

Madalynn Bushard  
Ovid-Elsie High School  
Elsie, MI, USA  
Indonesia, Infrastructure  
March 12, 2025

### **Indonesia: Improving Infrastructure to Resolve Food Security**

Imagine living in a nation comprising 17,508 islands that stretch across the equator, boasting a diverse array of languages, cultures, and landscapes. Welcome to Indonesia, where people see that every day. Indonesia is a rather large country located in Southeast Asia (“Indonesia Maps & Facts” par. 8). It was founded in 1945 three days after the Japanese surrendered to the Allies (“Background Notes: Indonesia.” par. 6). Indonesia also shares three land borders with East Timor, Papua New Guinea, and Malaysia (“Indonesia Maps & Facts.” par. 1). Although this is an amazing place with fascinating features there is one major problem that's leading to another. When living in an area with poor infrastructure, it can be challenging to lead a fulfilling life, and this can also contribute to food insecurity. The country of Indonesia faces food insecurity challenges triggered by a lack of infrastructure, a problem that can be addressed through multiple solutions.

Indonesia is home to a vast and growing population, currently numbering over 281 million, making it the world's fourth-largest country. Over 23 million of them are suffering from food insecurity (“Indonesia | World Food Programme.” par. 1). Out of that population, the percent of urban population consists of 59%, and the rural population is 41% (“Indonesia: Population.” par. 1). Families in Indonesia usually consist of a mom, dad, and two or more children, however, in some rural areas families are larger as some Indonesian cultures believe that having more children leads to more blessings. The most common jobs in Indonesia are in the agriculture sector, wholesale trade, retail trade, and manufacturing. The estimated average salary per month is IDR 5,000,000 to 7,000,000, which, converted to US dollars, is equivalent to 300 to 450 dollars (“Livetecs.” par. 5). Now, for food, most families get their food, like rice and other crops, from small farmlands or small villages called kampungs. They cook their food usually by frying, boiling, grilling, roasting, sauteing, and steaming (“The Food of Indonesia.” par. 3). Therefore rice is the main staple of the Indonesian diet and is cooked in numerous ways in different dishes along with varying types of meats and shrimp, most of the food in Indonesia consists of steamed rice, beef, buffalo, and fruits or veggies like mangosteen, salak, coconuts, and pomelos. While enrolment may be universal in wealthier areas, in poor rural areas many children cannot attend school or be educated (“Indonesia: Education.” par. 4). In most cases, when children can attend school, the school can be far from the children's house, and even attendance among teachers can be poor, especially if weather conditions are bad (“Indonesia: Education.” par. 4). Along with healthcare, medical facilities are well in urban areas, but changes are being made in rural clinics. However, all citizens do have access to healthcare, but the most affordable and popular option is traditional medicine. As a result, some of the most common issues with citizens who visit doctors and clinics are caused by malnutrition, lack of extensive parental care, pollution, poor sanitation, unsafe drinking water, and other diseases (“Indonesia: Health.” par. 1). Moving on to the infrastructure in Indonesia most families live in houses made of any available materials and accessible materials (“Indonesia: Housing.” par. 3). Most of the time, they don't have running water or sanitation

facilities. Instead, they have portable bathtubs to wash themselves and their clothes (“Indonesia: Housing.” par. 2). They also don't always have access to toilets with running water. Additionally, over 30 million people in Indonesia lack access to electricity or a telephone. In conclusion, some factors that typical families in Indonesia face are the average length of education, life expectancy, and government spending on infrastructure.

Poor infrastructure can be a significant challenge in a country, and Indonesia is no exception. Infrastructure is the basic systems and services, such as transportation and power supplies, that a country or organization uses to work efficiently and effectively (“INFRASTRUCTURE | Definition in the Cambridge English Dictionary” par. 1). In other words, it's the physical structure and facilities critical for the operation of society, such as roads, bridges, power, etc. Several factors contributing to this trend in Indonesia can be categorized into two groups. First is “hard” infrastructures, which include roads, airports, and electricity supply. The second is “soft” infrastructure, which is social welfare and healthcare. The impact of infrastructure on urban areas is evident in areas such as high population density and congestion, a decline in affordable housing, inadequate waste management, and water pollution. Following this, in rural areas, infrastructure can impact factors such as restricted access to quality healthcare, insufficient public transportation, poverty, and unemployment. Despite all the things they do, the impact of infrastructure on demographic groups is not particularly significant. This topic affects marginalized populations by limiting access to vital services, including healthcare, education, and transportation. When it comes to the environment and infrastructure, they often do not come hand in hand. Some environmental issues in Indonesia affected by infrastructure include deforestation, which is mostly illegal, air pollution, traffic congestion, garbage management, and unreliable water and wastewater services. Focusing on the primary issue of food insecurity, infrastructure plays a crucial role in addressing this problem. In many developing countries, inadequate infrastructure along the supply chain and inefficient services result in high transportation costs, delays, food price volatility, shortages, and post-harvest losses.

