



POSSIBLE SCENARIOS FOR THE INDONESIAN ENERGY SYSTEM 2030



BANDUNG
SCENARIOS
INDONESIA ENERGY SCENARIOS 2030

Bandung Scenarios

Possible Scenarios for the
Indonesian Energy System 2030

This book documents the four scenarios generated from intensive workshops conducted by 28 experts involved in Indonesia's energy sector using the Transformative Scenario Planning method. To better understand the methodology used and what to expect from this approach, we recommend first reading the Introduction (*page 6*) and explanation on the methodology (*page 48*).

INITIATED BY:
Unit Kerja Presiden Bidang Pengawasan
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Foreword

02



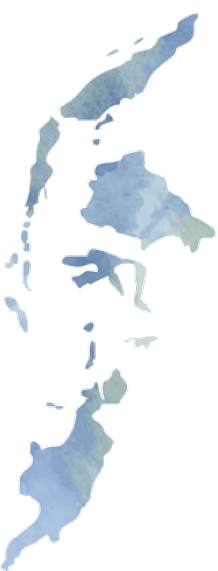
INDONESIA is entering an era of transition in 2014. The largest economy in Southeast Asia, the world's 4th largest population, and the world's 3rd largest democracy has just gone through a momentous period of political change, in which a new president from a new generation of political leaders has been elected. The vast archipelago nation of 13,461 islands stretching 5,150km has a new president with a new set of political, social and economic challenges to grapple with. Indonesia has come a long way since "reformasi" brought democracy and decentralization sixteen years ago. Its new president now faces the challenge of building on past successes and laying down a new path for the country's future. Providing energy and implementing reforms in the energy sector will be one of the key challenges – if not the most paramount – the country has to face.

The year 2030 is another sixteen years from now. Indonesia's energy future is uncertain. The decisions that are made over the next few years could lead to different paths and different scenarios. It is imperative for Indonesia to consider and to plan for its energy future. As a maritime archipelago nation, the metaphor of a ship sailing the seas and contending with different weather conditions is used to explore and elaborate on four different potential scenarios of what the Indonesian energy sector may look like in 2030. Using these four different scenarios, which describe the different dynamics that may be in play, Indonesian stakeholders can come together on the same page to discuss the issues and challenges the country faces and how we may best address them to ensure an optimal outcome for Indonesia's energy future. These stories of navigating the seas and waves can help us focus on what actions can and must be taken to address the challenges and avoid storms and shipwreck.

Energy and energy resources have always been a central issue for Indonesia's government and economy. Energy has been a national priority for past governments and will be an even more central issue for Indonesia's new government and political leaders. After ten years of stable rule during the administration of President Susilo Bambang Yudhoyono, the political transition gives us reason to renew our focus and approach to how we deal with Indonesia's current and future energy challenges.

Scenario planning is a methodology in strategic planning used to develop flexible long-term plans, involving aspects of systems thinking. Using this methodology, we can develop different scenarios of Indonesia's energy future in 2030 and think seriously about long-term goals. Only by planning and thinking now, can we avoid potential pitfalls in the future. The case of South Africa's transition from apartheid regime to the rule of Nelson Mandela was an example of how scenario planning was successfully used to provide possible pathways for the future. With four possible scenarios developed, narratives on the future direction of the country were developed that influenced policy making towards the South Africa that we see today.

Indonesia is not South Africa, nor is Indonesia's energy sector now alike that of South Africa's overall situation in 1989, but we'll thought our trajectories on how Indonesia's energy sector could develop and take shape in 2030 can help inform and guide all stakeholders involved in Indonesia's energy policy and help provide Indonesia's new government with valuable input as it formulates new policies and strategies for Indonesia's energy sector. These scenarios can help spark debate and focus minds from across the nation and help us combine our collective knowledge to address the intrinsic issues we face. It is in this spirit that 28 leading thinkers across Indonesia's energy sector have come together from across government, political parties,



“As a maritime archipelago nation, the metaphor of a ship sailing the seas and contending with different weather conditions is used to explore and elaborate on four different potential scenarios of what the Indonesian energy sector may look like in 2030.”

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state-owned enterprises, private companies, academia and civil society organisations to create these scenarios for Indonesia's energy sector. The goal is to help shape the future for Indonesia and kick-start a debate on solutions, so that our new government and president can work together to create a sound and sustainable energy policy toward 2030 ●

Kuntoro Mangkusubroto

Head of UNEP-PPP

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Introduction

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SCENARIOS ARE STORIES about what could happen in the future — not what will happen (predictions) or what should happen (proposals)

— but what could happen over the coming years in the Indonesian energy sector, based on the latest political, economic, social, cultural, ecological, and international data and dynamics.

These four scenarios were developed by a team of 28 of Indonesia's brightest minds from state-owned and private enterprises, political parties, government departments, non-governmental organizations, and academia.

These very different stories of the possible future for the Indonesian energy sector are intended to be relevant, challenging, plausible and clear in order to facilitate strategic conversations with energy leaders and stakeholders about the best way to address Indonesia's energy challenges. The purpose of the stories is to provide a common framework and language to support dialogue, debate, and decision-making among actors within and outside the energy sector. They are intended to support an open and constructive search for answers to core questions on energy policy and strategy: What opportunities and challenges are we and could we be facing? What are our best options? What is the best way forward and what actions should we take?

Scenarios play a very important role in strategic planning because they are stories – that is, fictions – and because they come in sets of two or more different plausible stories, they offer the political advantage of supporting informed debate without committing anyone to any particular policy position – they provide a more open space for dialogue, as those posing answers and solutions are not burdened by the political constraints of the present.

Scenarios enable us to deal with situations as they may arise, for although we cannot predict or control the future, we can work to plan for and influence it.

The energy expert scenario team met in August 2014 for two intense weekend workshops in Bandung. They started by examining a series of in-depth interviews of fifteen of the team members which had been conducted

“
Scenarios are stories about what could happen in the future—not what will happen (predictions) or what should happen (proposals) —but what could happen over the coming years in the Indonesian energy sector
”

Introduction



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before the workshop. Examinations and discussions of the interview summaries revealed that there were three big shared issues that received repeated mentions and attention: the governance of the sector; energy pricing, supply and demand; and the drivers of energy policy. The examination also revealed that three big issues received less attention: people empowerment, sustainability, and the global context.

