# Significance, gaps, and prospects of foresight – Lessons from Indonesia

*Yanuar Nugroho, Dimas Wisnu Adrianto, Joko Susilo, Claudia Rosari Dewi,
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**Acknowledgement**

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## Abstract

**Purpose** – *This study aims to explore some significance, gaps and prospects of foresight both for and as policy in planning and decision-making, as well as an instrument for enhancing the capacity of planners and decision makers in Indonesia.*

**Design/methodology/approach** – *This study deploys a case study method deriving from the authors' experience in conducting a series of foresight workshops and trainings in Indonesia. The workshops, which involved government officials from the Ministry of National Development Planning (Bappenas) and the Coordinating Ministry of Investment and Maritime Affairs (KemenkoMarves), were designed with two agendas. First, to apply foresight in the actual process of policy cascading for the formulation of the national long and mid-term development plan (Rencana Pembangunan Jangka Panjang Nasional (RPJPN) and Rencana Pembangunan Jangka Menengah Nasional (RPJMN)). Second, from the process itself, to improve the capacity of government officials in decision-making by using a more explorative method of planning.*

**Findings** – *The result shows that foresight proves to be a useful method that enables a more systematic exploration of events, trends and eventually drivers with which plausible future scenarios could be explored, thus leading to more adaptive policies. With regard to the prospect, foresight is seen as a more inclusive and participatory-based approach, which embraces a robust democratised process of policy construction. However, the practice is also challenging in its nature. Government officials have been prolongedly familiar with positivistic methods, hence considering the application of foresight as an endeavour of a new academic culture of planning, which requires them more time, resources and pondering.*

**Research limitations/implications** – *Considering the methodological prospect and the intrinsic uncertainty of the future, this paper argues the need to nurture planners and decision makers to have the capacity to design more adaptive policies as offered by explorative methods like foresight. Consequently, this is also a call for the Indonesian Government to recognise the significance of the method and to provide relevant institutional support for wider practice, or exploration at the least. However, as a note of limitation, the workshops were conducted only with government officials, thus the result should only represent the point of view of the public sector.*

**Originality/value** – *This paper contributes to the progress of foresight studies by presenting an original case study of the practice in Indonesia. The foresight workshops were facilitated by the authors, thus the insights brought in this paper derive from the first-hand experience of the authors. Moreover, as foresight is considered as a new endeavour in Indonesia, this paper helps provide a key novelty unfolding the reliability and prospect of foresight as an instrument for planning and decision-making.*

**Keywords** *Indonesia, Foresight, Collective future intelligence, Significance, Gaps and prospects*

**Paper type** *Case study*

## 1. Introduction

### 1.1 An overview of foresight

In contemporary times, the use of foresight as a tool for strategic planning and decision-making has garnered considerable attention (Buehring and Bishop, 2020). This stems from the acknowledgement by organisations, governments and policymakers of its capacity to

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influence forthcoming outcomes. The concept involves using a methodical and organised methodology to foresee possible situations, recognise emerging patterns, plan anticipative strategies and actions and evaluate their consequences (Miles and Keenan, 2003; Nugroho and Saritas, 2009; Gordon *et al.*, 2020). Through the use of foresight, individuals and organisations are able to use proactive strategies that facilitate the effective management of uncertainty, thereby capitalising on potential opportunities and mitigating associated risks in shaping, rather than predict or forecast, their future.

The foundation of foresight is in the notion of anticipation, placing significant emphasis on the value of strategic thought and long-range planning (Jovane *et al.*, 2003; Loveridge, 2008; Loveridge and Saritas, 2009; Miles and Saritas, 2012). This tool provides decision-makers with the capacity to predict changes across multiple domains, such as technology, economy, environment and society, thereby promoting adaptability and resilience. The adoption of an anticipatory mindset enables organisations and nations to proactively anticipate future trends and developments, enabling them to strategically match their objectives with shifting circumstances.

### 1.2 Advancements and implementation of foresight in Indonesia

Foresight practices have become increasingly prevalent worldwide, showcasing their effectiveness in influencing policy, fostering innovation and enhancing competitiveness. Countries such as Singapore, Finland and South Korea have adopted foresight approaches to cultivate innovation ecosystems, enhance education systems and maintain competitiveness in the global arena (Jemala, 2010; Miles, 2010; Kuosa, 2011; Choi and Choi, 2015; Nováky and Monda, 2015; Hytönen and Ahlqvist, 2019).

