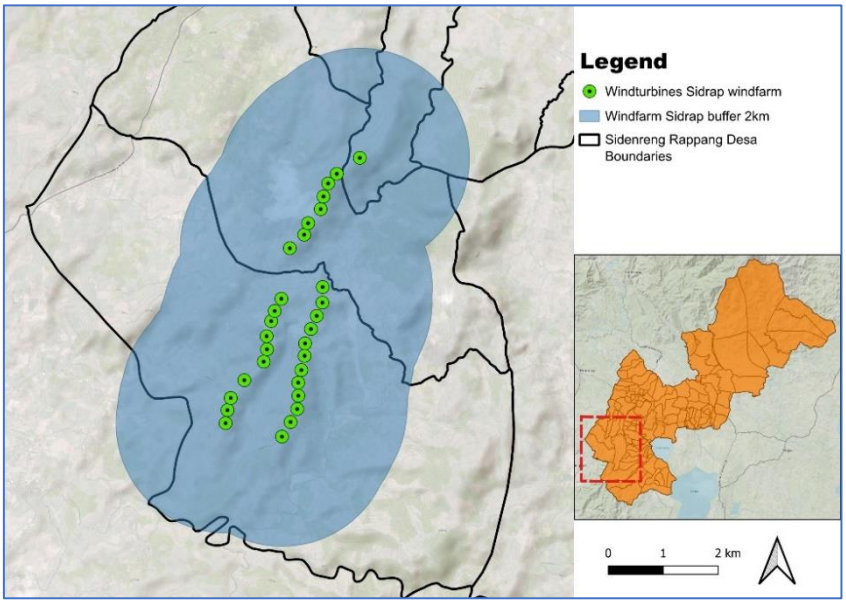

Figure 4.8: Map showing the location of the wind turbines of the Sidrap windfarm

Figure 4.9: Picture showing the wind turbines on elevated ridges (source: own picture)

When doing the supportive fieldwork on the first day to seek for the best strategy for doing the surveys, it became clear that the inhabitants inside the buffer only wanted to participate in the research if the head of the village was involved because of trust reasons or because some of them only speak a local language. During this day, the author managed to get in touch with the head of the village, he agreed on helping us to get to the local inhabitants as well as possible community representatives for interviews. Examples of the settlements in the area can be found in the figure below.

Figure 4.10: Aerial pictures of some of the settlements within the 2km buffer around the Sidrap windfarm

4.2 General acceptance/opposition

In the literature review, it is explained that in general there is a high level of support for a move towards renewable energy, a high level of support for wind energy in general, but often on a local scale support for windfarms appears to be lacking. From the surveys in the two case studies, it became clear that 85,2% of the respondents (strongly) agree that a move to renewable energy is important. In addition, only 3,8% (strongly) disagrees with the statement. This suggest that this is in line with the expectations.

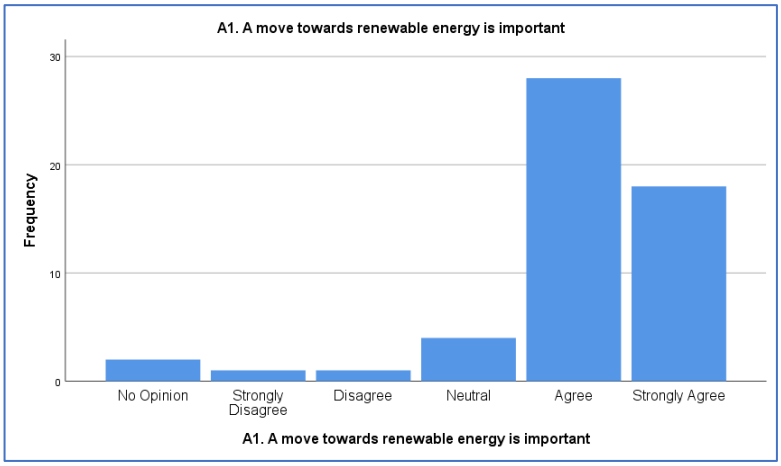

Figure 4.11: Chart showing the outcomes of the statement ''A move towards renewable energy is important''

In addition to the high level of support for a move towards renewable energy, the support of wind energy in general is also widely supported, 83,3% (strongly) agrees. As stated in the literature review, in society there seems to be a wide general support for windfarms as renewable energy sources, but strong opposition can often be found to local projects. This local opposition can not be found in the results of the surveys. To the statement whether the respondents support a windfarm in their own area, 83,3% mention to (strongly) agree with the statement. This can be considered as a significant difference from the literature. Literature mentioned that reasons for local opposition might be explained by negative externalities of

the windfarm, as for example visual impact and noise pollution. When asking the respondents if they experience negative consequences of the windfarms, 83,3% mention that they are not experiencing any negative consequences. The problem of noise pollution can be found in 9,26% of the answers. These numbers suggest that the NIMBY-effect as can be found in literature, can barely be seen in the two case studies. As explained in chapter 2, the NIMBY concept is often considered simplified and new theories are often discussed. In current research, distributional justice and procedural justice in windfarms are often found to be more relevant for creating local support. The next subchapters will explain the outcomes of the data related to these justice perspectives and see whether the conceptual model seems to be applicable in an Indonesian case, as well as exploring the data for new findings.

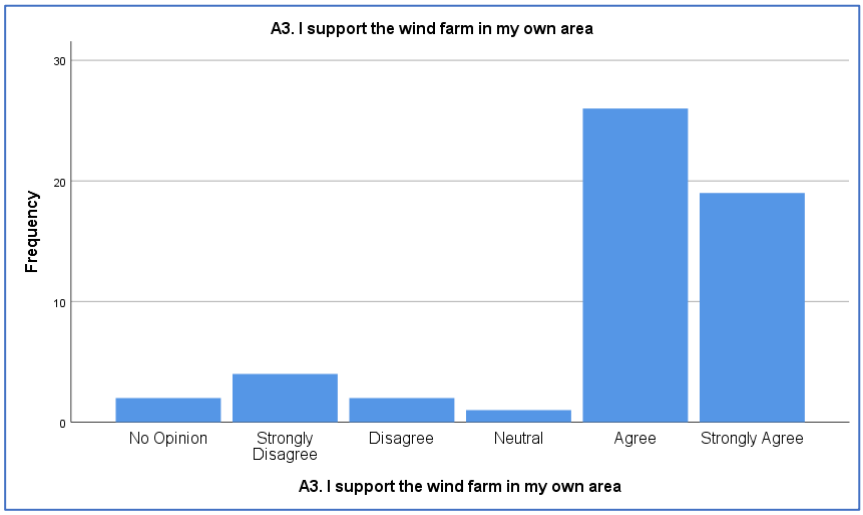

Figure 4.12: Chart showing the outcomes of the statement ''I support the windfarm in my own area''

4.3 Distributional justice

The data collected by the surveys is used to find out whether the hypotheses, about social acceptance in windfarm planning, can be accepted or rejected. The hypotheses, linked to distributional justice, are based on a couple of main assumptions that create social acceptance by local communities, from a Global North perspective. These assumptions are described in the conceptual model. The hypotheses related to distributional justice, as mentioned in chapter 3, are as follows;

- If people are benefitting from the windfarm, it will result in support;
- If people find the distribution of benefits to be fair, it will result in support;
- If people get financial benefits, it will result in support;
- If people get social benefits, it will result in support.