Some of the major infrastructure issues that are active in Indonesia include bridges, tons of deaths, and injuries that have come from local bridges in Indonesia, multiple every year, washed away by floods, along with houses (“Central Sulawesi Disaster: An Opportunity to Strengthen Road and Bridge Resilience in Indonesia?” par. 2). Power and electricity, Indonesia has an oversupply of electricity, which sounds good, but they don't know what to do with it, so it all goes to waste (“Indonesia’s Electricity Challenges, How to Overcome Excess Electricity Supply?” par. 1). To follow that problem, they are having a hard time covering the cost of generating capacities and constructing electricity networks in remote areas. Transportation and roads, most transportation in Indonesia can be considered dangerous, congested, and undisciplined. Air, ferry, and road accidents resulting in fatalities, injuries, and significant damage are common in Indonesia, as roads are often congested and many drivers and motorcyclists believe they have the right of way (“Indonesia Traffic Safety While Traveling. - CountryReports.” par. 3-4). Water supply, the combination of extreme weather, pollution, and underinvestment in water infrastructure is already pushing cities like Jakarta itself to the edge (“Jakarta Is a Thirsty Metropolis without Drinkable Water.” par. 3). To conclude, Indonesia's infrastructure challenges are deeply interlinked with its urban and rural issues, environmental concerns, and social challenges, showing the urgent need for better investment and improvement into the poor infrastructure.

To address some of the pressing issues surrounding Indonesia's infrastructure and help resolve food insecurity, several targeted solutions must be implemented. The number of solutions I could find in Indonesia that are already in action was limited, as there has been little effort, and securing funds for projects is difficult. Some improvements or initiatives that have been attempted include developing a \$50 billion recovery plan annually from 2020 to 2024; however, this effort wasn't fully implemented or put into use. Following that, Indonesia focused on waste management, and it began to utilize recycling facilities, composting facilities, and waste-to-energy plants. Lastly, they focused on sustainable mobility by utilizing clean transportation energy and accessing affordable energy sources, such as renewable energy sources. The impact of those solutions is mostly felt throughout Indonesia, and although new problems arise, they do not hinder the way conflicts are solved. While this country may be lacking some resources for rebuilding, it has numerous strengths and resources. Indonesia is rich in agricultural land, and it is already adopting new sustainable farming practices. Equally important, they have an abundance of rivers and streams.

When seeking inspiration, solutions can sometimes be closer than expected, as similar countries often face similar issues. Some other countries that struggle with infrastructure include Vietnam, India, and the Philippines. When infrastructure came to these countries, they took a moment and took action. Vietnam was struggling with a high population and a road system and network that were not strong enough to support it all. What they did was that their government recently approved a plan to spend \$ 43-65 billion on upgrading and building roads, rail, inland waterways, sea, and air transportation. To help with the cost, they also partnered with the Public-Private Partnership. Without a doubt, it worked in their favor because they have moved up on the scales from the World Economic Forum Global Competitiveness Report in both infrastructure and transport infrastructure (“Infrastructure | Open Development Vietnam.” par. 2). Moving on to India, one of their big struggles here was distributing and supplying power. To ensure they had enough power, they explored distributed energy and solar energy options. They also centralized their grid and contributed to the global effort to reduce greenhouse gas emissions (“5 Ways India Can Overcome Its Infrastructure Challenges,” par. 11). Lastly, the Philippines was vulnerable to natural disasters. The Philippines handled this inconvenience by putting money aside to help invest in climate-proof infrastructure to help everything be more resilient (“Building Resilience to Natural Disasters and Climate Change: A Model Application.” par.2). So in conclusion, other countries are going through the same problem as Indonesia, and in reality, it would be appropriate and feasible to implement a similar solution in Indonesia.