Starting from these sets of issues, the team identified a number of driving forces, i.e. social, technological, economic, environmental, cultural and political forces in the world, in which a small change could have a big impact on the sector. They then identified three key structural certainties about the future: the influence of politics on the sector; the imperative of balancing supply and demand; and the importance of human capital. They also identified three key structural uncertainties: the nature of governance, the impact of global developments, and which new technologies will be employed.

Based on these insights, the team started to construct scenarios by collecting ideas, headlines, and stories that were then organised into four outlines, which were discussed by the scenario team, and then developed further by working groups. Based on the reports of

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Introduction

“The purpose of the stories is to provide a common framework and language to support dialogue, debate, and decision-making among actors within and outside the energy sector”

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these working groups and further comments and suggestions by the whole team, the writing team then drafted a first version of the scenario texts.

At the beginning of the second workshop, this draft was reviewed by the scenario team and then revised in the working groups. An additional working group worked on a table that summarised and compared the scenarios. These new texts were again presented to the plenary, and more comments, suggestions and amendments were made by the scenario team. Finally, the scenario team agreed on names and images to represent the four scenarios. After the second workshop, the writing team refined and finalised the scenarios, which were sent to the whole team for final feedback, and then put in the form of this final report.

The Bandung Scenarios can be used to support the formation of energy policy and strategy through different types of stakeholder dialogues. The purpose of such dialogues are not to reconstruct and reimagine new scenarios, but rather to employ the scenarios as they are written to discover what can and must be done in each instance. These scenarios can help focus attention, bring out new ideas and spur debate on the best way forward to address the future challenges they pose. The most fruitful

dialogues involve a diverse group of interested and influential actors—not just friends and colleagues, but also strangers and opponents, creating a true open space for ideas and rejecting a group-think mentality.

There are four key steps to initiate the scenario-based dialogues successfully. First, the scenarios are presented through text, slides, and video. Second, for each scenario, the group addresses the question “If this scenario occurred, what would it mean for us?”. The group should then work to evaluate the opportunities and challenges the scenario poses. Third, the group deals with the question “If this scenario occurred, what would we do? What options do we have?”. Actions and solutions should then be put forward. Finally, the group steps back to the pre-sent and considers the question, “Given these possible futures, what shall we do next?”. This is perhaps the most important, as it brings these scenarios from the future into the today, and will help us formulate strategies and recommendations today that will affect the future, helping us collectively create more informed policy options ●



Summary of the Four Scenarios



THE CONTEXT

PRIMARY DRIVING FORCE



WAVES

ROWING TO BREAK
THROUGH THE WAVES



STORM

CHANGING SALES IN THE
MIDDLE OF THE STORM



ROCKS

ROWING AMONG ROCKS



CREW

ROWING TOGETHER WE
ARE STRONG, ROWING
SEPARATELY WE CRUMBLE

Pressures for better governance

Global and local concerns about the
impacts of climate change

Fierce international competition for
natural resources

Pushing and pulling for local
autonomy

DOMINANT ACTORS

Central political, bureaucratic and
business elites

International financial, development,
and research institutions, private
enterprises, and civil society
organisations

Private and state-owned
enterprises, diplomats, and security
forces

Local governments, civil society
organisations, and private, state-
owned and social enterprises

ECONOMIC DEVELOPMENT PATH

Incremental improvements in
productivity

Higher costs and slower growth

Inward-oriented growth

Multiple economic development



THE ENERGY SECTOR

ENERGY POLICY



ROWING TO BREAK THROUGH THE WAVES



CHANGING SAILS IN THE MIDDLE OF THE STORM



ROWING AMONG ROCKS



ROWING TOGETHER WE ARE STRONG, ROWING SEPARATELY WE CRUMBLE

Continuous rebalancing between competitiveness and stability

Pragmatic measures to reduce greenhouse gas emissions

Priority given to national self-sufficiency

Driven by diverse local situations and aspirations

Oil and coal dominate; limited shifts to biofuels, gas, nuclear, renewables

Increased efficiency, electric mobility, shifts to renewables, gas, and nuclear

Energy rationing; coal dominates, some nuclear, renewables, and unconventional hydrocarbons

In accordance with local resource availabilities

PLNG and FSRU, unconventional hydrocarbons biofuels,

Renewables, coal gasification, CCS, nuclear, energy efficiency

Intensive EOR, deep water oil and gas, second generation biofuels, regional energy connectivity

Diverse locally applicable technologies

NEW ENERGY TECHNOLOGIES DEPLOYED

ENERGY PRICING, SUBSIDIES AND INCENTIVES

Politicised and erratic subsidy policy

Economic price plus targeted subsidies and incentives for lower carbon sources

Incentives for national energy producers

Localised pricing policies with incentives for local producers

KEY ENERGY SECTOR CHALLENGE

Bottlenecks and stagnation

Increased costs

Supply disruptions and shortages

Central-local and local-local misalignments



Ringkasana
4 scenario

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This scenario
IS REPRESENTED BY A BOAT ROWING TO
BREAK THROUGH THE WAVES. ROWING
A BOAT THROUGH STRONG WAVES IS
A TIRESOME AND DRAINING EXERCISE.
THE WAVES CAN SEEM INFINITE AND
CONTINUOUSLY PUSH BACK AND SLAM
AGAINST THE BOAT, WHICH CAN CAUSE IT TO
CAPSIZE. THE ROWERS STRUGGLE BETWEEN
BALANCING THE BOAT AND ROWING HARD TO
OVERCOME EACH INCOMING WAVE.



IN THE YEAR 2030, INDONESIA'S ENERGY SECTOR IS UNDERGOING CONTINUOUS reforms amidst public debate and enduring arguments among key stakeholders across the sector on how to transform Indonesia's energy sector into a more resilient and rational energy system. Leadership of the sector, mainly represented by the central government and the national parliament, have been keen on formulating laws and regulations and working with large SOEs to address popular public concerns over energy subsidies, better energy access and development of new energy resources (e.g. nuclear energy, greenfield gas development, unconventional hydrocarbons and renewable energy). However, such efforts are not coupled with effective implementation of policies or timely execution of major energy projects. Barriers to implementation include legal uncertainty, a cumbersome bureaucracy and a misalignment among different government institutions, as well as speculative rent seeking activities. Hence, new challenges and public anxieties often occur faster than the resolution of the previous problems.

