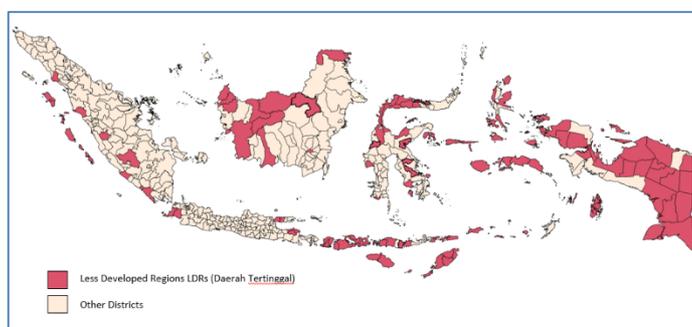


# Infrastructure scoping study: Indonesia

## 1. Introduction

In the less developed regions (*Daerah Tertinggal*, or 'LDRs') of Indonesia the quality of infrastructure services can be well below national standards. This includes limited access to water, sanitation, and electricity, underdeveloped ports, and unsuitable waste management. Various common challenges to improved service delivery include fragmented institutional structures, poor cost recovery, limited human resources, lack of public investment, and poor asset management, all working to limit economic growth and constrain living standards.

Figure 1: Less Developed Regions in Indonesia



The Government of Indonesian (GoI) has long had an objective of promoting economic development in laggard/Eastern regions to overcome income and price disparities. This includes promoting connectivity, and development in a range of sectors, some of which will be covered in this summary.

The views and opinions expressed in this document are those of the authors and do not necessarily reflect the official policy or position of any department of the UK Government.

## 2. Sectoral analysis

### 2.1 Water

#### Key issues:

Water is a decentralised function, with local government owned water utilities (*Perusahaan Daerah Air Minum*, or 'PDAM') having prime responsibility for production and distribution of drinking water. Only 57% of population in the 122 LDRs has access to 'improved water' (a measure including piped water, and uncontaminated well water amongst others), lower than the national average of 61%. Of the 58 PDAMs in LDRs various metrics suggest underperformance:

- Only 10 PDAMs offer 24-hour operational hours; 6 PDAMs operating less than 6 hours per day
- 90% of PDAMs record non-revenue water (NRW, a measure of leakage) above government target of 20%
- Only 36 PDAMs have less than 8 employees per 1000 connections (the government target) suggesting overstaffing and inefficiency
- 24% of PDAMs have 50% or more idle capacity, due to water source problems and insufficient distribution systems
- Poor governance means that only 16 of 58 PDAMs reached full cost recovery (FCR) in 2017. This inability to retain earnings, coupled with low budget allocations stifles investment and profitability

Additionally, local governments do not trust PDAMs to improve service if tariffs increase, supervisory bodies do not function well, and PDAMs have become highly politicised tools through non-transparent director appointments. Having been split into multiple units following decentralisation, PDAMs in LDRs also tend to be too small to deliver adequate quality services with average total connections of under 14,000 (we calculated 30,000 as the minimum efficient scale of operation).

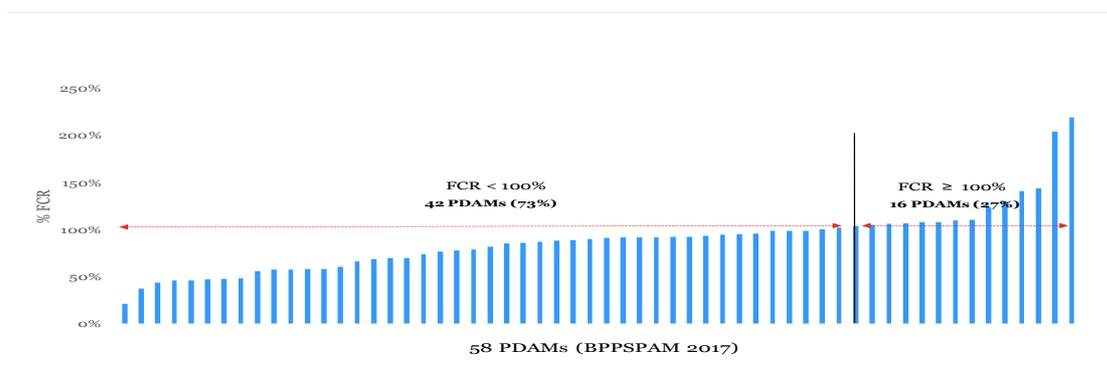
#### GOI and Donor response:

A number of donors have attempted various programmes to assist PDAMs in Eastern Indonesia, with varying degrees of success:

- **National water hibah programme;** Foreign Affairs and Trade of Australia (DFAT) funded water programme which used performance-based conditionality to incentivise local government investment in water networks; very successful and now being rolled out at a greater scale.
- **National Urban Water Supply Project (NUWAS);** funded by the World Bank and is yet to launch but will focus on capacity building and technical assistance for PDAMs.
- **NTT/NTB Water Governance programme;** implemented by IndII (DFAT-funded) and responded to the fact that previous technical assistance programmes had been ineffective, with improvements difficult to sustain. This program aimed to align incentives and build trust across stakeholders (local government, legislature, and the community), with ‘social contracts’ at its core prompting all parties to make certain commitments. Showed promising results but was wound up in 2016/2017; will be continued as a Gol led initiative, scaled up across many regions.
- **PDAM Finance Reform activity** (known as ‘20 PDAMs’); assisting 20 less healthy PDAMs to produce bankable business plans with corporate governance initiatives to help access additional funds. Ultimately directed to support a Gol program to provide capital guarantee and subsidies for PDAMs borrowing from commercial banks. Some successful participants, such as East Lombok PDAM which accessed investment funds from commercial banks and the government.
- **Development of model bid documents;** reduces complexity for Government Contracting Agencies (GCAs) to progress PPP projects through the transaction process, accompanied by teaching materials and an associated training programme. Helps save time, generate clearer processes that streamline work, decrease probability of disputes, and assists GCAs maintain transparency and accountability.

Focuses for the future could be promoting the move towards FCR, promoting governance reforms, helping PDAMs create bankable business plans, and rolling out the model bid documents to support the procurement / transactions for water projects at the local level.

Figure 2: Full Cost Recovery (FCR) (% Daerah) 58 PDAMs in LDRs 2017



## 2.2 Waste management

### Key issues:

As Eastern Indonesia rapidly urbanises, waste management systems are unable to keep up with the growth in produced waste. The Gol has emphasised the importance of establishing public-private partnerships to enhance capacity, introducing international standards, and achieving sustainable consumption levels by promoting ‘reduce-reuse-recycle’. Gol has also committed to develop a comprehensive waste management strategy.

Although policies explicitly delegate responsibility of waste management to local governments, there is generally a joint effort between community organisations and local governments. Waste management capacity is much lower in smaller cities and regencies than larger cities, due to 1) institutional fragmentation, 2) poor technical knowledge, 3) insufficient administrative budget, 4) lack of

transportation facilities, 5) lack of enforcement of existing policies and regulations, and 6) public awareness and consumer attitudes.

Currently, cities have landfills (TPA) along with a few temporary disposal facilities (TPS), but waste disposal in rivers and traditional waste collection and processing are still major phenomena across Indonesia. Major challenges include a lack of effective enforcement of policies (nationally and locally) and inadequate allocation of funds for waste management.

### **Gol and Donor response:**

Though central bodies have contributed to infrastructure building for TPAs and TPS-3Rs (these also rely on recyclable waste to generate revenue), poor budgetary planning and political will has made handover to city administrations ineffective at optimising these new facilities. Therefore TPAs are often poorly managed by local authorities, with local capacity / commitment undermining sustainability. The Directorate General of Human Settlements (*'Cipta Karaya'*) has "directive projects" at specific TPAs, but again poor management hinders effectiveness and training is often insufficient.

Currently microbusinesses, community groups and SMEs are leading efforts in the recycling industry, with 20% of plastics, metals, glass, paper, tires, and other materials are recovered and recycled by the private sector; this is primarily done through Waste Banks, with some even having capacity to compost organic waste, which has multiple advantages.

Gol is also working to develop 13 waste-to-energy power plants across the country (which are still under construction), but are heavily dependent on state-owned companies and private companies. WtE is increasingly being seen as a solution to waste problems for Indonesian cities across the archipelago.