The utilisation of foresight has been steadily increasing in Indonesia over the recent years. The nation acknowledges the imperative of adopting proactive approaches to tackle urgent issues like environmental sustainability, economic diversification and social equality. Foresight tools are increasingly being used by government entities, academic institutions, and private firms to enhance the decision-making processes related to policy making, investments and research orientations.

An example of this is the initiation of several foresight projects by Indonesia's National Development Planning Agency (Bappenas) with the purpose of providing insights for the formulation of country's long-term development planning (*Rencana Pembangunan Jangka Panjang Nasional*, or Rencana Pembangunan Jangka Panjang Nasional (RPJPN)). These endeavours encompass scenario planning exercises aimed at examining possible and plausible futures for Indonesia's economic and social milieu. This is important as the country has the vision that in 2045, Indonesia will be among the most advanced economies globally.

Nevertheless, the use of foresight in the country is currently in a state of development, with a range of obstacles that need to be addressed. They encompass various aspects such as the necessity for increased collaboration among stakeholders, improving the availability and quality of data and cultivating a culture of proactive thinking inside organisations and government bodies. The identification of these gaps is of utmost importance in advancing the efficacy of foresight in Indonesia and guaranteeing its contribution to the sustainable development of the nation.

### 1.3 The purpose of the paper

This purpose of this paper is to present ideas and recommendations for the advancement of foresight as a method to enhance future policy planning within the specific context of Indonesia. In line with that purpose, the objectives are:

■ to present a review on the significance of foresight in channelling an improved mechanism for future policy planning;

- to observe the gaps emerged from the practice of foresight within a number of institutional settings; and

- to explore the prospects for implementation, and avenues for improving foresight methodologies in policy planning and decision-making.

## 2. Rationale of foresight

### 2.1 Innovation for policy and governance in Indonesia

Innovation not only occurs in terms of product, process and services, it also takes place in the context of policy and governance. Innovation in policy and governance does not only mean government policy related to innovation. Rather, it also refers to innovation that transpires within the process of policymaking and governance itself (Boehmke and Witmer, 2004; Tolbert *et al.*, 2008).

The practices of innovation in policy and governance have gained increasing attention in the past decades in many countries, including Indonesia. One of the highlights of innovation in policy in Indonesia is the widespread establishment of evidence-based policymaking in different levels of government (Chu-Chang *et al.*, 2013; Blomkamp *et al.*, 2017; Pellini *et al.*, 2018). The President's Delivery Unit for Development Monitoring and Oversight or *Unit Kerja Presiden bidang Pengawasan dan Pengendalian Pembangunan* (UKP4) which then evolved into the Executive Office of the President or *Kantor Staf Presiden* (KSP) is one that strongly promotes the importance of evidence-based policymaking in government institutions (Nugroho *et al.*, 2020). In 2013, UKP4 brought in Foresight as a method within the institution to undertake horizon scanning to map events and trends that occurred in the past 3–5 years in 23 provinces across Indonesia which was then used as the basis for the future development planning.

Another evidence of innovation in policy and governance in Indonesia is the development of the Research and Innovation Ecosystem Blueprint in Indonesia (Pradana *et al.*, 2021). Recognising the complexity and its potential challenges, such initiative was not carried out by a single organisation. It is rather a collaborative effort between three ministries at that time, i.e. the Ministries of National Planning, Education, Research and Technology and State Apparatus and Bureaucracy Reform. This approach in itself is considered innovation, at least within the respective ministries. Furthermore, the establishment of a research and innovation ecosystem in Indonesia requires the support of many factors, two of which being a strong regulatory framework and the improvement of governance and accountability mechanisms. Innovation is indeed necessary to achieve those requirements.

### 2.2 Foresight for, and as policy

The utilisation of foresight has become progressively essential within the domain of policy formulation as an innovation in policymaking. Foresight enables governmental entities and individuals in positions of authority to proactively foresee and make necessary preparations for forthcoming problems, opportunities and uncertainties (Miles *et al.*, 2008; Nugroho and Saritas, 2009).

