

Feasibility Study Advisory Services

Integrated advice, holistic approach

The interrelatedness and complexity of delivering social and economic infrastructure services has got us asking what we can do better to deliver holistic solutions.

Our Feasibility Study Advisory Services across Southeast Asia provides integrated financial and technical advice for capturing economic, social, and commercial value.



Energy

Transport

Power

Water

Healthcare

Solid

Waste

Industrial

Cities

Tourism Development

Education



Feasibility Study Advisory Services

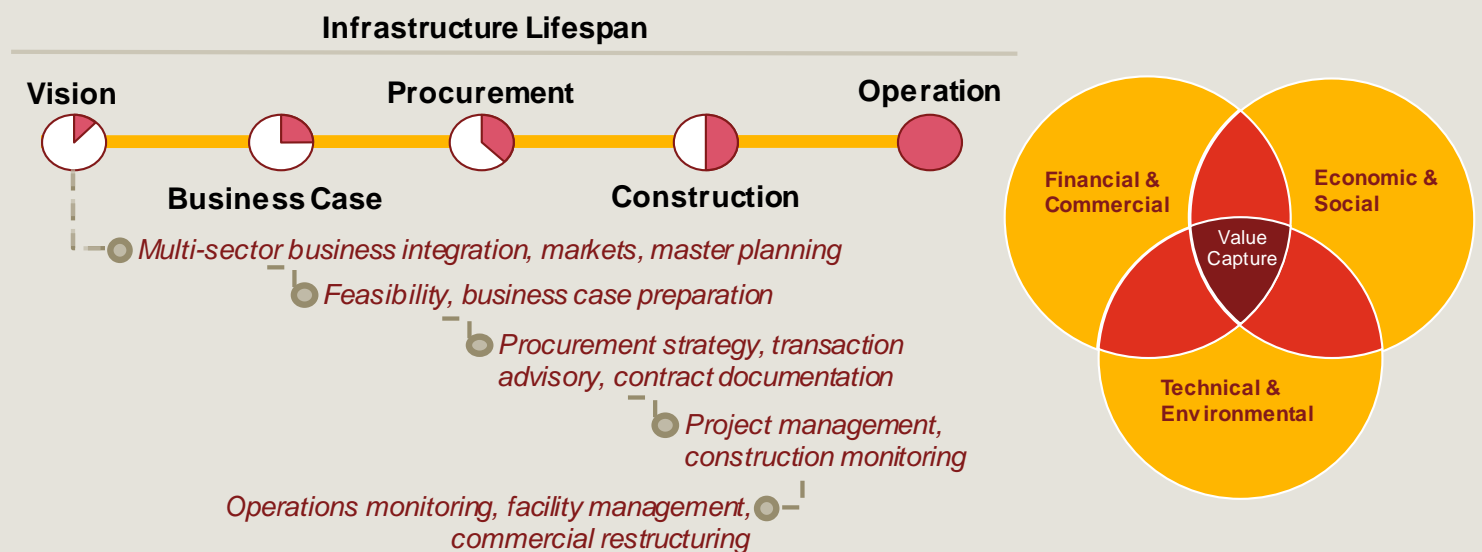
What we do, Who we are

We assist clients from the visioning stage, through feasibility, business planning, procurement and into monitoring of construction, then operation of infrastructure assets. Throughout, we determine infrastructure and operating requirements, quantify your costs & benefits, assess key risks and recommend contingencies necessary to support your informed decision making.

Our Feasibility Study Advisory Services across South-east Asia are delivered by professionals who provide commercially-orientated, technically-based advice on economic & social infrastructure. Our regionally based team includes planners, economists, scientists, environmental experts, chartered engineers and finance experts with experience in planning, engineering, contracting and operating infrastructure, as well as commercial and project finance advisory. Our clients include Governments, multi-lateral development banks, investors, lenders and developers.

Our team includes planners, economists, scientists, chartered engineers, finance experts and environmental specialists.

We will pool the right expertise so that we can help you maximise potential synergies through our unique market convergence approach.



1. Visioning & Strategy

Clear vision, clear direction

Our professionals support your **Visioning** through independently assessing the real market drivers and undertaking comprehensive stakeholder engagement to determine long-term goals and desired outcomes from infrastructure development. Visioning must consider the context in which infrastructure is required to achieve cross-sector integration, whilst aligning with the UN's Sustainable Development Goals to increase business resilience.