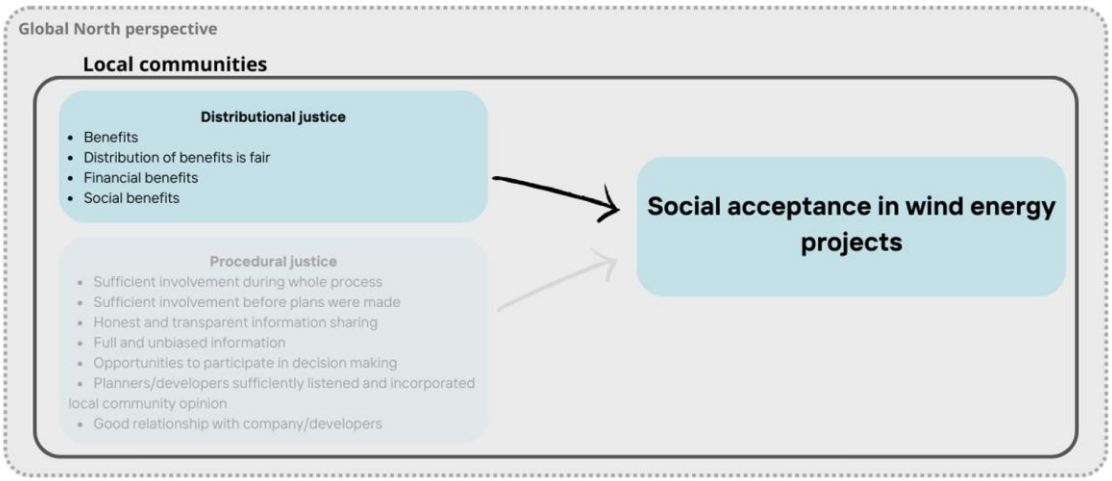

Figure 4.13: The conceptual model with a focus on the assumptions of the distributional justice perspective

As described in the methodology section, a Spearman's rho correlation test is done to show whether the statements from the survey are significantly correlating with local acceptance. Figure 4.14 below, shows the outcomes of the Spearman's rho test.

Correlations

Spearman's rho

A3. I support the wind farm in my own area

	A3. I support the wind farm in my own area	B1. I get benefits from the wind farms	B2. I believe the distribution of benefits between the developers/company and the local community is fair	B3. I get financial benefits from the windfarm	B4. I get social benefits from the wind farm (for example education or investments in the area)
Correlation Coefficient	1,000	,439**	,134	,187	,138
Sig. (2-tailed)	.	,001	,335	,177	,321
N	54	54	54	54	54

**. Correlation is significant at the 0.01 level (2-tailed).

Figure 4.14: Results of running the Spearman's rho correlation test with data of survey statements A3, B1, B2, B3, and B4

From the data, no proof is found that there is a significant correlation between whether people think the distribution between the company and the local community is fair, and if they support the windfarm. Also in the data no proof can be found that financial benefits would increase local community acceptance of the windfarms. This can also be said about social benefits influencing the support of a windfarm. And however the results of the tests related to these three hypotheses all show a (weak) positive correlation coefficient, these hypotheses made from literature about distributional justice in windfarms in the Global North, can thus not be assumed to be true in our sample. Within our dataset, we thus do not have proof to accept these hypotheses that suggest a significant direct correlation between acceptance and these three factors.

On the other hand, the outcomes of the Spearman's rho test show that in the sample, a significant correlation between people benefitting from the windfarm and supporting the windfarm is found, with a significance number of 0,001. What we could argue, deriving from our sample data, is that there is a correlation between how much people feel that they are benefitting from the windfarm and how much they accept it. The correlation coefficient shows a positive correlation, which suggests that an increase in the feeling of benefitting from the windfarm, would mean an increase in how much they will accept it.

Considering this significant correlation between benefitting and social acceptance, it can be valuable to find out how this feeling of benefitting from the windfarm is created. It is thus important to seek for the factors that make people feel that they are benefiting from the windfarm. In the analysis, a test was run to search possible factors that are significantly influencing people's feeling of getting benefits from the windfarm. Some of the outcomes are shown in Figure 4.15.

Correlations

B1. I get benefits from the wind farms

		B1. I get benefits from the wind farms	B2. I believe the distribution of benefits between the developers/company and the local community is fair	B3. I get financial benefits from the windfarm	B4. I get social benefits from the wind farm (for example education or investments in the area)	B5. I am aware of the local community projects by the developers	B6. The local community projects by the developers are creating benefits for the local community	B7. The local community projects by the developers are creating benefits for me
Spearman's rho	Correlation Coefficient	1,000	,363**	,230	,376**	,582**	,426**	,485**
	Sig. (2-tailed)	.	,007	,095	,005	,000	,001	,000
	N	54	54	54	54	54	54	54

**. Correlation is significant at the 0.01 level (2-tailed).

Figure 4.15: Results of running the Spearman's rho correlation test with data of survey statements B1, B2, B3, B4, B5, B6, and B7.

From the results from the Spearman's rho test, we see that there are a lot of factors where a significant correlation can be found to the statement whether people get benefits from the windfarm. What is noticeable, is that again whether people get financial benefits from the windfarm, is not significantly correlating with whether respondents feel they get benefits from the wind farm or not. The financial benefits are thus as well directly, as indirectly not impacting acceptance. On the other hand, we do see a significant correlation between people getting social benefits and having the feeling of benefitting in general. This factor of social benefits is thus not directly impacting windfarm acceptance, as was assumed in the conceptual model, but in our sample it is indirectly affecting the acceptance of the windfarm. In addition, statements B5, B6, and B7 are about the location specific local community projects. As explained in chapter 4.1, both windfarm developers came up with local community projects, also described as the CSR (Corporate Social Responsibility) programs. We see that all three statements about CSR programs are significantly correlating with people getting the feeling of benefitting from the windfarm. Especially between B5 and B1, there can be found a relatively high significant correlation compared to the others (correlation coefficient of 0,582). This means that from the sample, we can assume that people who are aware of the local community projects that are run by the developers, are more likely to feel that they benefit from it. Awareness of these CSR programs is thus considered to be important. In the survey, statements B6 and B7 are about whether the local community projects, run by the developers, are creating benefits for the people. B6 asks whether people believe the CSR initiatives create benefits for the local community, whereas B7 asks if people believe the CSR initiatives create benefits for them as individuals. Both have a significant correlation with B1. But what stands out, is that B7 has a higher correlation coefficient than B6. Which argues that when the CSR programs are creating benefits for the local community, people feel like they are benefitting, but when people specifically get personal benefits they even have a stronger feeling of benefitting from the CSR programs. It is thus found that the CSR initiatives have an impact on giving the feeling to people that they are benefiting from the windfarm, which again is influencing acceptance of a windfarm. This can be seen as an indirect effect.

It is also analysed whether these CSR programs have a direct impact on making people show acceptance towards the windfarm. Therefore, tests have run again but now tested to see if there is a correlation to be found between whether people support the windfarm (statement A3) and the statements B5, B6, and B7 about the CSR programs. This tests thus the direct impact. The results can be found in Figure 4.16.

Correlations

A3. I support the wind farm in my own area

		A3. I support the wind farm in my own area	B5. I am aware of the local community projects by the developers	B6. The local community projects by the developers are creating benefits for the local community	B7. The local community projects by the developers are creating benefits for me
Spearman's rho	Correlation Coefficient	1,000	,358**	,253	,511**
	Sig. (2-tailed)	.	,008	,065	,000
	N	54	54	54	54

**. Correlation is significant at the 0.01 level (2-tailed).

Figure 4.16: Results of running the Spearman's rho correlation test with data of survey statements A3, B5, B6, and B7.