Foresight enables policymakers to make well-informed judgements by offering them a comprehensive perspective on prospective future scenarios. Conventional policy formulation frequently focuses on historical data and short-term estimates, which may not comprehensively encompass developing trends and long-term difficulties (Nugroho and Saritas, 2009; Miles *et al.*, 2016). In contrast, foresight provides a systematic framework for examining potential future scenarios, allowing policymakers to evaluate a diverse array of potential outcomes and their associated consequences, enhancing their ability to survive unforeseen disturbances.

While foresight enables policymakers possess the capability of evaluating the enduring consequences of their policies on the environment, society and the economy, it also help policymakers engage a heterogeneous array of specialists, localities and stakeholder organisations, amass a breadth of views and viewpoints that enhance their comprehension of intricate matters.

The application of foresight as a policy tool empowers governments to proactively shape their future, foster innovation and address emerging challenges. At its core, it enables policymakers to embrace a proactive stance rather than a reactive one. Instead of merely responding to emergencies or urgent issues, foresight as policy encourages policymakers to consider multiple potential future scenarios and devise adaptable and robust solutions. By conducting a thorough analysis of many situations and their respective outcomes, policymakers possess the capacity to formulate policies that are better equipped to tackle unforeseen challenges while also achieving their broader goals (Mouw and Mackuen, 1992; Dror, 2006; OECD, 2021).

The capacity to anticipate forthcoming futures helps governments allocate resources towards development priorities to address future challenges and take advantage of prospective opportunities.

Taking into account the contemporary world, as policy, foresight also incorporates the diverse and interconnected challenges of modern society such as climate change, health care, cybersecurity and social injustice. It builds the capacity of governments to anticipate forthcoming events and outcomes, confers them with the ability to attain a deeper understanding of the interrelationships among today's diverse concerns (Martin and Irvine, 1989; Miles *et al.*, 2008).

The usage of foresight as a policy instrument allows governmental institutions and policymakers to be ready and efficiently navigate the complex and unexpected terrain of the future. In a period marked by rapid global changes, the capacity to foresee forthcoming advancements remains crucial in shaping the establishment of robust, inventive and sustainable societies at a worldwide level.

### 2.3 On Foresight 3.0

Foresight 3.0, as outlined by Ravetz (2020) and Ravetz and Ravetz (2017), extends beyond standard practice to explore the scope of collective anticipatory intelligence and the learning and creative potential of whole communities and societies. Some of the key features of Foresight 3.0 include the following. Firstly, Foresight 3.0 fosters systemic transformations as it involves exploring and mapping pathways for societal transformation, emphasising the potential for collective anticipatory intelligence in addressing urgent, uncertain, conflicting and controversial situations. This approach extends beyond crisis management to encompass transformation in various systems, including social, technical, economic, ecological and political realms. Secondly, it uses visual thinking tools and "Corona games" to facilitate the exploration of deeper and wider ideas and insights, aiming to steer systemic pathways from one outcome to another. This visual foresight aspect enables the examination of potential systemic transformations, particularly in the context of critical danger and opportunity, such as the global crisis posed by the COVID-19 pandemic. Thirdly, Foresight 3.0 channels cognitive systems transformation from smart to wise (Mode III) which embraces creativity in mapping synergies within deeper complexity systems (Ravetz, 2020). This mode combines technical, evolutionary and co-evolutionary approaches, going beyond simple solutions to encompass extended pathways that integrate multiple modes of system organisation. Finally, it aims to mobilise deeper forms of collective intelligence across wider communities, organisations, and networks to address systemic challenges and opportunities. It underscores the importance of collective social

intelligence in fostering learning and thinking capacities to guide societal transformations and address complex global crises, such as the COVID-19 pandemic.

## 3. Methods

To analyse the significance, limitations and prospect of foresight, this paper makes critical reflection through the approach of case studies. The methodological advantage of using case studies is the enabling of a more in-depth exploration of events (Stake, 2009; Yin, 2014), thus providing opportunities to yield better insights. The case study involves a series of foresight exercises conducted first hand by the authors in various government institutions, i.e. the Ministries of National Development Planning (Bappenas), Education, Culture, Research and Technology (Dikbudristek) and Coordinating Ministry of Investment and Maritime Affairs (Marves).