And a realistic strategy of how to get there

Our **Strategy** advice provides realistic steps to reach your business goals: Business goals are aligned with investments to unlock revenue generation and create value using our technically-based and commercially-orientated **Master Planning** for commercial and industrial developments; assessment of accessible financial and human resources can set ambitious yet reachable milestones; and early assessment in environmental, social & governance compliance requirements can enable early prevention of programme delays and budget over-runs. The outcome is a **Strategic Case** for steering the business or project, where we ascertain 'strategic fit' by making the case for change, determining shortlist for potential affordable options and helping convey management capacity and capability to deliver.

Global Infrastructure Programme, Phase I & II

We are assisting the UK Infrastructure Projects Authority (IPA) in adapting UK's business case (5 Case Model) and project readiness assessment methodology (Project Initiation Routemap) to Indonesia with Bappenas as the beneficiary.

Semarang Waste-to-Energy OBC

We are preparing an Outline Business Case for Semarang Waste-to-Energy PPP project, including analysis on the technical and commercial aspects.

2. Business Case

Preparation of a Business Case is steered by the Strategic Case to develop:

- **The Economic Case:** Bankable infrastructure projects are driven by real demand. We appraise real demand for infrastructure services. This is based on sound appreciation of the underlying project drivers. The Economic Case can then also analyse how an infrastructure project provides broader social, environmental and economic benefits and thus demonstrates the rationale for the project size, scope and appropriate service levels.
- **The Commercial Case:** We build the Commercial Case around testing the technical feasibility of the project. Our technical staff appraise fundamental feasibility issues such as:

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| <ul style="list-style-type: none"> ▪ Defining how achieving appropriate service levels will deliver the consequent revenues ▪ Defining the project scope & selecting appropriate technical solutions to meet the technical requirements | <ul style="list-style-type: none"> ▪ Defining a programme and date for commercial operation ▪ Scoping requirements for managing social, gender, environmental, governance and compliance issues |
| <ul style="list-style-type: none"> ▪ Defining required technical performance in terms of key performance indicators (KPIs) ▪ Deriving the appropriate sizing of the project based on predicted demand and revenue factors | <ul style="list-style-type: none"> ▪ Appraising land issues, site access issues and utility requirements ▪ Presenting a realistic assessment of project risks, and ▪ Estimating the whole-life costs. |

Floating Solar PV Project

We assisted in finding a strategic partner for a floating-solar power plant in West Java province, which is planned to have a capacity of approximately 100-200 MW that will become the largest solar power plant in Indonesia.



A Preliminary Commercial Case development usually requires taking practical assumptions based on technical experience. This will define an initial base case and test feasibility by analysing scenarios that are supported, where applicable, by our benchmark database.

- **The Financial Case:** Based on the commercial case, we provide technical support to our colleagues to develop comprehensive financial models, scenario analysis and to guide risk and value-for-money analysis, including on issues impacting on structuring and project financing for Capital Costs, periodic facility renewal capital expenditures and Operation & Maintenance Costs.
- **The Management Case:** Development of resilient infrastructure services requires ambitious changes to management practices. We advise on embedding the latest digital technologies and management practices to achieve a high performing corporate culture. We appraise the technical capacity of key staff required to create Project Management Offices for managing the commercial & cost control of investment through to revenue generating commercial operation.

3. Procurement

The Business Case leads our preparation of your procurement. Our familiarity with the markets and the technical and commercial requirements provides you with comfort that the **Procurement Strategy** is appropriately assigning obligations and risks through your supply chain.

EU Gateway for Green Energy Technology

Supported the European Commission in coordinating business matchmaking events in Indonesia and Singapore for 38 EU Green Energy Technology businesses



Expansion of Patuha Unit 2 and Unit 3

Feasibility study for PT Geo Dipa Energi (Persero) for expansion of existing power plants in Java, i.e Patuha Unit 2 and Unit 3

Our **Transaction Advisory Services** enable the implementation of the Procurement Strategy; from taking the project to market and securing investor commitment for achieving financial close, through to commercial operation. Our **Contract Documentation Services**, as a sub-set of Transaction Advisory services, involves working with your lawyers to draft the technical and financial content of procurement documents, including robust technical specifications, KPIs and payment mechanism, commissioning and certification processes and performance penalties. On the bidders side, we provide technical, commercial and financial **Bid Advisory Services**.