From our data, we see that an awareness of the CSR programs is directly related with a support towards the windfarm. From this, it can be argued that people that are aware of the CSR programs see what benefits the project is creating and therefore have an increased support towards the windfarm. Furthermore, we can see that B6 (CSR programs creating benefits for the local community) is not significantly correlated with the support of a windfarm. But where benefits for people themselves from CSR initiatives appears to be more important to make people feel the benefit from the windfarm, we can see that it also significantly correlates directly with a support towards a windfarm. So in the sample, not only an indirect correlation can be found, but also a direct correlation. The results from the survey thus suggest that the respondents of the survey are more likely to support a windfarm if they get benefits from it themselves.

Now we know that, in our sample, getting personal benefits from a CSR program is significantly correlated with accepting a windfarm. It is interesting to find out what exactly makes people feel like they are benefitting themselves. As showed in Figure 4.17, we see that financial benefits are not significantly correlated with people having the feeling of benefitting when taking a 0,01 significance level. There is a significant correlation found between financial benefits and the personal benefits from the CSR programs, but on a 0,05 significance scale. On the other hand, there is a significant correlation between people getting social benefits from the windfarm and having the feeling of benefitting from the CSR programs themselves. This is significantly correlated with a 0,01 significance level. In addition, the correlation coefficient can be considered to be higher than with the financial benefits. As also shown in Figure 4.15, in our sample social benefits are more important for the local community than financial benefits.

Correlations

B7. The local community projects by the developers are creating benefits for me

		B7. The local community projects by the developers are creating benefits for me	B3. I get financial benefits from the windfarm	B4. I get social benefits from the wind farm (for example education or investments in the area)
Spearman's rho	Correlation Coefficient	1,000	,297*	,445**
	Sig. (2-tailed)	.	,029	,001
	N	54	54	54

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Figure 4.17: Results of running the Spearman's rho correlation test with data of survey statements B7, B3, and B4..

The results from testing the hypotheses are found to be confirmed by the interviewees. Different heads of villages mention that most people are happy with the windfarm because now they got electricity, clean water, and new and better infrastructure. These are thus related to the social benefits. Examples are given that for example now there is a road to their farm land, so the farming goes easier. In addition, an example is given that now people can easily go to the hospital with their scooter for example, while before they first had to walk 40 minutes to reach the road. These examples are also given by different participants in the survey, where the last question was an open question whether the respondents would like to add some information. In these open questions, it was also mentioned by some participants that they get benefits as for example education in how to best grow their crops and new seeds. Next to this agricultural education, some respondents mentioned that they are ''very happy'' that their children can go to a school which is built by the developers. This school is free of charge and can again be seen as a social benefit. From the interviews and from the open question in the survey, social benefits seem to be mainly important and financial benefits are considered to be less important. One head of the village mentioned that the windfarms have created a ''better quality of life''. In addition he mentions that people are ''very grateful'' for it. Another example which was given by a former head of the village, which was active during the time of planning and construction, is that the developers funded a party for the independence day of Indonesia and that the local community was delighted by that. Again this can be seen as a social benefit.

Figure 4.18: Photo impression of different interview sessions

Furthermore, in chapter 2, one of the solutions mentioned in literature to create acceptance of a windfarm, is to give people co-ownership. Since in the two cases, there is no community ownership, it does not seem suitable to test whether this would result in support or not. But what can be tested is if there is in interest in such a community ownership of a windfarm in our cases studies. This resulted in a 51,85% of people that (strongly) agree to this statement.

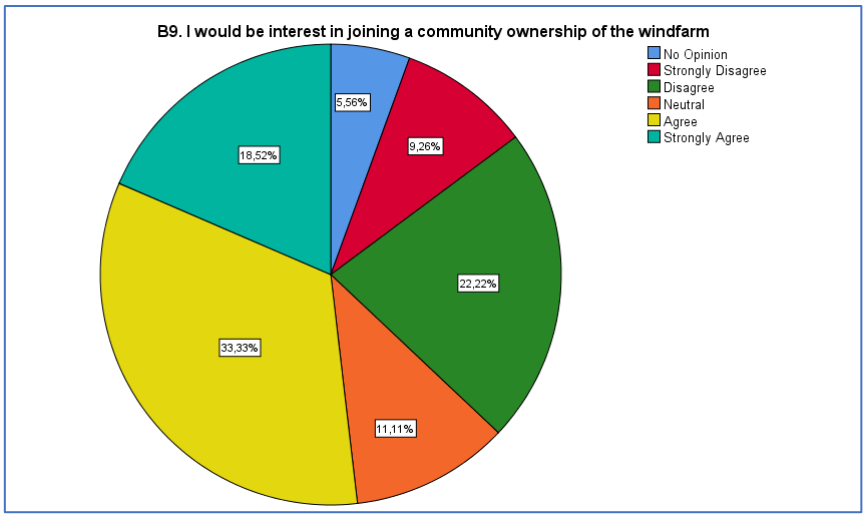

Figure 4.19: Results to the statement in the survey whether people would be interest in joining a community ownership of the windfarm

4.4 Procedural justice

The second perspective which is studied is the procedural justice perspective in windfarm planning. From the assumptions as shown in the conceptual model, a couple of hypotheses have been created linked to these assumptions. The hypotheses about that have been made about procedural justice impacting social acceptance in windfarm planning are;

- If there is sufficient involvement during the whole process, it will lead to support;
- If there is sufficient involvement during the time before the plans were made, it will lead to support;
- If there is honest and transparent information sharing, it will lead to support;
- If there is full and unbiased information, it will lead to support;
- If people get opportunities to participate in decision making, it will lead to support;
- If people believe that planners/developers sufficiently listened and incorporated the local community opinion, it will lead to support;
- If people have a good relationship with the company/developers, it will lead to support.

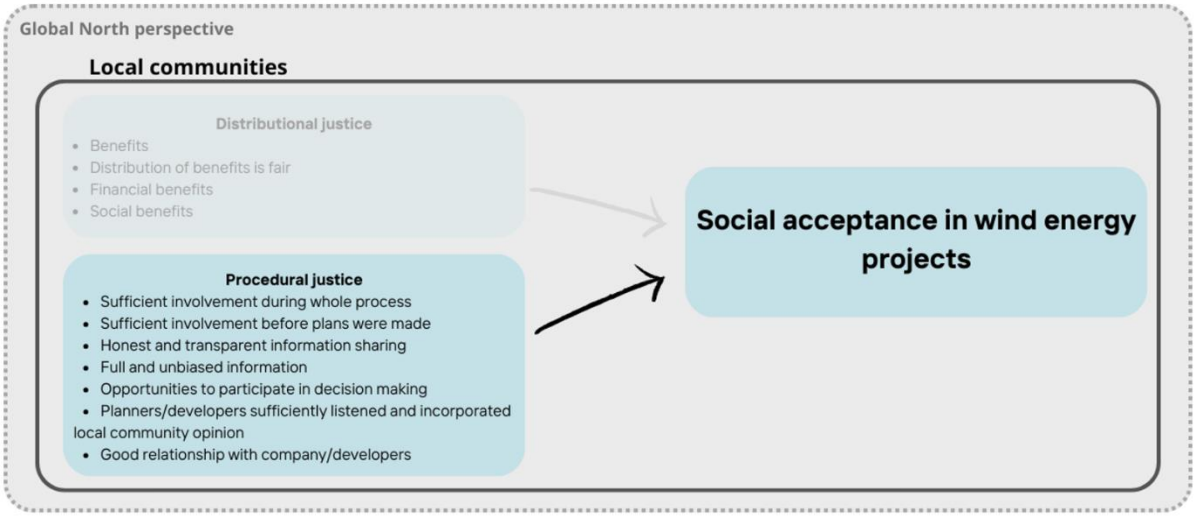

Figure 4.20: The conceptual model with a focus on the assumptions of the procedural justice perspective

The hypotheses mentioned above resulted in different survey questions (Appendix A & Appendix B). These survey items related to the procedural justice perspective have been labelled as items C1 to C7. The Spearman's rho correlation test is run to see whether there are significant correlations to be found between the different procedural justice factors and local acceptance. The results are shown in Figure 4.21.