IN THE YEARS FOLLOWING 2014, strong public pressure for better governance has led the central political, bureaucratic and business elites to try to create a transparent, accountable, and professional unitary state, but with only incremental improvements, especially concerning the development of the energy sector. The electoral phenomenon that happened in 2014 has increased awareness of how information technology can empower the broader public to influence the government in making strategic decisions for the country. Such influence has become a bridge that connects popular concerns with key policy responses coming from the government – creating a more reactionary policy process. At the local level, stronger public participation has made local policy more complicated. Democratic decentralisation has created a long and ineffective chain of command and inconsistency. Despite improvements within the executive branch of government, the effect of public pressure has been much less pronounced on the legislative branch, law enforcement and the judicial system, leading to a disconnect between agreed policies and on the ground implementation. Executive decisions were often contested by the parliament, mostly at the local level, while many legal uncertainties were

faced by government and state-owned enterprises in the form of criminalisation under the pretext of corruption. This situation has contributed to the slow realisation of large-scale energy projects, since investors are deterred by the legal uncertainties involved and unclear policies at the local level. Coupled with the complex geography of the Indonesia archipelago, social heterogeneity and gaps in bureaucratic capacity, such imbalances have limited the impact of policy reforms within the sector.

Strong public pressures and an inability to deliver has resulted in inconsistencies and frustration. Policies developed for the energy sector have swung between trying to establish optimal energy systems and sub-optimal options for the sake of social and political stability. For example, the central government initially took the bold policy decision of nearly eliminating energy subsidies to enable a reallocation of budgetary expenditure to welfare and infrastructure programmes. However, new problems occurred as these programmes were not delivered effectively at the local grass roots level due to a misalignment between national and local government implementation. People began to oppose the subsidy removal, since the negative impacts of the policy were more apparent than the promised positive outcomes

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HOWEVER, OTHER FORMS OF RENEWABLES WERE NOT ABLE TO DEVELOP, DUE TO THE CENTRALISED SYSTEM AND A GRADUAL RATHER THAN SWIFT COLLABORATION BETWEEN MINISTRIES AND LOCAL GOVERNMENTS, WHICH WERE LARGELY MISALIGNED
”



“
Policies developed for the energy sector have swung between trying to establish optimal energy systems and sub-optimal options for the sake of social and political stability”

on welfare and infrastructure. Such pressure was strong enough to cause a major setback for the government. The energy subsidy was reintroduced to ease public turmoil, although with new strategies aimed at mitigating the risk of an uncontrollable subsidy budget hike, thus leading to a politicised and erratic subsidy policy.

The development of major energy projects needed to ensure a sufficient energy supply, such as a transmission grid, large-scale power plants, refineries, gas pipeline infrastructure and new greenfield gas projects were set back. Due to reform in pricing policy that supports domestic utilisation, biofuel was the only form of renewable energy that could flourish, due to its local availability and abundant production.

However, other forms of renewables were not able to develop, due to the centralised system and a gradual rather than swift collaboration between ministries and local governments, which were largely misaligned. In addition, licensing, administrative procedures and regulations remained cumbersome and were not accessible for community-based energy solutions.

Energy incentive policies were developed through time consuming and overcautious debates. As a result, the energy mix is still dominated by locally abundant coal resources and easily accessed imported fuel. Under such

circumstances, fossil fuels continue to dominate the energy system. Some unconventional hydrocarbon technologies were encouraged to address energy scarcity pressures, allowing for an increase, albeit incremental, and contribution of shale gas to the national energy mix, which is obtained through several pilot projects.

With both high energy demand and limited domestic production, sub-optimal solutions, including increasing energy imports and scattered and uncoordinated small-medium scale energy facilities have grown. Local level small-scale infrastructure solutions are more feasible for on time delivery compared to massive large-scale infrastructure that requires careful planning and complicated cross ministerial execution.

By 2030, these issues in the energy sector contribute only incremental improvements to the economy. Industrialisation and productivity are not supported with adequate energy supplies, which has resulted in slow growth. Limited oil production has led to an increase in fuel imports and a vulnerable monetary situation.

The economy is being held back and allows only modest productive gains, mainly in the petrochemical industry enabled by domestic coal and gas utilisation. Economic growth remains dominated by natural resource exploitation,



leading to limited people participation and employment opportunities. The role of national and multilateral companies remains strong. Indonesia is only slightly better positioned to face deeper ASEAN integration and the ASEAN Economic Community and the globalised marketplace. Under such a situation, the regional gap between Jakarta, Java and other areas of the country has widened. Social issues and inequalities have become more striking, as wealth disparity between rural and urban areas has increased. As a result, there has been a disintegration of poorer regions that see themselves as being neglected by the central government, which has led to a greater focus on development strategies.

Under such a situation, the people believe that the effort of constructively monitoring the government's performance needs to be enhanced. Activism and public scrutiny are starting to have an effect on legislative and judicial domains. History is being repeated. In 2014, sixteen years after the fall of the New Order in 1998, people's dissatisfaction with change led to an unprecedented type of activism that significantly reformed the way the government was run. Sixteen years later in 2030, in the presence of stagnation – especially in the key sector of energy – new initiatives and issues emerge ●



STORM:
Changing Sails in
the Middle of the Storm

This scenario
IS REPRESENTED BY A BOAT TRYING TO
CHANGE SAILS IN THE MIDDLE OF A STORM.
IF THE BOATMEN ARE UNABLE TO
SUCCESSFULLY OPEN THE STORM SAILS
BEFORE THE SQUALL HITS, IT WILL PLACE
THE BOAT IN A DANGEROUS SITUATION.
HOWEVER, USING REGULAR SAILS INSIDE
A STORM IS ALSO HIGHLY DANGEROUS.