4. Construction

Commercial success during construction requires the Project Owner to apply disciplined contract administration through a project management office to control costs and programme. Our **Project Management Services** include supplying project control teams to oversee or support project delivery on behalf of governments or lead sponsors. For regulating agencies, lenders and minority sponsors, we provide **Construction Monitoring Services** to report on project progress and project risks that can have a material impact on timely service delivery and diminish financial returns.

Independent Contract Review can be a powerful tool for clients embarking on construction or acquisition of operational assets. It may be especially relevant to situations where existing contract conditions are novated to you or you are proposing to engage in a new partnership to deliver or operate an asset. It could also be that you are looking to determine if the project is delivering value as was originally envisaged at feasibility stage. We will dispatch experienced technical experts to perform an independent technical review of the project and relevant contracts to assess if the project is delivering on its objectives as originally planned and make recommendations for improvement.

Independent Project Review can be implemented when large infrastructure projects start to fail. Investors & lenders must act to protect their interests. Our familiarity with contractual and construction risk enables us to provide the forensics as to why the project is failing, and to determine what contractual remedies or claims can be applied to both recover losses and to recover the project.

5. Operation

Operations Monitoring is often required by lenders and investors in order to monitor operational performance of the infrastructure and identify and manage any risks to return on investment. Governments may also seek such services where operation or maintenance of a Government asset is being delivered by the private sector, for example as part of a Public Private Partnership. Our team has technical staff with extensive operational experience, who understand investor risks and have broad experience of implementing operational KPIs and payment mechanisms.

Facility Management Advice can support infrastructure owners to maintain and operate their assets more efficiently or assist in benchmarking performance or operational costs to improve overall asset performance. Our experts in facility and asset management can provide such advice which may also then result in **Commercial Restructuring** services to review and restructure the model of service delivery to rationalise costs or improve services. **Investor Due Diligence** for re-financing or acquisition of infrastructure assets or portfolio is another of our services, providing a full range of technical, commercial and financial due diligence to lenders and investors.

Our Relevant Credentials

Indonesia Sustainable Least-cost Electrification (ISLE), Component 1

We are assisting World Bank to develop bankable business models for rural electrification in eastern Indonesia. Study includes project structure, technical and financial feasibility that can be implemented by PLN through data analysis gathered on the field.

Legok Nangka Regional Final Waste Treatment and Processing Site PPP Project

We were appointed by MCA-I to assist LKPP in developing Prefeasibility Study and Procurement Documents for Legok Nangka Regional Final Waste Treatment and Processing Site PPP Project as well as Model Procurement Documents that can be used by the other projects in Indonesia.

Financial Feasibility Study for Jabodetabek LRT Project

We were engaged by PT Kereta Api Indonesia (Persero) to assist with the preparation of a feasibility study document to assess the project viability and key issues and identifying the necessary steps to manage and deliver the project. The study included demand analysis, high level demand forecasts development, capacity analysis and required fleet size estimate to meet demand, as well as tariff analysis and recommendation of tariff levels.

Feasibility Study for Lombok International Airport

We assisted a feasibility study development related to the renovation and expansion of an International Airport in Indonesia, commissioned by JICA. The study included development of passenger traffic, aircraft, and cargo movement forecasts and financial model to assess the project's feasibility at different levels of capital investment.

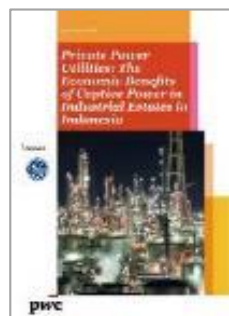
Our Thematic Thought Leadership



Indonesian Infrastructure: Stable Foundations for Growth

Infrastructure continues to be a top priority for President Joko Widodo's administration. There has been real progress in these areas in the last year. But there remain several key success factors for the infrastructure programme:

- Continued improvement in the investment climate.
- Better coordination within and between government institutions.
- Reduced reliance on SOEs and leverage of private sector funding.
- Capacity building in project preparation and procurement and a new emphasis on finding, training and motivating talented people to manage the projects.



Private Power Utilities: The Economic Benefits of Captive Power in Industrial Estates in Indonesia

GE Operations Indonesia ("GE"), in collaboration with PwC Indonesia, has produced a report on Private Power Utilities in Industrial Estates so to understand their economic benefits and the regulatory barriers.