The Spearman's rho tests shows us that, in the sample, the hypotheses about sufficient involvement before plans were made as well as during the whole process are not significantly correlated with the level of support for the windfarm. Also, in the sample, the opportunity of participating in decision making of the plan, does not show a significant correlation with the level of support.

When looking with a significance level of p<0,05, we can see that for some factors a significant correlation to local acceptance can be found. Namely, honest and transparent information sharing by the developers, the believe that planners sufficiently listened to and incorporated the opinion of the local community, and a good relationship with the company/developers.

In addition, when taking a significance level of p<0,01, we can see that the receiving of full and unbiased information about the plan is significantly correlating with the support for a windfarm. This factor has the highest significant correlation and also the highest correlation coefficient. It can be argued that, in our sample, this is an important factor in creating social acceptance in windfarm developments.

Correlations

Spearman's rho

A3. I support the wind farm in my own area

	A3. I support the wind farm in my own area	C1. I have been sufficiently involved in the whole planning/development process	C2. I have been sufficiently involved before plans were made	C3. During the planning process, there has been honest and transparent information sharing from the developers	C4. During the planning process, I got full and unbiased information about the plan	C5. I had the opportunity to participate in decision making of the plan	C6. I believe the planners/ developers sufficiently listened to, and incorporated the opinion of the local community in the plan	C7. I have a good relationship with the company/developers
Correlation Coefficient	1,000	,206	,225	,313*	,487**	,186	,328*	,320*
Sig. (2-tailed)	.	,135	,102	,021	,000	,179	,015	,018
N	54	54	54	54	54	54	54	54

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Figure 4.21: Results of running the Spearman's rho correlation test with data of survey statements A3, and C1

To summarise: our data does not provide support that the following hypotheses can be accepted;

- If people believe to be sufficiently involved during the whole process, it will lead to support;
- If people believe to be sufficiently involved during the process before the plans were made, it will lead to support;
- If people get opportunities to participate in decision making, it will lead to support;.

On the other hand, our data does provide support to accept the following hypotheses;

- If there is honest and transparent information sharing, it will lead to support (when p<0,05);
- If there is full and unbiased information, it will lead to support (when p<0,01);
- If people believe that planners/developers sufficiently listened and incorporated the local community opinion, it will lead to support (when p<0,05);
- If people have a good relationship with the company/developers, it will lead to support (when p<0,05).

What can be assumed from this is that the factors that are not significantly correlated, are arguably all related to active involvement/participation in the windfarm development. Whereas the factors were a significant correlation can be found, are about the receiving of information or a good communication. Also C6, which is about whether people believe that the planners have listened to them and incorporate their opinions, are arguably not about an active form of participation/involvement. Therefore, it can be argued that the factors where a significant correlation can be found, are all about passive involvement. From this, it could be argued that from our data, looking at procedural justice factors, active involvement does not seem to be improving social acceptance within the local community, but passive involvement is.

This assumed focus on these 'passive' procedural justice factors can also be confirmed by the data from the interviews with local community representatives. The information, gained in the interviews, about procedural justice shows a couple of mixed signs. Some head of the village argue that there was honest and transparent information sharing, other argue that there was not. Same as for full and unbiased information, some say that there was, some say that there was not. But what can be seen is that in the interviews where they mentioned that information sharing was lacking, they said they would ''hope that information sharing would improve'', and ''hope to be informed more directly''. This does thus appear to be an important factor for creating acceptance. And this can be argued to be agreed upon by the interviewees which are happy with the information sharing. As for example ''we were informed about CSR and compensations before, and we are happy with that'', ''we were content with meetings about access and rent compensations'', ''the information sharing'', and ''easy to get info and to consult with the company''. For example they were happy with monthly meetings in which they were working on prioritizing what the village needs most. Another head of the village mentioned that ''the developers should listen to the heads of the villages and do this in a good way''. Furthermore, it is mentioned in various interviews that there is a good relationship with the developers. About the questions whether there was honest and transparent information sharing, getting full and unbiased information and taking serious/incorporating the opinion of the local community the opinions of the interviewees are sometimes differing. However for both the interviewees that are positive about it, as well as negative about it, getting the information and taking serious/incorporating the opinion of the local community seems to be really important. The interviews do thus support the outcomes.

4.5 Keeping the focus

The interview data suggest that over time, the companies are taking a less active role. Some heads of villages as well as other local community representatives mentioned that the focus of the companies should stay. Different interviewees mentioned for example that ''some small negative things could become bigger if they don't get solved'' and ''nowadays we have to force them more and more to take action''. It thus seems that the focus of the developers is getting less active which could possibly diminish the local acceptance over time. The element of keeping the focus over time, should thus be considered to be an important factor as well.

4.6 Coming to new preliminary theoretical insights and synthesis

The outcomes show that not all hypotheses can be accepted in this study. Therefor, our data is not always supportive to the assumptions made in the conceptual model as described in chapter two. The aim of this research is to contribute to answering the question whether the conceptual model, including the assumptions of distributional justice and procedural justice factors resulting in social acceptance, can be used as a tool to do research in Indonesia and the Global South. Although the results from the study based on the two wind farms in Indonesia may be limited for making generalizations about the entire Global South, they still provide a starting point for further research in this area. Based on the data in this study, some new insights related to the conceptual model are found.

Of the hypotheses, based on the conceptual model, some were rejected and some were accepted by our sample data. Therefore, for some of the assumptions in the conceptual model, our data does not provide support to assume they are true. Additionally, our results do provide support to add certain factors to the conceptual model. These first theoretical insights can be seen as a starting point for contributing to the theoretical field of distributional justice and procedural justice in windfarm developments in Indonesia and in the Global South. Consecutively, theoretical progress in this research area can contribute to the social acceptance of future windfarm developments.

From our data, changes are suggested for the conceptual model to serve as a research tool in Indonesia and the Global South. Taking into account the theoretical insights, based on our data, a comprehensive synthesis is presented. The findings from this study are incorporated in the conceptual model to contribute to creating a conceptual model that can be used as a tool to do research in Indonesia and the Global South. This synthesis is shown in Figure 4.22. In the figure, the hypotheses that are rejected by our data are crossed out with a red line. Other additions, are added in red.