The exercise has two objectives: firstly, to build an in-house capacity in applying foresight as an instrument for policy and decision-making, and secondly, to facilitate the formulation of their respective sectors' long and mid-term development policy goals. It follows systemic foresight methodology (Saritas, 2006, revised in 2013) (Figure 1) depicted below as a standardised method.

The exercise runs in four days, reflecting the stages of foresight. The first day covers primarily the introduction and scoping, which aims to build an understanding of the process, the state of the arts and a brief reflection on previous application of foresight (Miles, 2002). This is followed by an exercise to identify events and trends as part of the horizon scanning stage. The second day activity is centralised on identifying weak signals, discontinuities and wild cards, which is essential to channel the identification of drivers. These stages incorporate the Delphi approach in which participants took an expert role in the simulation. Upon concluding the drivers, the third day is to map the alternative futures

| **Figure 1** | Systemic foresight methodology |



**Note:** Simplified from Saritas (2006, 2013)
**Source:** Authors' own work
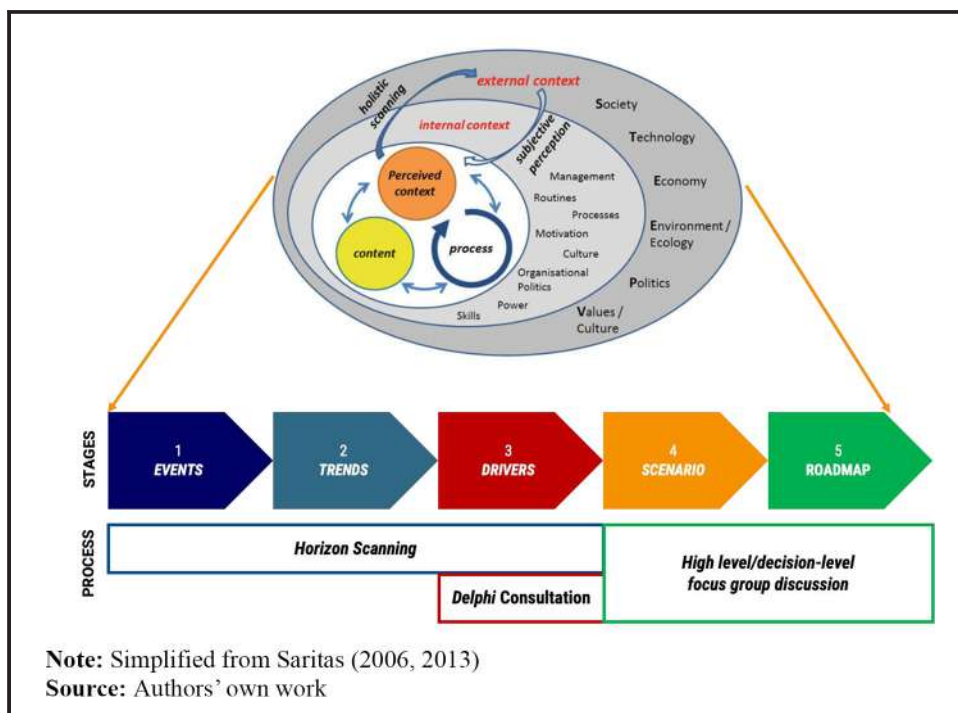
using both inductive and deductive scenarios and the construction of policy road map, followed by presentation and reflection on the fourth day.

Reflective reviews on the significance, gaps and prospects of foresight are then made based on observation of these exercises in association with the processes, results and the overall participants' cognitive experience in using foresight.

## 4. Results and discussions

### 4.1 The exercises

In this initial discussion section, we elucidate the three major stages of the selected case study exercises (see Table 1) – the *horizon scanning, scenario mapping and road-mapping* – to draw attention to the key features of the foresight exercise. In total, there are six exercises and one high-level workshops that provide data for this analysis.

*4.1.1 Horizon scanning.* Horizon scanning involves the systematic examination of a wide range of information sources, including scientific publications, news articles, stakeholder opinions, expert opinions and emerging technologies to identify emerging trends, opportunities and potential disruptions that may affect the future. This process goes beyond mere trend analysis; it aims to uncover the underlying forces and driver(s) of change that may shape the future landscape.