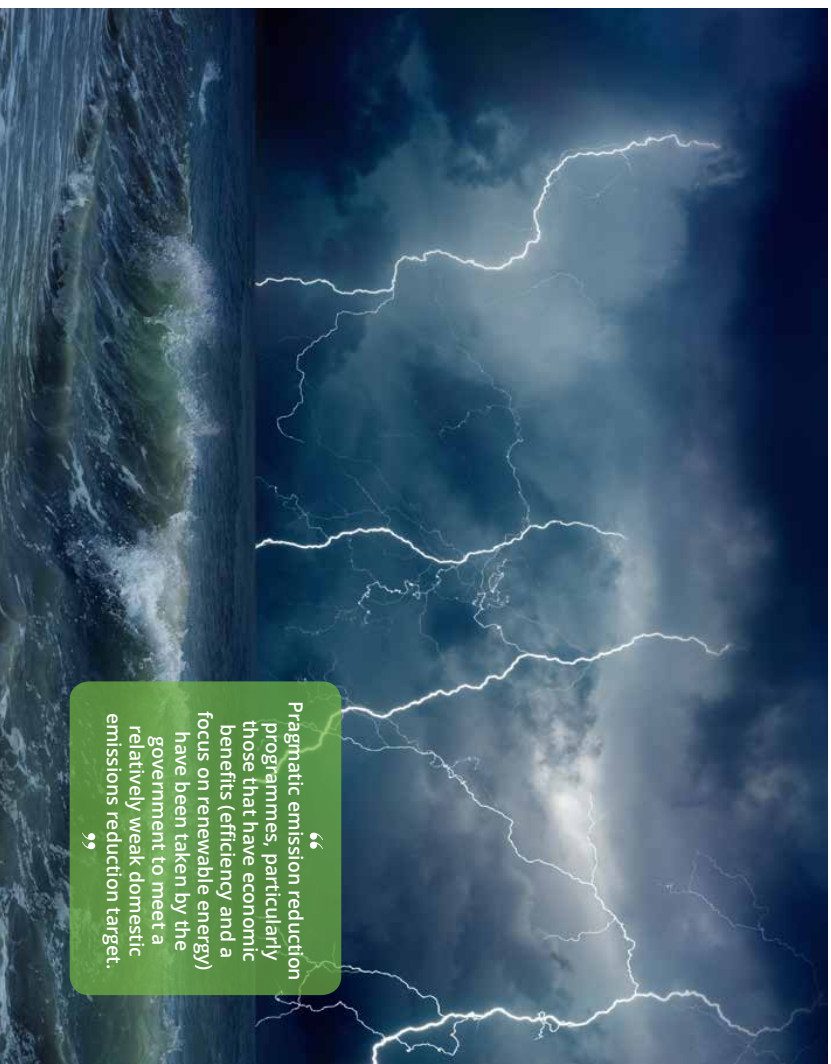
IN 2030, CONCERNS OVER THE ECONOMIC IMPLICATIONS OF MAJOR CLIMATE events are changing the way countries and corporations look at climate change risks. The global energy system is struggling to meet the enormous rise in demand for energy, whilst simultaneously curbing greenhouse gas emissions. Energy prices are high, limiting growth in energy-intensive economies. Indonesia is slowly recovering from socio-economic turbulence caused by a spike in the global energy price, but is helped by growth in the renewable energy sector. Nevertheless, the country is struggling to fund climate change adaptation and mitigation. Climate sensitive developments and energy resources come at a high price, which were not taken into account in previous years. Consensus among national actors on Indonesia's global position on climate change is hard to find.

ON THE WAY TO 2030, growing concerns about the economic and social impacts of climate change have led private enterprises and civil society organisations to put pressure on the government to increase climate change adaptation and mitigation efforts; this is accompanied by pressure from international financial, development, and research organisations. Nevertheless, Indonesia was already one of the leading developing countries committed to carbon emission reduction by 2020. Many studies and programmes have already been done, but are still considered far from sufficient, as high costs and slow growth have forced the government to make only small-scale and pragmatic measures to reduce carbon dioxide emissions. Pressures on the national budget have forced the government to gradually reduce and reform the fuel subsidy. The government has spent significant political capital pushing through the fuel subsidy reform and has reallocated funding previously used for subsidies to infra-structure, education, and healthcare; however, still very little has been spent on reforms to the carbon-intensive energy system and new technologies.

Meanwhile, the frequency of major climate events has continued to rise. The United States has been hit by several more Katrina-level hurricanes, Europe's agricultural production has declined, and China has faced serious drought, threatening the survival of tens of millions of its population. The economic impacts of climate change have focused attention on international climate negotiations. The international climate debate has also become more polarized, with strongly opposed views on how to deal with climate change, especially between the superpowers the United States and China. Indonesian diplomacy faces a paradox as the country advocates for global climate action to mitigate greenhouse gas emissions, but at the same time lobbies for an easing of constraints in the international carbon trade to allow for coal exports and other carbon intensive commodities. A formal deal has been hard to reach at the international level, but global popular pressure for action and for a reduction in emissions has become intense, aided by a vigorous global social media effort across countries. This grassroots pressure has resulted in politicians across a number of countries to introduce a number of new measures to combat emissions in order to appeal to their constituents.

The changing climate has also taken its toll on the Indonesian agricultural and energy production system. The domestic impact of

“Pragmatic emission reduction programmes, particularly those that have economic benefits (efficiency and a focus on renewable energy) have been taken by the government to meet a relatively weak domestic emissions reduction target.”



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This causes controversy among many and leads to some violent protests, but Indonesia's first nuclear power plant went operational nonetheless.”

climate change (especially increased food prices and energy blackouts), combined with a global popular movement, has intensified pressure on the Indonesian government to take action on climate change. Due to public pressure, the government has moved to phase out fossil fuel subsidies, leading to an increase in energy prices, which has further hampered economic growth. Pragmatic emission reduction programmes, particularly those that have economic benefits (efficiency and a focus on renewable energy) have been taken by the government to meet a relatively weak domestic emissions reduction target.

International banks and investors perceive carbon-intensive projects as high risk projects, which has led to international financiers to stop financing fossil projects unless they are equipped with environmentally sound but expensive emission reduction technologies. This has put further pressure on the Indonesian energy system and energy companies, and thus further constrained growth in the sector. Energy demand, therefore, is unmet. As a knee-jerk reaction to this, the government spent billions of dollars to accelerate geothermal and other renewables, which will still take several years to come on stream, in the hope of controlling energy prices, increasing supply and meeting

international and national demands for clean energy. Research centres and companies come up with energy conservation innovations and different types of renewable energy methods. Indonesia has become the world's laboratory for renewable energy, attracting international researchers and investors interested in generating carbon credits. While there is a major boost for renewable energy, different types of renewable energy are competing with each other for market share and subsidies – and collectively still struggle to meet the scale of demand, leading to the maintenance of a high energy price.