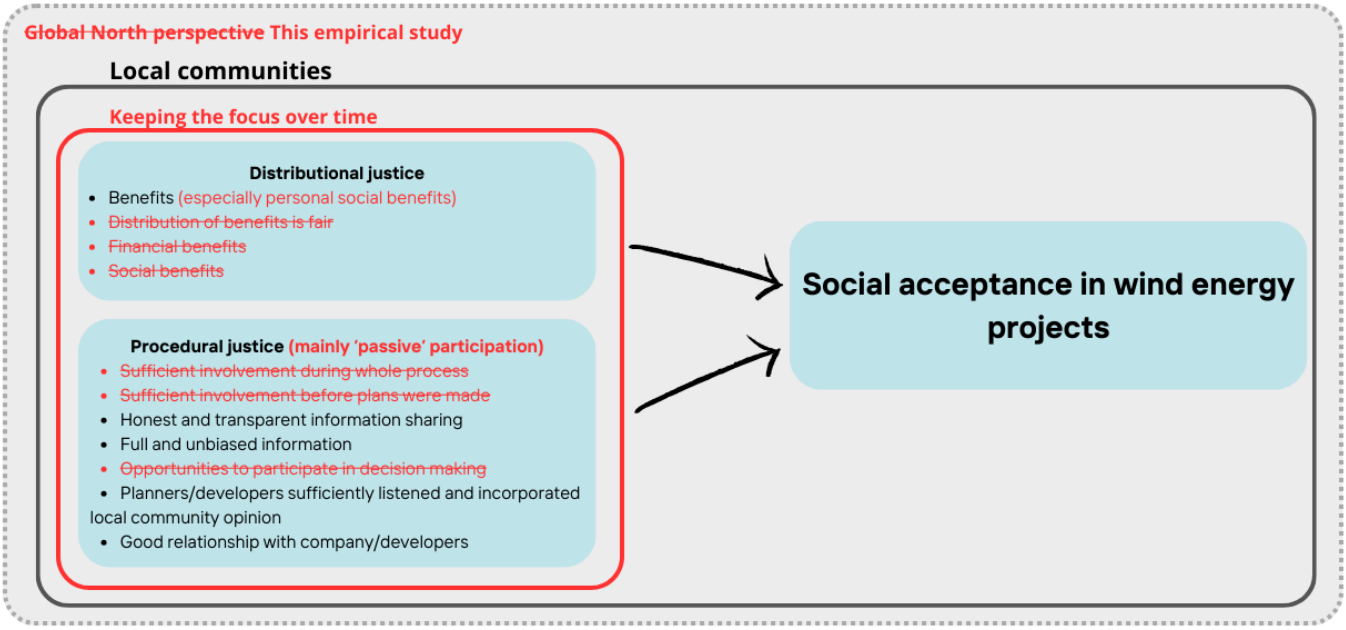

Figure 4.22: The conceptual model with the findings from this empirical study added in red

With the findings shown in Figure 4.22, from this study an updated conceptual model is created:

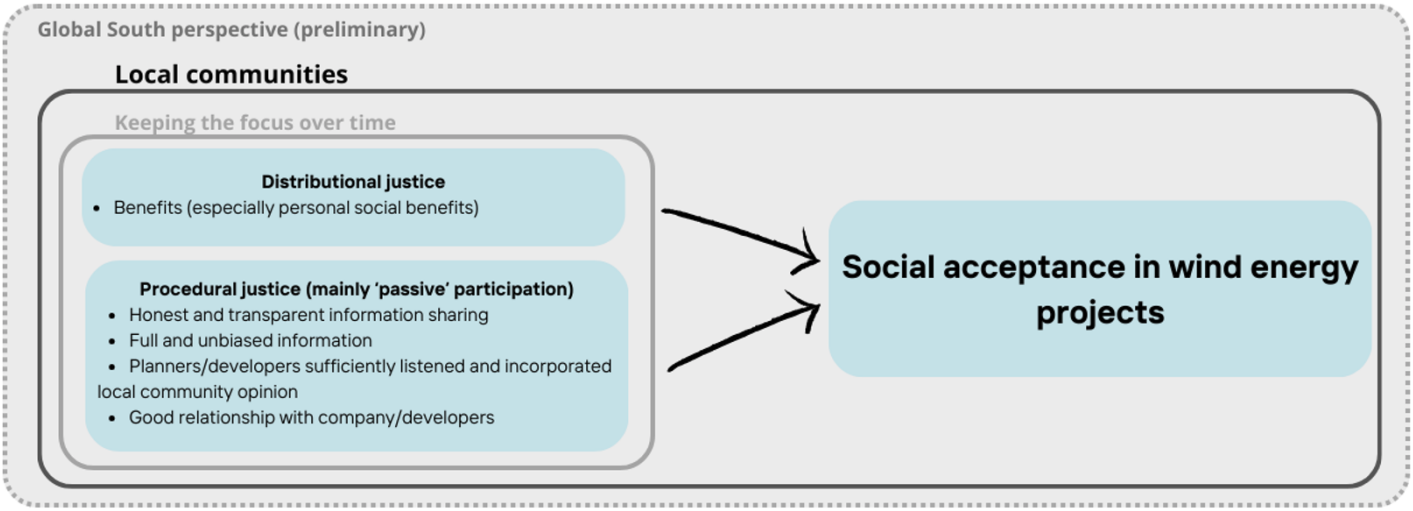

Figure 4.23: The conceptual model with updates suggested by this study

Our empirical study is aimed to be a start to research into social acceptance in Global South areas, but the findings can not be generalized for the Global South and should be viewed as a starting point only. Future research is needed to gain more insights into the question whether the conceptual model can be used as a tool to do research in Indonesia or the Global South and whether the findings from this study are also found in other cases. The findings of this study can not yet be generalized and therefore it is suggested that future research would still incorporate the hypotheses that have been rejected by the data from this research. In this way, it could be a valuable comparison whether these factors are also rejected in other cases. Another suggestion for future research is to take into account that results from this research might be different then future results since these are the first two windfarms in the country of Indonesia. This could thus be seen as ''pioneering'' projects. Future windfarm developments might be perceived differently.

5. Conclusion

This aim of this research is to contribute to research on social acceptance in the Global South from a distributional justice and procedural justice perspective. An empirical study is done around two windfarms in Indonesia to find out whether the conceptual model, as described in chapter two, can be used as a tool to do research in an Indonesian and Global South setting. Since the data in this study is collected in two windfarms, it is too limited for generalisation of the results for future developments in this country or the Global South. However, it resulted in a number of findings which can be seen as a starting point for the development of more research about social acceptance of windfarms in Indonesia and the Global South. Chapter two resulted in a conceptual model derived from literature that is mainly based on Global North research. This conceptual model included certain assumptions about how social acceptance in windfarm development is impacted by distributional justice perspectives and procedural justice perspectives. From these assumptions a set of hypotheses was created. From these hypotheses, survey questions were derived. After collecting the data, the hypotheses were tested using this data. Outcomes of the empirical study show that not all hypotheses can be accepted. Furthermore, our data provides support to add certain factors to the conceptual model. Therefore, from our data, an updated conceptual model is suggested.

In this concluding chapter, the research question is answered by help of answering the sub-questions. The main research question is: ''What influences local opposition/acceptance in windfarm developments in Indonesia from a distributional justice and procedural justice perspective, and what lessons can be learned for social acceptance in future windfarm developments in Indonesia?''

Same as stated in the literature in chapter two, there was a high level of support towards a move to renewable energy in general and wind energy in general. What was not expected is that there also is a high level of support towards wind turbines close to people's residences. Looking at the first sub-question: ''Are local communities supporting or opposing windfarm development in Indonesia?'', our data suggests that, in general, a high level of support can be found towards windfarm developments by local communities in Indonesia.