In line with its participatory approach, one key element in effective horizon scanning is the use of collective intelligence. In this context, collective intelligence refers to the collaborative effort of diverse stakeholders (e.g. experts, decisionmakers and the public) to gather, interpret and validate information. Collective intelligence taps into the wisdom of crowds, harnessing the variety of perspectives and expertise to enhance the accuracy and comprehensiveness of scanning efforts.

Out of all conducted exercises, one high-level workshop and three exercises used real data:

- Bappenas' high-level workshop on the formulation of the National Long-Term Development Plan 2025–2045 (RPJPN 2025–2045 thereafter), which used the ministry's background study and data;

- Polkom–Bappenas, which used the directorate's background study for RPJPN 2025–2045;

- Kumlasi–Bappenas, who also used directorate's background study for the RPJPN 2025–2045 and the National Mid-Term Development Plan 2025–2029 (RPJMN 2025–2029 thereafter); and

- Dikbudristek, who used working papers the from the Directorate of Business and Industrial Partnerships (Dunia Usaha dan Dunia Industri). In our observation, using real data helped the discussions run smoothly, thus, the results of identifying the main/key events and trends were quite comprehensive.

In all exercises, we used brainstorming, role playing, small-group discussions and expert panel mock-up to optimise participants' understanding of the horizon scanning process and the nature of its participatory approach. The participants were very present and active during the discussions as a result. However, as they were living their respective roles, sharp differences of opinion surfaced, prompting them to question how to deal with (potential) deadlocks and how to recognise and manage the facilitators' own biases. Other concerns were on the recruitment of foresight participants and Delphi experts, particularly on how to ensure the inclusivity and the need to achieve a sort of balance proportion of different stakeholders.

**Table 1** Key features of the foresight exercise

| No. | Institution | Objectives of the exercise | Topic/key questions/focus | Results (key trends, drivers and scenario) | Participants |
|---|---|---|---|---|---|
| 1 | Directorate of Civil Service and Bureaucracy Reform, Bappenas (ANTB) | Enrich methodologies for planning, designing and shaping the future | Indonesia's new capital city (IKN), development planning until 2045 | Key events: social conflict (S), environmental degradation (En) and transnational crimes (P) Drivers: Group 1: social response of IKN and funding (S & Ec) Group 2: ICT usage in public services and Indonesia's economic trajectory (T & Ec) Scenario: deductive and inductive scenarios on: 1. A liveable capital city 2. Transformation of public services in the new capital city | ANTB directorate staff and other directorates |
| 2 | Directorate of Politics and Foreign Affairs, Bappenas (polugri) | Introducing and broadening the methodology references for planning | Indonesia's role and leadership in global setting | Key trends: digitalisation of diplomatic process (T) and the use of social media in diplomacy (T) Drivers: Presidential leadership in foreign policy (V) and the country's national income (Ec) Scenario: deductive and inductive (one topic) | Polugri internal staff |
| 3 | Directorate of Politics and Communication, Bappenas (Polkom)* | Designing and refining scenario planning and roadmapping for long-term (RPJPN) and mid-term (RPJMN) development planning in the field of politics and communication | Realise political development in Indonesia by 2045 through substantive democracy | Key trends: Low media literacy (T) and intolerance (S) Drivers: The capacity of civil society (S) and the capacity of democratic institutions (P) Scenario: deductive and inductive | Polkom's internal directorate staff, experts and consultants |
| 4 | Directorate of Law and Regulation, Bappenas – (Kumlasi)* | Preparation for the planning documents fRPJPN and RPJMN in the field of law and regulation | Fair, certain, helpful and human rights-based national laws by 2045 | Key trends: Limited access to justice (S), weak integrity of law enforcement officers (V) Drivers: A political system characterised by integrity, transparency and accountability (P) and democracy, human rights and anti-corruption (V) Scenario: deductive and inductive | Kumlasi's internal directorate staff, experts, consultants and partners |
| 5 | Coordinating Ministry for Maritime Affairs and Investment (Marves) | To introduce a new perspective and approach | The future of electric vehicles in Indonesia | Key trends: "green" lifestyles (V); green and cheap technology (T); sustainable lifestyle (S)Drivers: the government's policies on EV (P) and GDP of Indonesia (E) Scenario: deductive and inductive | Internal staff of Deputy VI Marves (strategic investment) and their stakeholders |
| 6 | Ministry of Education, Culture, Research and Technology (Dikbudristek) | Enhancing capacity to establish innovation clusters through strategic partnerships between vocational education units and local governments | Transformation of vocational education ecosystem into a partnership ecosystem for the development of innovation-based regional development | Key trends: increased links and match (P), quality of vocational education programs (S) Drivers: economic development based on vocational education (Ec) and link and match between vocational education and industry (P) Scenario: deductive and inductive | Dikbudristek's internal staff and vocational school representatives |