Recognising that coal, coal gasification, and gas power plants are still required to meet baseload demand, carbon capture and storage technologies are being applied to about 30% of the existing plants, by utilising international assistance – with the additional costs borne by the state budget and electricity consumers. The tensions between managing carbon emissions from the power sector, meeting energy demand, and controlling energy prices force the government to focus on nuclear power. This causes controversy among many and leads to some violent protests, but Indonesia's first nuclear power plant went operational nonetheless.

Scenario 2: Storm



Mainstream banks start to see major opportunities in financing green power projects, even without collaterals for the micro projects in different parts of Indonesia. The availability of easy financing and high energy prices spurs innovation and creativity, particularly in areas with renewable energy potential and economic growth. Home utility systems spread and increase, and when infrastructure allows, system owners sell their excess electricity to the grid.

In 2030, Indonesian society is split between two major camps. One camp belongs to those that believe that the right thing to do is increase the energy price to allow for more renewables, whereas the other camp is angered as they can no longer afford the luxury of having personal cars and air conditioning in their homes – something that many of them have been enjoying for years, but can no longer afford. The government targets its subsidies to the poor through mass transport systems and cheap housing complexes. The national budget is constrained by the high cost of energy systems, clean energy subsidies for the poor and incentives to further boost low carbon energy to meet ever-growing demand ●



ROCKS:

Rowing Between the Rocks

This scenario

IS REPRESENTED BY A BOAT NAVIGATING ITS WAY THROUGH DANGEROUS ROCK FORMATIONS THAT LIE UNDERNEATH THE SEAS. THE DECIDING FACTOR THAT DETERMINES WHETHER THE BOAT CAN NAVIGATE ITS WAY THROUGH THE ROCKS SAFELY IS THE ROWERS SKILL AND UNCONTROLLABLE FACTORS SUCH AS THE STRENGTH OF THE WINDS AND THE FORMATION OF THE ROCKS.



IN THE YEAR 2030, INDONESIA FACES ONE OF THE MOST MAJOR CHALLENGES IN

its history, with fierce global competition for resources. Many countries across the world face a shortage of energy, and are therefore competing with ever greater intensity for energy resources. Southeast Asia and Indonesia's neighboring countries are becoming more politically volatile, due to the intense global competition for increasingly scarce energy resources. To cope with this situation, the Indonesian government adopts a growth policy driven by the domestic market and consumption and implements an energy policy based on national self-sufficiency. Combined with strong international and domestic diplomacy efforts to try and mitigate conflict and volatility in the country, the new policy sets out to secure domestic energy needs in order to prevent internal strife. State-owned enterprises, Indonesian private enterprises, diplomats and security forces work hand in hand with the central government to support the new policies and try to mitigate and anticipate regional conflict. There is a critical danger that the country will face domestic energy shortages and will be dragged into regional conflict if regional tensions become worse and foreign diplomacy fails to overcome the geo-political, trade and resource challenges. However, if successful in the policy, Indonesia could become a regional economic power, which relies fully on its own domestic energy supplies and so is less affected by regional political turmoil caused by resource constraints, high energy prices and shortages.

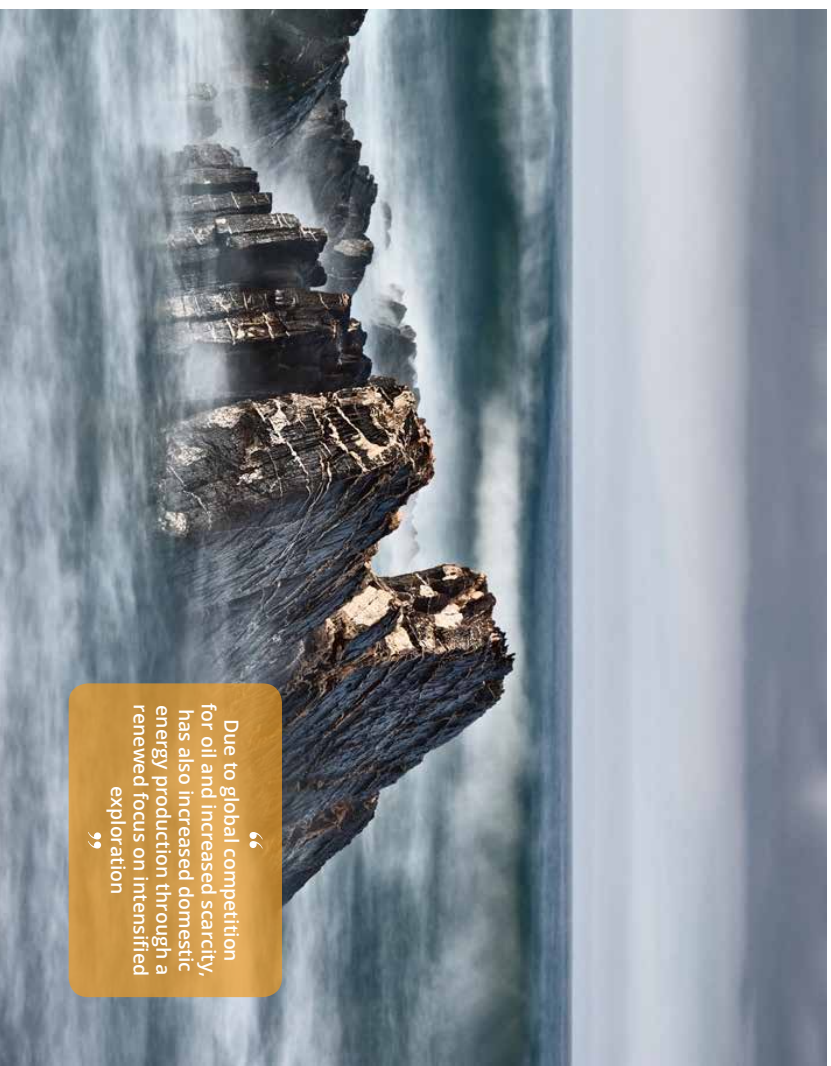
WHILE INDONESIA had just begun a new era with a newly elected president and government in 2014, on the other side of the world conflicts and political tensions in the Middle East, post the “Arab Spring” have impacted the global oil and gas supply in a major way, leading to large increases in global energy prices. To sustain its economy under the pressure of western sanctions due to the conflict in Ukraine, Russia aligned itself with China. At the regional level, the South China Sea region became the new global hot spot for geopolitical tensions between China and its neighboring countries over both disputed territory and the competition for energy sources. The United States continued to exert considerable diplomatic influence over the region and posed its military assets around the region, contributing to an escalation of tensions with China and the region. The Association of South East Asian Nations (ASEAN)’s effort to reconcile the conflicting parties bore little results. Similar tensions were inflamed in the resource rich Timor Leste and Indonesian-Timor Leste border, which was considered to be a hydrocarbon-rich region. Indonesia, being the world’s largest liquid fuel importer in 2014, was very fragile to changes in the world fuel market. Such situations forced the new Indonesian

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The Indonesian government is adopting a policy of “national energy self-sufficiency” with the main approach focused on energy conservation and maximising the utilisation of domestically available energy resources
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government to remain unaligned with the two competing superpowers, but at the same time made it difficult for Indonesia to gain any great international support.