For answering the second sub-question: ''From a distributional justice and procedural justice perspective, what are the reasons behind the acceptance or opposition?'', the conceptual model created in chapter two is used as a tool to study this. Looking from a distributional justice perspective, the hypotheses derived from the conceptual model predicted that financial benefits, social benefits, and a perceived fair distribution of benefits would directly influence the local acceptance of the windfarm. This was not found in the data. Another hypothesis predicted that if local communities have the feeling that they are benefitting, it would lead to social acceptance. Our data provided support to accept this hypothesis. This feeling of benefitting is significantly related with personal benefits and social benefits. These outcomes have been confirmed by the interview results.

From a procedural justice perspective, the main finding was that in our data, there is no relation found between the hypotheses that predicted that 'active' involvement would lead to social acceptance. For example factors of involvement during the whole process and opportunities to participate in decision making did not have a significant correlation with social acceptance of the windfarm. On the other hand, significant correlation could be found in the 'passive' participation. Examples are about honest and transparent information sharing and receiving full and unbiased information.

One additional finding that was mentioned by multiple interviewees is that the windfarm developers should keep this focus. It was mentioned that over time, the focus on creating social acceptance became less, which could arguably lead to opposition.

The three paragraphs above also help to answer the third sub-question: ''What lessons can be learned for future windfarm development in Indonesia?''. In this study, lessons that are related to future windfarm developments in Indonesia which are found are thus that from a distributional justice perspective, mainly personal social benefits are leading to social acceptance in windfarm developments. From a procedural justice perspective, it is mainly a focus on passive participation which is leading to social acceptance in windfarm planning. Whereas for developers it is important to take into account to keep focussing on these different perspectives, even after the years go by.

This research acts as a starting point for research on social acceptance in Indonesia and the Global South and further research is needed. Since the results from this research are based on two windfarms, additional research is needed to find out whether the preliminary theoretical insights can be generalized on a larger scale. Further research could contribute to creating a conceptual model, for social acceptance in windfarm developments in the Global South from a distributional justice and procedural justice perspective, that can be used as a tool to do research. This in its turn could contribute to creating social acceptance in windfarm developments in practice.

There are some important notes that should be considered that have impact on future research. Firstly, the Global South keeps being a broad and unclear concept. It is questionable which countries belong to the Global South, and will still belong to the Global South in the future. Additionally, there should be a consideration whether all countries in the Global South are generalizable as one and the theory is applicable in all countries. For example, studies in Indonesia can show different results that studies in African or South-American countries. Already on a more regional scale as the ASEAN, differences might be found between countries. Furthermore, it should be considered that the results of this study might be impacted by the fact that at the moment of research, these are the first and only two windfarms in Indonesia. Future research should show whether the results in future windfarms would be the same.

6. Reflection

In this chapter, I will reflect on my own research process and what I think went well and what could have been done differently.

Overall I am satisfied with how the process went. However, of course there are some points that could have been done differently. Doing a double degree program gave me a unique opportunity to conduct research in Indonesia. Following the study program, the master thesis project should be done in the last 6 months when I would already have finished my studies in Indonesia. I am contently looking back on the decision to take the possibility of doing research in Indonesia, since this has been a highly valuable experience. From a personal perspective as well as an academic perspective. However, deciding to do research in Indonesia also came with some challenges. Coming to a subject has been a long process. I was still following different courses and next to that discovering different research topics. When my courses in Indonesia were finished, I did not have a clear enough view on my research topic yet. At this moment, I had to get back to Groningen for my last courses, while first I planned doing empirical research before that. In this way the research was delayed. Luckily I had the opportunity of going back a couple months later and still do the empirical research. After all, I could have scheduled my time more realistically to prevent these kind of time management issues.

Before conducting the empirical research, I had to arrange an unexpected amount of permission letters. In the end this was all in time for the research, but it would have been preferred to take into account these kind of unexpected risks and schedule some time for unexpected events.

Furthermore, I am very happy with how the data collection itself went. There were some bumps in the road. It was hard to get in touch with persons in the research area. After many emails, calls, and other messages, I luckily got in touch with an alumni of our university that was working in the Jeneponto area. Without her help and the help of my translator/study colleague/friend, this process would have been more difficult. When we arrived in the area, via this contact person we could arrang meetings with many different community representatives. This made me learn a lot about doing research in this cultural setting. I learned that I had to make a ‘plan B’ in case the planned scenario would not work out. I am gladly looking back that I had made this plan beforehand. On the other hand, maybe I could have even made this plan earlier. This links to what I have also learned, namely flexibility. It required a lot of flexibility doing the empirical research. A day before going to the second windfarm for doing the data collection, there had been contact but there was no permission for research yet. I learned to not start stressing in this moment and to find the right persons in such situations to be able to start my research.

I argue that choosing a study colleague/friend as my translator has been a crucial part of being able to complete this research. Having informal contact, engaging in honest discussions, receiving his input on cultural aspects, and his efforts in connecting with the right people have been critical for the research. Therefore, I am gladly looking back on this decision.

In addition, in the last months of working on my thesis, I decided to leave my student city behind and to start working part-time. This changed me in a way that I am delighted with. I took a turn in my life that made me grew as a professional. And however I am happy with this decision of working part-time, it also created a situation in which the finalization of the thesis got delayed. In the end, this made me realize even more the importance of time management. I realize this could have been better throughout the last months. And however this could have been better, on a personal level it has been a highly educational and exiting period.

On an academic level, I noted that I had some points of attention that needed improvement. For example, the methodology section has been difficult for me to put on paper. I needed some extra feedback on putting some things on paper. I gained a better understanding of methodological concepts and I believe I improved. However I also believe that there might still be room for improvement. I needed the feedback from my supervisor to improve my understanding of certain research concepts and methods. In addition, I learned my writing skills were sometimes lacking on an academic level. I needed feedback to realise this. I believe I have improved my writing skills, but I also believe there is still room for further improvement.

For the results of the research, I can conclude that I contently look back. I believe the data collection went well and most respondents trusted us and were not afraid to give their honest opinions. Since in Indonesia there are only two windfarms, I realise the results might not be generalisable for future developments in the country or for the wider Global South. What I do believe is that the results of this study can be used if further research will be done in more cases. Therefore, I am happy with the outcomes of this study. I look back on an amazing period in which I learned a lot and have developed as an academic, a professional, and a person.