**Notes:** *Real data was used in this training; Code for dimension: S = social; T = technological; Ec = economic; En = environmental; P = political and V = values, ICT = information and communication technology; GDP = gross domestic product
**Source:** Authors' own work

Nevertheless, the biggest concern was on the feasibility of conducting full-fledged foresight exercises given its resource-extensive nature, hence the questions on the possibility to shorten the process and whether the results will continue to be used when the government changes. The possibility to use other data collection methods (e.g. survey and big data analytics) was discussed as well.

*4.1.2 Scenario mapping and planning.* Pessimistic, moderate and optimistic scenarios constitute the standard process of scenario production within various government entities in Indonesia. While this approach is not entirely incorrect, it is quite common. Therefore, it may be necessary to delve into how scenarios are genuinely created. The process of conceiving and constructing scenarios is not only feasible but also highly plausible within the framework of foresight methodology.

Inductive and deductive scenarios as the two primary scenario models are introduced and used in the systematic foresight processes, drawn from Kahane (2012). Inductive scenario planning involves building scenarios from specific observations and detailed data. This approach is more bottom–up, starting with particular events or trends as a main driver and then building up to broader generalisations and narratives about the future. The famous *South Africa's Mount Fleur Scenarios* used inductive approach. Deductive scenario planning, on the other hand, is a top–down approach useful in situations where overarching principles or drivers can help define plausible futures, particularly when data is sparse or when exploring high-level strategic changes.

The creation of scenarios is influenced by three key factors:

1. economic;

2. political; and

3. social considerations.

In the context of institutional governance and the tension between budgeting and development planning, scenario development has received significant attention in various Bappenas directories. Kumlasi–Bappenas has developed a strategic roadmap aimed at achieving a well-functioning legal system by 2045. This roadmap encompasses reforms in criminal law, the strengthening of anti-corruption measures and improvements in legal and regulatory governance. Using inductive scenario planning, it explored the plausibility of a society characterised by a strong legal culture that would result from a political system marked by honesty, openness and accountability (political dimension). On the other hand, a political system rooted in integrity, transparency, accountability and democracy (political dimension), along with a commitment to human rights and anti-corruption (value dimension), emerged as the outcome of deductive scenario analysis.

This finding intersects with the mission of the Polkom–Bappenas, which is focused on achieving political growth in Indonesia by 2045 through substantive democracy. With the primary goal of creating an autonomous, inclusive and participatory society, inductive scenario planning places a strong emphasis on the power of civil society as the driver. In the deductive scenario, the two drivers are the capacity of democratic institutions (political dimension) and the capacity of civil society (social dimension).

Meanwhile, Polugri–Bappenas engages in the viewpoint of global scenarios and road mapping with the major issue of "Indonesia's Role and Leadership in the Global Order" by using dummy data. The primary drivers stemmed from the value and economic dimensions. Presidential leadership in foreign policy, with a spectrum from inward- to outward-looking was the motivation. Middle- to upper-middle-class drives the economy. Additionally, there were two themes covered by Aparatur Negara dan Transformasi Birokrasi(ANTB)-Bappenas, which also uses dummy data to look deeper into the endeavours of moving the National Capital (IKN). The participants were split into two groups, with one theme and two

primary drivers for each group. The first group explored plausible scenarios focusing on "liveable capital cities", while the second, "Transformation in public services in Ibu Kota Nusantara (IKN)" – both driven by social and economic factors.

Unlike Bappenas, whose primary role is to prepare the national strategic planning, Deputy VI at Marves serves as a bridge between implementing ministries, with a particular focus on the investment and mining industries. The participants came up with "The Future of Electric Vehicles in Indonesia" as the overarching theme for their foresight exercise, understanding that given Indonesia's resource-intensive nature, implementing foresight practices in this sector may pose challenges.