Global economic uncertainty is pushing Indonesia to focus on domestic economic consumption as its main driver to support national growth. In view of the challenges, the Indonesian government is adopting a policy of “national energy self-sufficiency” with the main approach focused on energy conservation and maximising the utilisation of domestically available energy resources. Indonesia’s lack of engagement with the world is having a negative impact on the country’s global standing amongst a global environment of tension, resource scarcity and competition. Trade deals,

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Due to global competition for oil and increased scarcity, has also increased domestic energy production through a renewed focus on intensified exploration
”



“
Indonesia is also taking a greater interest in working with other resource-rich regions in parts of the Middle East, Africa and Eastern Europe, as part of an effort to secure energy supplies
”



arbitration treaties, and international energy co-operation are dominating the landscape of global, multilateral, and bilateral negotiations. Intensive negotiations and partnerships are also

taking place between private sector actors and governments. Large Indonesian corporations, both state and privately owned, often talk directly with their international counterparts to

Scenario 3: Rocks

secure business deals that bring energy and energy technology to Indonesia, as the government takes a backseat. These corporations sometimes are backed by the Indonesian government to advocate for favorable terms when it comes to energy investment.

Furthermore, the national energy self-sufficiency policy is a key influencing driver for foreign diplomacy. Existing energy export contracts were subject to alignment with the new energy policy, with the aim of fulfilling domestic energy needs. Prior international commitments on economic integration in ASEAN and trade are reviewed and revised. Indonesia is also taking a greater interest in working with other resource-rich regions in parts of the Middle East, Africa and Eastern Europe, as part of an effort to secure energy supplies as an alternative to other volatile regions. State-owned and national private companies are encouraged and supported to become global players outreaching to these regions. Technology co-operation is also encouraged, for example with South Africa in developing coal gasification so that Indonesia could use its relatively abundant coal resources to help meet the deficit in liquid fuels, struck by huge fluctuations in global energy prices,

Indonesia has no option other than to remove the unsustainable energy subsidy, due to huge economic and fiscal pressures from a turbulent global economy. The Indonesian government puts a greater emphasis on social welfare programmes in order to try to reduce domestic social unrest.

As a result of these domestic policies, Indonesia gradually is managing to decrease its energy imports, however this happens at a high cost and very slowly due to slow moving implementation from the government and challenging governance issues. Because of this, energy rationing becomes a normal policy reaction to cope with a lack of energy supply and unmet demand. The landscape of Indonesia's energy mix gradually shifts to an energy supply driven by coal, renewables, and unconventional hydrocarbons and nuclear as the primary energy resources.

On the demand side, all sectors are gradually moving toward adopting energy efficiencies and a shift toward domestically available energy supplies. The high global oil price, ramped up due to global competition for oil and increased scarcity, has also increased domestic energy production through a renewed focus on intensified exploration to find new oil and gas reserves, as well as intensified efforts to make use of

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Because of this, energy rationing becomes a normal policy reaction to cope with a lack of energy supply and unmet demand
”

renewable energy resources. To support these efforts, the Indonesian government is creating new incentives to encourage national energy producers. These efforts are aimed at ushering in new investments in energy technologies and energy infrastructure in Indonesia, for instance Enhanced Oil Recovery (EOR), deep water oil and gas, coal gasification, second generation biofuels, nuclear power plants and regional energy connectivity primarily for gas and electricity.

Overall, the situation in 2030 is characterised by global power struggles and intense resource competition, with Indonesia reacting with diplomatic efforts focused on securing reliable energy supplies; internally Indonesia is focused on an inward-oriented growth strategy, with securing national energy self-sufficiency as a key priority, but despite these efforts major energy shortages are still a major challenge ●



CREW:
Rowing Together We Are Strong,
Rowing Separately We Crumble

This scenario

IS REPRESENTED BY A BOAT BEING ROWED BY A NUMBER OF PEOPLE. EACH OF THE ROWERS HAS THE SAME GOAL: TO MOVE THE BOAT FORWARD, HOWEVER THE CAPACITY AND SKILLS OF EACH ROVER VARIES. SOME OF THE ROWERS ARE MORE ABLE THAN OTHERS. THERE ARE TWO POSSIBLE OUTCOMES IN THIS SCENARIO. THE FIRST POSSIBLE OUTCOME IS THAT EACH OF THE ROWERS CONTINUES TO ROW ACCORDING TO THEIR CAPACITY, DISCONNECTED AND OUT OF SYNC WITH THE OTHERS. THE SECOND POSSIBLE OUTCOME IS THAT THE ROWERS ORGANIZE THEMSELVES AND UNITE IN ORDER TO WORK WITH EACH OTHER TO MAKE THE BOAT MOVE FORWARD MORE EFFICIENTLY.



IN THE YEAR 2030, INDONESIA'S ENERGY SUPPLIES ARE MUCH MORE

decentralised. Many regions are working to meet their energy needs through local energy resources. There is no "one size fits all" approach to national energy policy or a coordinated framework. Different regions are building their own local energy systems. For instance, fossil fuel rich areas like Kalimantan are relying on coal and gas resources; large cities such as Jakarta procure their energy supplies from a mix of different energy sources; and the electricity needs of smaller islands, such as Sumba, are nearly entirely based on renewable energy resources. Renewable energy has contributed significantly to the national energy mix and is now a major energy source, however fossil fuels are still Indonesia's largest energy source. Trade in energy between different Indonesian regions has also emerged. Despite these developments in the energy sector, a number of new challenges have also emerged. Tensions between provinces and agencies have arisen from increased regional energy security concerns and competition to secure energy subsidies from the state budget for renewable sources. Outer provinces have even established energy pacts with neighboring countries to manage their own energy security. Indonesia's energy framework is increasingly fragmented and faces the new prospect of internal regional competition.