Key areas for future focus could include leveraging centrally provided assets to ensure effective use and maintenance as well as addressing fragmentation through institutional arrangements.

## **2.3 Energy**

### **Key Issues:**

High costs of generation is the central problem undermining electrification efforts. Electrification in Eastern Indonesia, which is on average below 80% and well below national averages, is difficult due to remoteness of the target islands and villages, the small size of the grids, and the limited financial capacity of households to pay for electricity. A 2016 Asian Development Bank report estimated that the required capital investment for universal access to electrification is some 8-48 times the average annual public investment in electrification.<sup>1</sup> Difficult terrain and topography, dependence on resource outsourcing, and the unwillingness of developers to implement projects in Eastern Indonesia are additional barriers.

### **Gol and Donor response:**

There is no overall Government electrification strategy; responsibility is mostly held by PT PLN (Persero) (PLN), the Indonesian State utility. Lack of coordination has prevented previous programmes (e.g. "Indonesia Terang", or the Renewable Energy for Electrification Programme) from becoming fully operational and effective).

Various donor programs are ongoing or in planning to promote electrification in Eastern Indonesia:

- **Indonesia Sustainable Least-cost Electrification (ISLE)**; World Bank funded, aiming to leverage private sector investments and expertise while developing renewable energy, access,

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<sup>1</sup> ADB, 2016. Achieving Universal Electricity Access in Indonesia, available online at <https://www.adb.org/sites/default/files/publication/182314/achieving-electricity-access-ino.pdf>

and target un-electrified rural areas. Provide technical assistance and support developing business models.<sup>2</sup>

- **Sustainable Energy Access in Eastern Indonesia-Electricity Grid Development Programme**; partly funded by ADB / KfW loan, supports development of electricity distribution networks, targeting sustainable use of electricity as a driver of increased economic activity.<sup>3</sup>
- **Electrification Planning for Papua and Maluku**; Using the Reference Electrification Model (REM) the tool will augment existing plans to expand knowledge and degrees of freedom for the planner.<sup>4</sup>
- **Electricity for the Poor**; targets 100 cities/districts with lowest welfare indices in a joint initiative between government bodies and NGOs. Encourages private sector participation through corporate social responsibility funding to alleviate poverty by distributing free solar panels to poor households.<sup>5</sup>
- **NZMATES**; funded by New Zealand government, aims to increase uptake of affordable, reliable, and renewable energy by providing assistance throughout RE project development lifecycle.<sup>6</sup>
- **Indonesia Renewable Energy Programme** (upcoming); FCO (UK Govt) programme that aims to deliver poverty reduction, economic development, and gender equality by developing RE sector through policy development, technical assistance, infrastructure delivery, and increased networking and collaboration.<sup>7</sup>

Major challenges remain in electrification planning at the local level, assistance with operation & maintenance of micro-grids, integrating renewables with the production and distribution of water, and project identification / initial feasibility.

## 2.4 Local roads

### Key issues:

Economic growth is undermined as subnational roads deteriorate with the lack of adequate investment. In LDRs, road maintenance tends to be underfunded, delayed, and poorly implemented locking local governments into a vicious cycle of build-deteriorate-rehabilitate as eventual reconstruction is made more expensive by poor maintenance. Local funds are insufficient, spending is allocated inefficiently, road agencies are not held accountable for performance, and the role of the central government is not clear.

### Gov and Donor response:

Directorate General of Highways (DGH) and Ministry of Public Works (MPWH) initiate movement towards contracted works and performance-based contracting (PBC), which offers cost savings, certainty in expenditure planning, and improved results. There are difficulties, including monitoring,

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<sup>2</sup> World Bank, 2019. Project Information Document (PID) - Indonesia Sustainable Least-cost Electrification (ISLE) - P169259, available online at <http://documents.worldbank.org/curated/en/952431548153802613/Project-Information-Document-PID-Indonesia-Sustainable-Least-cost-Electrification-ISLE-P169259>

<sup>3</sup> ADB, available online at <https://www.adb.org/projects/50016-001/main#project-documents>

<sup>4</sup> Universal Energy Access Lab of IIT-Comillas, available online at [https://www.iit.comillas.edu/proyectos/mostrar\\_proyecto.php.en?nombre\\_abreviado=AsianDB\\_Indonesia](https://www.iit.comillas.edu/proyectos/mostrar_proyecto.php.en?nombre_abreviado=AsianDB_Indonesia)