To address Indonesia's infrastructure challenges, solutions include investing in environmentally friendly transportation, water and sanitation systems, and sustainable farming practices. For my first recommendation to help Indonesia reduce its infrastructure and, hopefully, improve food security, there are a couple of steps. Water and sanitation are super important for one's health, and in Indonesia, the capital relies on various water sources that are frequently polluted by industrial and domestic waste. According to Water.org Indonesia's water and sanitation crisis, “About 192 million Indonesians lack access to safe water and 14 million lack access to a safe toilet,” which is why my first solution is to create a new water system in the middle of cities and villages (“Indonesia's Water Crisis - Indonesia Water Problems in 2020” par.2). With all of Indonesia's rivers and streams, simple canals could lead into villages and cities to lead to new water supply systems and sanitation facilities to improve public health. Constructing canals from local rivers to bring water into town will provide power for solar energy and

supply the village with a reliable energy source. Additionally, it will give people sanitized water for drinking, bathing, and cooking. The impact I aim to make with this approach is to improve the sanitation of the water, making it usable for multiple purposes, while also generating energy and electricity. Some limitations would include a lack of resources on the intended path of the canals, the availability of funds to purchase additional materials, and the agreement of the local people. Some cultural norms that need to be considered when developing this project include existing laws, as I am not familiar with all the rules, and the potential disturbance to people already living near the canal path. Because this is a larger project with more extensive construction, the individuals who would help lead this plan would be the government and international development organizations. The best resources and funding required to implement this project would be to partner with a Private-Public partnership to share costs and expertise. Some policies that would need to be implemented include monitoring and accountability, as well as allowing the public to provide feedback and report any issues or concerns. Legal and regulatory work is necessary to ensure they can utilize that water and construct canals across the land. And lastly, the project is climate change resilient. Since Indonesia is prone to natural disasters, it's better to be safe than sorry, and we don't want to waste any more resources. In conclusion, this solar-powered canal water sanitation and energy source would help supply energy and clean water, addressing some infrastructure issues and the lack of clean water that people currently obtain.

My second recommendation is that, since Indonesia experiences multiple natural disasters each year, I think being able to avoid the widespread crop destruction would be an advantage. To achieve this, options such as greenhouses or indoor farming can be used to keep the crops safe within an enclosed structure. Community gardens would be an option that brings the community together, while also being feasible and affordable. The last option could be designing more houses with roofs that can hold rooftop gardens, so when floods come from hurricanes and storms, crops aren't flooded and wasted. The impact I'm hoping to achieve with this is that since they can't predict the weather, they can provide fresh crops for their communities without them getting destroyed. Some limitations to this idea include the cost of supplying agricultural supplies, the already crowded nature of cities, and citizens' reluctance to take an active role in caring for community gardens. Cultural norms that need to be taken into consideration when starting this initiative include personal space, as well as whether all villages are willing to have community gardens occupy space, and whether they are eager to have the government allocate funds for indoor facilities. The best people to help lead this project would be community members, the government, and international development organizations. Just as with the other recommendation, a resource that would help with funding is a Private-Public partnership to help offset the cost, and again, share their expertise. Policies that would need to be implemented include land use and zoning policies, water and irrigation policies, and community engagement strategies. The resources my country already has to help advance the impact of this solution are numerous people and farmers to assist with improvement, as well as extensive land for new agricultural development. To sum up, this plan will help provide healthy, climate-resilient, and community-grown foods to alleviate some food insecurity. Because we are using public-private partnerships, there would still be some extra money that builds up from these projects, and with that, they could look into upgrading some roads that would help ensure people can transport goods into the cities as well (Grandstaff, Matt, Personal Interview, 28 Feb. 2025.).

Ultimately, Indonesia faces food insecurity that is linked to Its Infrastructure. With Indonesia having poor infrastructure, it can impact how families function in their everyday lives and whether they can live a

fulfilling life. Examining the country itself and the solutions of other countries can help reduce the need for infrastructure. When infrastructure is extensive, it can make it difficult to supply food to everyone. If the roads are bad, people won't be able to transport goods to places. If there is no way to sanitize water, people can't hydrate themselves, bathe, or cook. When natural disasters strike and destroy all the crops, farmers often feel defeated and are unable to supply food. If effective plans are put into place, Indonesia has the resources and help to beat poor infrastructure and food insecurity.