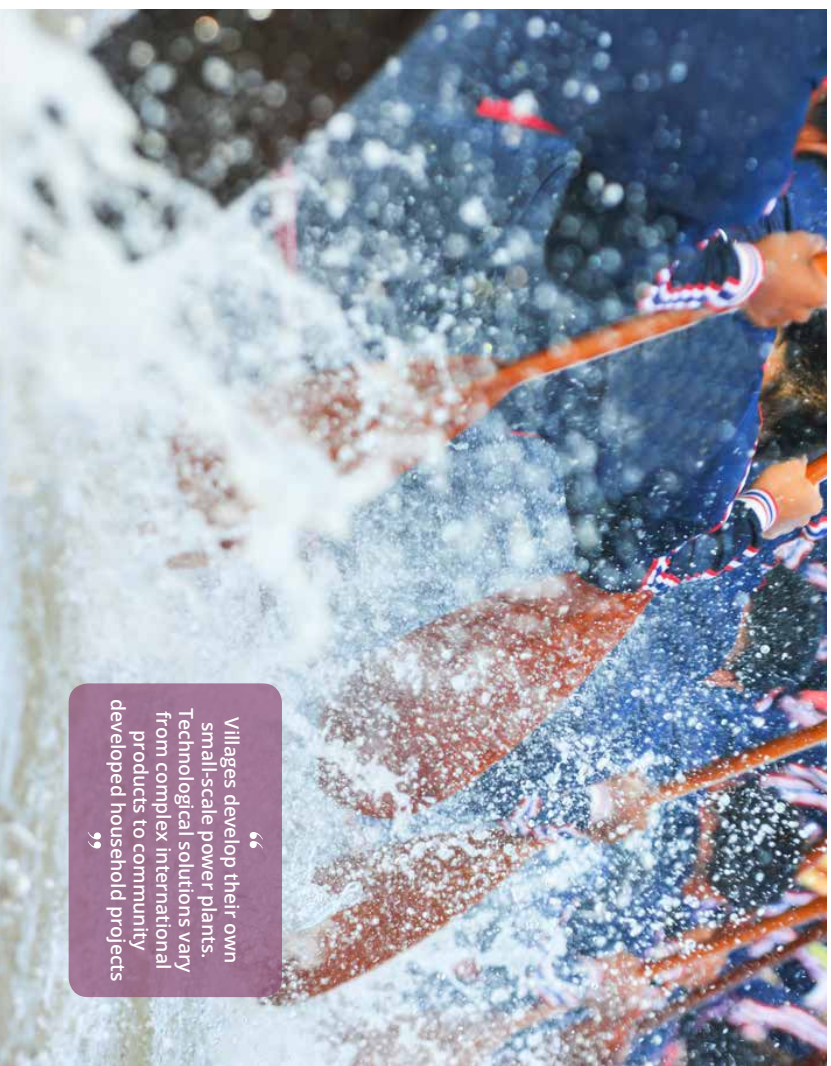
DURING THE YEARS after 2014, Indonesia has been swept by competing pushes and pulls for greater and less local autonomy. In the energy sector, there is now a strong desire for local and regional leaders – including from private, state-owned, and social enterprises – to make decisions more independently from the central government, which has faced difficulties in providing sufficient energy supplies amidst rising global energy scarcity. Disatisfaction has arisen at the regional level as regions with rich fossil fuel deposits are becoming increasingly resentful of the central government taking away their indigenous resources, while neglecting development in their regions. They accuse the government of denying them the growth and standard of living they deserve from their regional resources and see an increasingly widening gap between rural regions and their counterparts in metropolitan areas. At the same time, regions with renewable energy resources feel they are not sufficiently empowered by the central government to develop these resources and lack support. On a broader scale, energy scarcity has become more apparent in people's everyday lives. Large-scale energy infrastructure projects, including in the renewable energy sector, have failed to materialise, mainly due to deadlocks in land acquisition for building large

scale energy infrastructure and limited investment. The price of energy has increased rapidly, leading to the government's decision to phase out fossil fuel subsidies gradually.

The people have responded in different ways. A large majority of the poor and marginalised have protested with anger and resentment, accusing the government of going against the people's needs. However, some have started to focus on bigger problems; these include a heavy reliance on fossil fuels and an overdependence on a centralised energy system. Moreover, the archipelagic geography of the country has also contributed to the increasing price disparity. In the remote areas of Papua and Kalimantan for instance, the cost of gasoline far exceeds the price in Java, although in these areas people have a much weaker purchasing power.

To prevent a national calamity and address these tensions, the government was forced to take swift actions to address short and long-term concerns. The policy approach has shifted drastically; the monolithic, top-down, state-centric energy system has been replaced by a community-driven, bottom-up and pluralistic energy approach to meet regional desires for more autonomy. Funds distributed from the central government to the village level are being used by local leaders and others for the

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Villages develop their own small-scale power plants. Technological solutions vary from complex international products to community developed household projects
”



“
increased contribution from renewables aligned with local resource availability has triggered interprovincial, and at times even inter district, disputes over incentives provided by the central government for the different types of renewable energy developments
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Scenario 4: Urew

development of local energy infrastructures. However, this policy has also faced strong opposition from within the central government bureaucracy, with vested interests opting to maintain strong central government control over the regions and a reluctance over greater regional autonomy in energy planning.

Problems have also come to light with the new policy. Having a national energy mix with an increased contribution from renewables aligned with local resource availability has triggered interprovincial, and at times even inter district, disputes over incentives provided by the central government for the different types of renewable energy developments. Districts advocate for more national research into renewable energy that fits with their local needs. Notwithstanding the central government's support through various subsidies, development of technologies for renewables has progressed at a slow pace. There has also been an increase in resentment and discord between fossil fuel and renewable-rich provinces, as fossil-rich provinces such as Kalimantan and South Sumatra continuously try to lobby the central government for fossil fuel subsidies to make greater use of their local resources. Tensions also increase between the intensive

capital companies and small holder enterprises.

Greater regional autonomy has also faced technical barriers. The capacity gap between central and local expertise has become more apparent, with local governments now expected to provide reliable data, formulate policies, and make key decisions on energy projects. While the central government has been trying to carry out capacity building across the country to boost regional capacity levels, results have been limited due to misalignment between different levels of government and bureaucratic egos. As a result, only a few regions have been able to attract sufficient funding and negotiate reasonable contract terms with energy companies, which benefit their local communities. Misalignment and a lack of coordination on energy policy has created a confused landscape.