<sup>5</sup> TNP2K, available online at <http://www.tnp2k.go.id/images/uploads/downloads/02102016%20Final%20Convert%20infographic%20Listik%20Bagi%20Masyarakat%20Miskin-1.pdf>

<sup>6</sup> NZMATES, available online at <https://www.nzmates.org/about/what-nzmates>

<sup>7</sup> FCO, available online at [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/759290/Indonesia\\_Renewable\\_Energy.odt](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/759290/Indonesia_Renewable_Energy.odt)

ensuring minimal quality standards, training contractors and supervisors, and the politically difficult task of downsizing the public sector.

Main response has been the joint GOA/Gol **Provincial Road Improvement Programme (PRIM)**, focusing on West Nusa Tenggara (NTB) but being rolled out nationally. This programme is funded by DFAT and managed by IndII/KIAT; uses incentive of conditional grants and performance-based contracting of private players. To date, grants reimburse up to 40% of works costs if outputs were developed according to standards. Grants also supplemented by technical assistance support from DFAT to increase probability of success after aid ceases. About AUD 79 million (25% of total costs) was invested by DFAT, but going forward much of these costs will be covered by the central government as it is mainstreamed as an APBN-funded programme.

PRIM has been a success, resulting in over 5000km of road receiving rehabilitation, improved quality of road works, improved governance practices, among other benefits. Its success has motivated other similar programmes based on the same model in other regions including the *Program Nasional Jalan Daerah* (PHJD) a grant programme for roads.

Further support could be targeted towards assisting at the central level on road management, assistance at the local level in planning & budgeting, supporting training private sector implementers, and building community engagement in road maintenance decision making and implementation.

## 2.5 Ports and Special economic zones

### Key issues:

The geography of Indonesia and substandard infrastructure are primary reasons why logistics costs are very high at over 20% of GDP. This results in regional disparities in development, prices, and declining international competitiveness. This has particularly affected Eastern Indonesia.

Lack of connectivity results in economic autarky and high economic concentration, where regions are dependent on a limited number of commodities.

Inadequate infrastructure drives up costs of transport, with high variation in sea freight costs; it is at the port that exacerbates this, often due to time delays.

Figure 3: Freight Logistics and Route Costs



Notes:

1. Source: World Bank, various reports
2. In figure on the right freight costs are in black, total costs (including port costs) are in red

Various problems undermine port productivity in Eastern Indonesia, including lack of containerisation and storage yard facilities, lack of available berths, lack of competition, poor human resource capability, lack of functioning IT systems, poor quality management, and more. Frequent incidence of cargo being stored at ports for long periods of time is another factor constraining performance.

### Gol and Donor response:

Gol's *'tol laut'* (sea toll) concept proposes a regulation shipping network connecting main ports from West to Eastern Indonesia, including hub ports that consolidate cargo from feeder ports to redistribute to smaller ones. To make a major difference, significantly greater investment in port infrastructure is required, as well as increases in container volumes. There is open scepticism over the programme's effectiveness and whether there has been any impact on prices. Shippers remain concerned about deploying ships on the longer *'tol laut'* routes, when competitors can focus on more densely trafficked shorter routes. The PELINDO Port companies are reluctant to upgrade facilities when they are unsure whether larger ships would come, leaving a kind of 'chicken or egg' situation.

In Eastern Indonesia, GoI appears increasingly focused on promoting private investment. A 2017 World Bank study maps out where investment would have the highest impact, and what economic benefits would accrue to those regions. Working in ports has proven difficult for donors and there is little to no on-ground implementation work.

Using tax concessions and supporting infrastructure, Special Economic Zones (KEK) have been created to try and push development away from the congested and higher production cost areas of Java and other Western Indonesian hubs. Many are struggling to get established, however, and are underutilised. Common challenges include the lack of infrastructure ready to support businesses in SEZs, the lack of an anchor tenant, the lack of a clear development strategy, and insufficient commercial incentives.

An important aspect for future development could include ensuring coordination to avoid multiple investments crowding each other out, and interesting work is being done by the Global Green Growth Initiative on the interface between ports and special economic zones.

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