Power in Indonesia: Investment and Taxation Guide, 6th Edition

This Guide has been written as a general investment and taxation guide for all stakeholders and those interested in the power sector in Indonesia. This edition has been updated to reflect the regulations issued in late 2017 to mid 2018 (which are notably fewer and less substantial than last year). Greater focus was on the tracking of actual transactions and project implementation, particularly in light of the wave of Power Purchase Agreements ("PPAs") signed last year. We hope readers find our comments on these developments helpful but reinforce the interpretational uncertainty that exists around the regulatory environment in Indonesia.



Alternating Currents: Indonesian Power Survey 2018

The development of energy and resources as a whole - and the electric power industry in particular holds major importance for the continued economic growth of Indonesia. The Independent Power Producers Association of Indonesia ("APLSI") worked with PwC Indonesia on this report, based on a survey of stakeholders in the Indonesian power industry. This survey aims to understand investors' views of the impact of frequent changes in regulation and the Government of Indonesia's plans for development of the power sector in Indonesia. This report also aimed at acknowledging the role of the private sector in supporting the growth and reliability of the Indonesian electric power sector. This is in line with the country's goal of achieving an electrification target of 100% by 2024, for which at least 43.5 GW of new power generation needs to be constructed.

Find these and our other thought leadership publications at:

<https://www.pwc.com/id/publications/eu&r>

<https://www.pwc.com/id/publications/cpi>

Our Team & Expertise



Julian Smith
Director

Julian Smith is a Director of PT PricewaterhouseCoopers Indonesia Advisory and PwC Indonesia Government & Public Sector & Infrastructure Advisory Leader. He specialises in financial and commercial advice on Capital Projects and Infrastructure in many infrastructure sectors.

Julian has 26 years of international corporate finance advisory experience, 16 of which specialised in PPP in both developed and developing countries. Julian has advised PPPs in various sectors including renewable energy, light railway, high-speed railway, buses, ports, airports, government research agencies, new cities, healthcare, and housing and general corporate finance advice in many other sectors. He is a lead author of PwC thought leadership on infrastructure development.



Agung Wiryawan
Partner

Agung is a Partner in PwC Indonesia's Capital Projects & Infrastructure practice and has been with the firm since 2004. He is an infrastructure specialist, mainly in utilities, working with both the private and public sectors. He has had significant exposure to a number of Indonesia's recent geothermal projects and has recently supported PT SMI to finance and deliver a number of recent projects.

Agung has also had key roles during the nation's ongoing energy sector reform, including supporting strategic planning for Indonesia's implementing agencies and structuring various PPP projects. His core expertise is in investment planning, facilitating large transactions, institutional capacity building, financial feasibilities, and asset valuations.



Euan Low
Director

Dr Low has over 20 years of professional experience and co-leads the Technical Advisory Services practice of PwC in Southeast Asia. He specialises in economic & social infrastructure project definition, planning, transaction structuring & procurement, especially using structured financing and has a strong interest in Land Value Capture.

Dr Low has advised on Railways, Roads, Ports, Airports, Renewables, Water, Wastewater, Waste Management and Industrial Projects, providing consultancy services such as market entry, business planning, commercial feasibility studies, risk sharing, procurement management, technical due diligence & asset management. He is a Chartered Chemical Engineer and Chartered Scientist.



Helen Steward
Director

Helen has approximately 25 years' experience of project management and delivery, predominantly on infrastructure projects, and co-leads the Technical Advisory Services practice of PwC in Southeast Asia. She has advised on around 45 PPP projects around the globe, including multi-billion dollar hospital PPP projects.

Helen has particular expertise in the Social infrastructure sector, with wider sectoral experience includes Cities, Water supply, Roads and Ports. She has extensive experience in providing strategic advisory services to Governments at all stages of infrastructure project planning and procurement and has a strong track record of advising private sector lenders and investors on technical and commercial risks in project finance transactions.

Contact Us

Technical Advisory Services – Southeast Asia

- Market studies
- Feasibility studies
- Bankable business case preparation
- Master planning & strategic advisory
- Value capture
- Sponsor's and Lender's technical due diligence
- Transaction advisory
- Tender support
- Contract preparation
- Procurement management
- Asset management planning
- Construction economics, value management, cost management

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