In line with the policy of empowering bottom-up energy solutions, long-term strategies were put in place through the education system and national curriculum. The new curriculum, combined with a widespread public information campaign, has placed a great deal of emphasis on energy conservation. The goal is to create 'energy-aware citizens' who have an 'energy-efficient' lifestyle to reduce national energy

demands. This has also made people more focused on the importance of locally-developed renewable energy technology.

In 2030, local innovations in energy flourish and develops significantly. Innovation drives the emergence and development of small to medium-sized local energy companies, mostly active in the renewable energy sector across the country. Villages develop their own small-scale power plants. Technological solutions vary from complex international products to community developed household projects, which apply the concept of sustainable, locally appropriate technology. A new co-existence between large scale grids and energy systems run by state-owned companies and private corporations, with small-scale energy supplies reaching out across the Indonesian archipelago, contributes to 100% electrification across the country. This contributes to economic developments, with multiple local growth poles. The national motto, the Bhinneka Tunggal Ika principle, 'Unity in diversity', is now emerging in the country's energy sector – although unity still requires a lot of effort to maintain, and inequality in outcomes is still a major challenge ●

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The scenarios Team members attended in their personal capacity as individuals and did not represent their respective organizations. Compiled scenarios were formulated from the collective inputs and ideas of the scenario team members. The scenarios were debated and discussed in detail.





Annex:

The Transformative Scenario Planning Methodology

Excerpted from "Transformative Scenario Planning: Working Smarter to Create the Future" by Adam Kahane (San Francisco: Berrett-Koehler, 2012).

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SOMETIMES SOCIAL systems get stuck. There is not enough agreement among leading players about what is happening or what could or should happen, for the system to be able to move forward. Confusion and conflict impede progress and create the risk of regression.

In such contexts, transformative scenario planning can be useful. This process enables politicians, civil servants, activists, business-people, trade unionists, academicians, and leaders of other stakeholder groups to work together to construct a shared understanding of what is happening and what could happen

In their system, and then to act on the basis of this understanding. The focus of transformative scenario planning is the development, dissemination and use of a set of two, three or four scenarios (structured narratives or stories) about what is possible. A scenario is a story about what could

happen: an internally-consistent hypothesis about the future that is relevant, challenging, plausible, and clear. A scenario is not a story about what will happen (a forecast or prediction) and not a story about what should happen (a vision or proposal or plan). Scenarios provide a shared framework and

language for strategic conversations within and across stakeholder groups about the situation they are part of and what actions they can, must, and will take to address it. Transformative scenario planning thereby offers a way for social systems to get unstuck and move forward.

5 Steps

The transformative scenario planning process



THE FIRST STEP is to enroll a team of people from across a whole system who want to—and together are able to—influence the future of that system. This system can be a community, a sector, or a country; any social-political-economic whole that is too complex to be grasped or shifted by any one of its parts.



THE SECOND STEP is for the scenario team to build up a rough shared understanding of what is happening in the system of which they are part of and which they want to influence. They come to this work with differing positions in and perspectives on the system, and so this process requires them to go beyond their established views and see with a fresh pair of eyes. It requires them to see not just their part of the system but more of the whole system, and to open up and inquire and learn.



THE THIRD STEP is for the team to construct a useful set of scenarios about what could happen in and around their system. To be useful, the scenarios must be relevant, challenging, plausible, and clear. Useful scenarios open up and enable movement in the thinking and acting of actors across the system.



THE FOURTH STEP is for the team to see what their scenarios tell them about what they can and must do. These conclusions may be about actions that they need to take to adapt to things they cannot influence, or about actions to influence things they can. These conclusions may be about actions that they need to take jointly or separately.



IN THE FIFTH AND FINAL STEP, the members of the team act, with one another and with others from across the system, to transform their situation. These actions can take any number of forms: campaigns, meetings, movements, publications, projects, initiatives, institutions, or legislation, private or public, short-term or long-term. The activities of this step, more than those of the previous steps, will therefore generally not be able to be foreseen or planned in advance. These activities will further more not necessarily be part of the scenario project as such.



Result

Through these steps, transformative scenario planning produces five sets



Annex:

The Transformative Scenario Planning Methodology

Excerpted from *Transformative Scenario Planning: Working Systems to Create the Future* by Adam Kahane (San Francisco: Berrett-Koehler, 2012).

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Relationships

01

First, it produces cross-system **RELATIONSHIPS** an experience of leading actors from the across the system—including some who have been locked in conflict—to work together constructively on complex shared concerns.

Understandings

02

Second, it produces systemic **UNDERSTANDINGS**, a set of scenarios that illuminate and clarify the past, present, and possible futures of the system.

Intentions

03

Third, it produces **INTENTIONS** that take account of the whole system: commitments, on the part of leading actors, about what they need to do in light of these scenarios.

Capacities

04

Fourth, it produces, in and among the participating actors, **CAPACITIES** for leading systemic change.

Actions

05

Fifth, it produces **ACTIONS** intended to transform the system: initiatives undertaken by these actors to create forward movement.



Waves

Represented by a boat rowing to break through the waves. Rowing a boat through strong waves is a tiresome and draining exercise. The waves can seem infinite and continuously push back and slam against the boat which can cause it to capsize. The boatmen are not able to change the direction of the waves. The rowers struggle to overcome each incoming wave.



Storm

Represented by a boat trying to change sails in the middle of a storm. If the boatmen are unable to successfully open the storm sails before the squall hits, it will place the boat in a dangerous situation. However, using regular sails inside a storm is also highly dangerous.



Rocks

Represented by a boat navigating its way through dangerous rock formations that lie underneath the seas. The steering factor is the most important in this scenario. The boatmen have to find a way through the rocks safely. The rowers' skill and uncontrollable factors such as the strength of the winds and the formation of the rocks.



Crew

Represented by a boat being rowed by a number of people. Each of the rowers has the same goal to row the boat. Some of the rowers are more skilled than others. There are two possible outcomes in this scenario. The first possible outcome is that each of the rowers continues to row according to their capacity, disconnected and out of sync with the others. The second possible outcome is that the rowers organize themselves and unite in order to work with each other to make the boat move forward more efficiently.





Indonesia Energy Scenarios 2030

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