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Appendix A: Survey (Indonesian; how it is used in conducting the survey)

1. Penerimaan / penolakan

	1. Sangat tidak setuju	2. Tidak setuju	3. Netral	4. Setuju	5. Sangat setuju	0. Tidak berpendapat
Langkah menuju energi terbarukan adalah hal penting						
Saya mendukung PLTB secara umum						
Saya mendukung PLTB di daerah saya sendiri						

Apakah Anda mengalami dampak negatif dari PLTB? Jika iya, lalu apa dampak negatifnya:

……

……

……

……

	1. Sangat tidak setuju	2. Tidak setuju	3. Netral	4. Setuju	5. Sangat setuju	0. Tidak berpendapat
Saya aktif terlibat dalam perencanaan PLTB						
Pengembang memberi saya cukup kesempatan untuk terlibat dalam proses perencanaan						

2. Keadilan distribusi

	1. Sangat tidak setuju	2. Tidak setuju	3. Netral	4. Setuju	5. Sangat setuju	0. Tidak berpendapat
Saya mendapat manfaat dari PLTB						
Saya yakin pembagian keuntungan antara pengembang/perusahaan dan masyarakat setempat secara merata						
Saya mendapatkan keuntungan materi dari PLTB						
Saya mendapatkan manfaat sosial dari PLTB (misalnya						

pendidikan atau investasi di daerah tersebut)						
Saya sadar terdapat projek masyarakat lokal dari pengembang						
Proyek masyarakan lokal oleh pengembang memberikan manfaat bagi masyarakat lokal						
Proyek komunitas lokal oleh pengembang memberikan manfaat bagi saya						
Pengembang memberikan manfaat yang cukup						
Saya akan tertarik untuk bergabung dengan kepemilikan masyarakat atas PLTB						
Secara keseluruhan, saya puas dengan manfaat yang saya terima dari PLTB						

3. Keadilan prosedural

	1. Sangat tidak setuju	2. Tidak setuju	3. Netral	4. Setuju	5. Sangat setuju	0. Tidak berpendapat
Saya telah cukup terlibat dalam seluruh proses perencanaan/pembangunan						
Saya telah cukup terlibat sebelum rencana dibuat						
Selama proses perencanaan, telah terjadi pemberian informasi yang terbuka dan transparan dari para pengembang						
Selama proses perencanaan, saya mendapatkan informasi yang lengkap dan tidak memihak tentang rencana tersebut						
Saya memiliki kesempatan untuk berpartisipasi dalam pengambilan keputusan rencana						
Saya yakin para perencana/pengembang cukup mendengarkan, dan memasukkan pendapat						

masyarakat setempat ke dalam rencana tersebut						
Saya memiliki hubungan yang baik dengan perusahaan/pengembang						

Saya ingin menyampaikan hal-hal berikut sehubungan dengan PLTB:

Appendix B: Survey (English; including item numbers)

A. Acceptance/opposition

	1. Strongly disagree	2. Disagree	3. Neutral	4. Agree	5. Strongly agree	0. No opinion
1. A move towards renewable energy is important						
2. I support windfarms in general						
3. I support the windfarm in my own area						

4. Do you experience negative consequences by the windfarm? If yes, then what negative consequences:

……

……

……

……

	1. Strongly disagree	2. Disagree	3. Neutral	4. Agree	5. Strongly agree	0. No opinion
5. I have actively been involved in the planning of the windfarm						
6. The developers gave me enough opportunities to cooperate in the planning						

B. Distributional justice

	1. Strongly disagree	2. Disagree	3. Neutral	4. Agree	5. Strongly agree	0. No opinion
1. I get benefits from the windfarms						
2. I believe the distribution of benefits between the developers/company and the local community is fair						
3. I get financial benefits from the windfarm						
4. I get social benefits from the windfarm (for example education or investments in the area)						

5. I am aware of the local community projects by the developers						
6. The local community projects by the developers are creating benefits for the local community						
7. The local community projects by the developers are creating benefits for me						
8. The developers are creating sufficient benefits						
9. I would be interest in joining a community ownership of the windfarm						
10. Overall, I am satisfied with the benefits I get from the windfarm						

C. Procedural justice

	1. Strongly disagree	2. Disagree	3. Neutral	4. Agree	5. Strongly agree	0. No opinion
1. I have been sufficiently involved in the whole planning/development process						
2. I have been sufficiently involved before plans were made						
3. During the planning process, there has been honest and transparent information sharing from the developers						
4. During the planning process, I got full and unbiased information about the plan						
5. I had the opportunity to participate in decision making of the plan						
6. I believe the planners/ developers sufficiently listened to, and incorporated the opinion of the local community in the plan						
7. I have a good relationship with the company/developers						

I would like to mention the following with regard to the windfarm:

Appendix C: Information Form for Respondents

Universitas Gadjah Mada

Fakultas Teknik

university of groningen

Opini masyarakat lokal dalam pengembangan PLTB

Saya Jochem van der Deen, mahasiswa dari Universitas Gadjah Mada, Magister Perencanaan Wilayah dan Kota, dan di Universitas Groningen (Belanda), Magister Perencanaan Lingkungan dan Infrastruktur.

Penelitian ini bertujuan untuk mengetahui pendapat masyarakat lokal dalam pengembangan Pembangkit Listrik Tenaga Bayu (PLTB) di Indonesia. Data Anda akan sepenuhnya anonim.

Untuk informasi lebih lanjut tentang penelitian ini, dapat menghubungi saya melalui:

Nama: *Jochem Matthias van der Deen*
Tel/WhatsApp: *082146315652*
Email: *jochemvanderdeen@hotmail.com*

Appendix D: Information Form for Respondents (English Translation)

Universitas Gadjah Mada

Fakultas Teknik

university of groningen

Local community opinion in the development of PLTB

I am Jochem van der Deen, student from Gadjah Mada University, Master of Regional and Urban Planning, and at the University of Groningen (Netherland), Master of Environmental and Infrastructure Planning.

This research aims to find out the opinions of local communities regarding the development of Wind Power Plants (PLTB) in Indonesia. Your data will be completely anonymous.

For further information about this research, you can contact me via:

Name: *Jochem Matthias van der Deen*
Tel/WhatsApp: *082146315652*
Email: *jochemvanderdeen@hotmail.com*

Appendix E: Permission letters

PEMERINTAH PROVINSI SULAWESI SELATAN
DINAS PENANAMAN MODAL DAN PELAYANAN TERPADU SATU PINTU
Jl.Bougenville No.5 Telp. (0411) 441077 Fax. (0411) 448936
Website : http://simap-new.sulselprov.go.id Email : ptsp@sulselprov.go.id
Makassar 90231

Nomor	:	**20035/S.01/PTSP/2023**	**Kepada Yth.**
Lampiran	:	-	Buapti Jeneponto
Perihal	:	**Izin penelitian**	2. Bupati Sidrap
			di-
			Tempat

Berdasarkan surat Ketua Departemen Teknik Arsitektur dan Perencanaan Fak. Teknik Univ. Gadjah Mada Yogyakarta Nomor : 781606/UN1/FTK.2/DTAP/PK/2023 tanggal 16 Juni 2023 perihal tersebut diatas, mahasiswa/peneliti dibawah ini:

N a m a	:	**JOCHEM MATTHIAS VAN DER DEEN**
Nomor Pokok	:	21/491669/PTK/14405
Program Studi	:	Perencanaan Wilayah dan Kota
Pekerjaan/Lembaga	:	Mahasiswa (S2)
Alamat	:	Jl. Grafika No. 2 Yogyakarta

Bermaksud untuk melakukan penelitian di daerah/kantor saudara dalam rangka menyusun Tesis, dengan judul :

" WIND FARM DEVELOPMENT IN INDONESIA: LOCAL SUPPORT FROM A DISTRIBUTIONAL- AND PROCEDURAL JUSTICE PERSPECTIVE "

Yang akan dilaksanakan dari : Tgl. ***23 Juni s/d 31 Juli 2023***

Sehubungan dengan hal tersebut diatas, pada prinsipnya kami ***menyetujui*** kegiatan dimaksud dengan ketentuan yang tertera di belakang surat izin penelitian.

Demikian Surat Keterangan ini diberikan agar dipergunakan sebagaimana mestinya.