## Works cited

- “Background Notes: Indonesia.” *1997-2001.State.gov*,  
1997-2001.state.gov/background\_notes/indonesia\_0010\_bgn.html. Accessed 3 Feb. 2025.
- “Central Sulawesi Disaster: An Opportunity to Strengthen Road and Bridge Resilience in Indonesia?”  
*World Bank Blogs*,  
blogs.worldbank.org/en/transport/central-sulawesi-disaster-opportunity-strengthen-road-and-bridge-resilience-indonesia. Accessed 3 Feb. 2025.
- "Indonesia: Education." *CultureGrams Online Edition*, ProQuest, 2025,  
online.culturegrams.com/world/world\_country\_sections.php?cid=76&cn=Indonesia&sname=Education&snid=21. Accessed 02 Feb. 2025.
- "Indonesia: Health." *CultureGrams Online Edition*, ProQuest, 2025,  
online.culturegrams.com/world/world\_country\_sections.php?cid=76&cn=Indonesia&sname=Health&snid=22. Accessed 02 Feb. 2025.
- "Indonesia: Housing." *CultureGrams Online Edition*, ProQuest, 2025,  
online.culturegrams.com/world/world\_country\_sections.php?cid=76&cn=Indonesia&sname=Housing&snid=27. Accessed 02 Feb. 2025.
- "Indonesia: Population." *CultureGrams Online Edition*, ProQuest, 2025,  
online.culturegrams.com/world/world\_country\_sections.php?cid=76&cn=Indonesia&sname=Population&snid=3. Accessed 01 Feb. 2025.
- “Indonesia Traffic Safety While Traveling. - CountryReports.” *Www.countryreports.org*,  
www.countryreports.org/country/Indonesia/traffic.htm. Accessed 4 Feb. 2025.
- “INFRASTRUCTURE | Definition in the Cambridge English Dictionary.”  
*Dictionary.cambridge.org*, dictionary.cambridge.org/us/dictionary/english/infrastructure.  
Accessed 4 Feb. 2025
- International Monetary Fund. Asia and Pacific Dept. “Building Resilience to Natural Disasters and Climate Change: A Model Application.” *IMF eLibrary*, International Monetary Fund, 15 Dec. 2023,  
www.elibrary.imf.org/configurable/content/journals\$002f002\$002f2023\$002f415\$002farticle-A003-en.xml?t%3Aac=journals%24002f002%24002f2023%24002f415%24002farticle-A003-en.xml. Accessed 5 Mar. 2025

- Kurniawati Hasjanah. "Indonesia's Electricity Challenges, How to Overcome Excess Electricity Supply? - IESR." *IESR*, 11 Oct. 2023,  
[iesr.or.id/en/indonesias-electricity-challenges-how-to-overcome-excess-electricity-supply/](http://iesr.or.id/en/indonesias-electricity-challenges-how-to-overcome-excess-electricity-supply/).  
Accessed 4 Feb. 2025.
- "Livetecs." *Livetecs.com*, 29 Aug. 2024,  
[www.livetecs.com/blog/average-salary-in-indonesia-2024/](http://www.livetecs.com/blog/average-salary-in-indonesia-2024/). Accessed 4 Mar. 2025.
- Open Development Vietnam. "Infrastructure | Open Development Vietnam." *Open Development Vietnam*,  
8 Oct. 2022,  
[vietnam.opendevlopmentmekong.net/topics/infrastructure/](http://vietnam.opendevlopmentmekong.net/topics/infrastructure/). Accessed 5 Mar. 2025.
- Saluja, Dipender. "5 Ways India Can Overcome Its Infrastructure Challenges." *World Economic Forum*,  
Nov. 2014,  
[www.weforum.org/stories/2014/11/five-ways-india-can-overcome-infrastructure-challenges/](http://www.weforum.org/stories/2014/11/five-ways-india-can-overcome-infrastructure-challenges/).  
Accessed 6 Mar. 2025.
- Teoman, Denis. "Jakarta Is a Thirsty Metropolis without Drinkable Water." *Eco-Business*, 17 Oct. 2024,  
[www.eco-business.com/opinion/jakarta-is-a-thirsty-metropolis-without-drinkable-water/](http://www.eco-business.com/opinion/jakarta-is-a-thirsty-metropolis-without-drinkable-water/).  
Accessed 1 Feb. 2025.
- "The Food of Indonesia." *Otaokitchen.com.au*,  
[otaokitchen.com.au/blog/learning/the-food-of-indonesia-b284.html](http://otaokitchen.com.au/blog/learning/the-food-of-indonesia-b284.html). Accessed 30 Jan. 2025.
- Water.org. "Indonesia's Water Crisis - Indonesia's Water Problems in 2020." *Water.org*, 2020,  
[water.org/our-impact/where-we-work/indonesia/](http://water.org/our-impact/where-we-work/indonesia/). Accessed 6 Mar. 2025
- World Atlas. "Indonesia Maps & Facts." *WorldAtlas*, 16 Dec. 2023,  
[www.worldatlas.com/maps/indonesia](http://www.worldatlas.com/maps/indonesia). Accessed 1 Feb. 2025.
- World Food Programme. "Indonesia | World Food Programme." *Www.wfp.org*, 2022,  
[www.wfp.org/countries/indonesia](http://www.wfp.org/countries/indonesia). Accessed 30 Jan. 2025.