Diterbitkan di Makassar
Pada Tanggal 23 Juni 2023

A.n. GUBERNUR SULAWESI SELATAN
PLT. KEPALA DINAS PENANAMAN MODAL DAN PELAYANAN TERPADU SATU PINTU PROVINSI SULAWESI SELATAN

Drs. MUH SALEH, M.Si.
Pangkat : PEMBINA UTAMA MUDA
Nip : 19690717 199112 1002

Tembusan Yth
1. Ketua Departemen Teknik Arsitektur dan Perencanaan Fak. Teknik Univ. Gadjah Mada Yogyakarta;
2. *Pertinggal.*

Nomor: 20035/S.01/PTSP/2023

KETENTUAN PEMEGANG IZIN PENELITIAN :

1. Sebelum dan sesudah melaksanakan kegiatan, kepada yang bersangkutan melapor kepada Bupati/Walikota C q. Kepala Bappelitbangda Prov. Sulsel, apabila kegiatan dilaksanakan di Kab/Kota
2. Penelitian tidak menyimpang dari izin yang diberikan
3. Mentaati semua peraturan perundang-undangan yang berlaku dan mengindahkan adat istiadat setempat
4. Menyerahkan 1 (satu) eksamplar hardcopy dan softcopy kepada Gubernur Sulsel. Cq. Kepala Badan Perencanaan Pembangunan Penelitian dan Pengembangan Daerah Prov. Sulsel
5. Surat izin akan dicabut kembali dan dinyatakan tidak berlaku apabila ternyata pemegang surat izin ini tidak mentaati ketentuan tersebut diatas.

REGISTRASI ONLINE IZIN PENELITIAN DI WEBSITE :
https://izin-penelitian.sulselprov.go.id

PEMERINTAH KABUPATEN JENEPONTO
Dinas Penanaman Modal Dan Pelayanan Terpadu Satu Pintu
Jl. Ishak Iskandar No. 30 Bontosunggu Telp. (0419) 2410044 Kode Pos 92311
web : dpmptsp.jenepontokab.go.id

IZIN PENELITIAN

Nomor: **73.4/518/IP/DPMPTSP/JP/VI/2023**

DASAR HUKUM :

1. Undang-Undang Republik Indonesia Nomor 18 tahun 2002 tentang Sistem Nasional Penelitian, Pengembangan, dan Penerapan Ilmu Pengetahuan Teknologi;
2. Peraturan Menteri Dalam Negeri Nomor 7 Tahun 2014 tentang Perubahan Peraturan Menteri Dalam Negeri Nomor 64 Tahun 2011 tentang Pedoman Penerbitan Rekomendasi Penelitian;
3. Rekomendasi Tim Teknis Izin Penelitian Dinas Penanaman Modal dan Pelayanan Terpadu Satu Pintu Kabupaten Jeneponto Nomor : **189/VI/REK-IP/DPMPTSP/2023**.

Dengan ini memberikan Izin Penelitian Kepada :

Nama	:	**JOCHEM MATTHIAS VAN DER DEEN**
Nomor Pokok	:	**21/491669/PTK/14405**
Program Studi	:	**TEKNIK ARSITEKTUR DAN PERENCANAAN**
Lembaga	:	**UNIVERSITAS GADJAH MADA**
Pekerjaan Peneliti	:	**MAHASISWA (S3)**
Alamat Peneliti	:	**NEDERLANDSE**
Lokasi Penelitian	:	**KABUPATEN JENEPONTO**

Maksud dan Tujuan mengadakan penelitian dalam rangka **PENYUSUNAN DISERTASI** *dengan Judul :*

WIND FARM DEVELOPMENT IN INDONESIA: LOCAL SUPPORT FROM A DISTRIBUTIONAL- AND PROCEDURAL JUSTICE PERSPECTIVE

Lamanya Penelitian : **2023-06-26** *s/d* **2023-07-31**

Dengan ketentuan sebagai berikut :

1. *Menaati semua peraturan perundang-undangan yang berlaku, serta menghormati Adat Istiadat setempat.*
2. *Penelitian tidak menyimpang dari maksud izin yang diberikan.*
3. *Menyerahkan 1 (satu) examplar Foto Copy hasil penelitian kepada Badan Perencanaan Pembangunan Daerah (BAPPEDA) Kabupaten Jeneponto Cq. Bidang Penelitian & Pengembangan.*
4. *Surat Izin Penelitian ini dinyatakan tidak berlaku, bilamana pemegang izin ternyata tidak mentaati ketentuan-ketentuan tersebut diatas.*

Demikian Izin Penelitian ini diberikan untuk dipergunakan sebagaimana mestinya.

Ditetapkan di : Jeneponto
27/06/2023 14:48:43
KEPALA DINAS,

Hj. MERIYANI, SP, M. Si
Pangkat: Pembina Utama Muda
NIP 19690202 199803 2 010

Tembusan :

1. ***Bupati Jeneponto di Jeneponto***
2. ***Kecamatan Binamu***
3. ***Kecamatan Arungkeke***
4. ***Kecamatan Turatea***
5. ***Arsip***

PEMERINTAH KABUPATEN SIDENRENG RAPPANG
DINAS PENANAMAN MODAL DAN PELAYANAN TERPADU SATU PINTU
JL. HARAPAN BARU KOMPLEKS SKPD BLOK A NO. 5 KABUPATEN SIDENRENG RAPPANG
PROVINSI SULAWESI SELATAN
Telepon (0421) - 3590005 Email : ptsp_sidrap@yahoo.co.id Kode Pos : 91611

IZIN PENELITIAN

Nomor : 345/IP/DPMPTSP/7/2023

DASAR
1. Peraturan Bupati Sidenreng Rappang No. 1 Tahun 2017 Tentang Pendelegasian Kewenangan di Bidang Perizinan Kepada Kepala Dinas Penanaman Modal dan Pelayanan Terpadu Satu Pintu Kabupaten Sidenreng Rappang
2. Surat Permohonan **JOCHEM MATTHIAS VAN DER DE** Tanggal **07-07-2023**
3. Berita Acara Telaah Administrasi / Telaah Lapangan dari Tim Teknis **DPMPTSP PROVINSI SULAWESI SELATAN**
   Nomor **20035/S.01/PTSP/2023** Tanggal **23-06-2023**

M E N G I Z I N K A N

KEPADA

NAMA : **JOCHEM MATTHIAS VAN DER DEEN**

ALAMAT : **JL. GRAFIKA NO. 2 YOGYAKARTA**

UNTUK : melaksanakan Penelitian dalam Kabupaten Sidenreng Rappang dengan keterangan sebagai berikut :

NAMA LEMBAGA / UNIVERSITAS	: **UNIVERSITAS GADJAH MADA**
JUDUL PENELITIAN	: **WIND FARM DEVELOPMENT IN INDONESIA: LOCAL SUPPORT FROM A DISTRIBUTIONAL- AND PROCEDURAL JUSTICE PERSPECTIVE**
LOKASI PENELITIAN	: **KABUPATEN SIDENRENG RAPPANG**
JENIS PENELITIAN	: **QUANTITATIVE AND QUALITATIVE**
LAMA PENELITIAN	: **01 Juli 2023 s.d 31 Juli 2023**

Izin Penelitian berlaku selama penelitian berlangsung

Dikeluarkan di : Pangkajene Sidenreng
Pada Tanggal : 07-07-2023

Biaya : Rp. 0,00

Tembusan :
1. UPC SIDRAP BAYU ENERGI
2. BAPPEDA
3. DEKAN FAKULTAS TEKNIK UGM