Within Dikbudristek, several case studies and scenarios were also explored to promote the integration of vocational education to meet labour demands and enhance economic competitiveness. This approach aimed to bridge the gap between supply and demand in the job market. The horizon scanning revealed two key driving forces: economic development through vocational education (economic dimension) and the alignment between industry and vocational education (political dimension). The primary objective of the roadmap following the scenario analyses was to transform the vocational education ecosystem into a collaborative platform for innovative ideas based on local potential.

It is worth noting that the output of these exercises is systematic as a result of scenario development that involved multiple actors and sectors, and the use of solid data – be they actual one derived from the institutions background study and dummy but realistic ones. The scenarios became the basis for the follow-up cascading process involving road mapping, strategic agenda setting, technical programmes and measuring achievement indicators. The inclusion of actual data and the involvement of policymakers from various stakeholders throughout the process made the crucial aspects more distinct and forward-thinking. In particular, we note that using an inductive method demands more time and more intensive forum dynamics compared to the mainstream deductive scenario development, which often focuses on a single ideal goal. To address these methodological problems and empirical gaps in practice, foresight methods that use both inductive and deductive scenarios have proven to be helpful throughout these exercises.

*4.1.3 Road mapping.* As Bappenas is tasked to prepare Indonesia's long-term planning – the RPJPN 2025–2045 – foresight was used as a guiding method in its formulation and public communication. In doing so, Bappenas convened a high-level workshop on 5–10 January 2023 in Bali, comprising of 11 plenary and two group sessions for each working group.

The discussions were centred around the main topic of "Indonesia Emas (Golden Indonesia) 2045", with three key questions:

1. "What the vision is for Indonesia's development 2045";

2. "How this vision will be realised through targets, strategic agendas and goals"; and

3. "What the indicators of success are".

These discussions served as the horizon scanning phase.

While the participatory nature of foresight was demonstrated throughout the discussions, the resulting number of development goals, targets, strategic agendas and indicators had been somewhat pre-determined. At the end of the exercise, the results included two proposals for RPJPN vision, five development targets, eight agendas, 17 goals, ten challenges and 45 development indicators. The number formation of 5, 17, 8 and 45 reflects the five principles of Pancasila (the state ideology) and Indonesia's Independence Day (17-8-1945). Such pre-determined numbers for goals, targets, agendas and indicators had to some extent limited the full potentials of foresight. Nevertheless, the richness of the results can still be obtained regardless.

The dynamics of the participants were one key aspect for observation. The exercise sessions were held in hybrid mode, with 50 offline participants from echelon I, II and expert staff and 184 other staff participants – of which 28 participants were considered junior millennial staff. Additionally, there were 133–460 online participants joining each session over four days. In total, there were 248 discussion and questions and answers sessions among the participants themselves (without the involvement of external facilitators), of which 36 discussions were led by junior millennial staff. The context of "Golden Indonesia 2045" resonated more to the millennial staff as they represent the future. While each participant brings along their own interest to the discussion – which led to a tug-of-war between politics, substantive issues and shared vision – it was the informal negotiations between the key actors outside the discussion forums that consolidated the final results.

In hindsight, there were two key issues that emerged as participants' reflections. Firstly, economic growth should no longer be the sole measure of development success. Instead, it requires a holistic shared vision for Indonesia's development that includes other aspects, such as environmental sustainability, adequate health, democracy and even the citizens' level of happiness. Secondly, the issue of governance remains critical for the future. Governance needs to be improved to achieve the goals, targets, agendas and indicators.

In Figures 2–5 below, we exhibit scenario planning and road-mapping exercises from two ministries, each use both inductive and deductive methods, as examples. Each figure explores scenarios, their respective main features, along with policy priorities in each scenario.

## 4.2 Foresight and policy cascading

Of all conducted exercises, three in particular involved the actual work of policymaking and cascading. Cascading in this context refers to the process of aligning policy targets of the long-term national development strategy to a more relevant operational unit.

The Bali high-level workshop pioneered the endeavour by first defining the relevant long-term goals, strategy, targets and indicators for pathway towards "Golden Indonesia 2045". Foresight played a major role as an instrument and contributed in at least two key areas.

| **Figure 2** | Inductive scenario mapping on "political system with integrity, transparency, and accountability" (Directorate of Law and Regulation, Bappenas) |



**Source:** Authors' own work
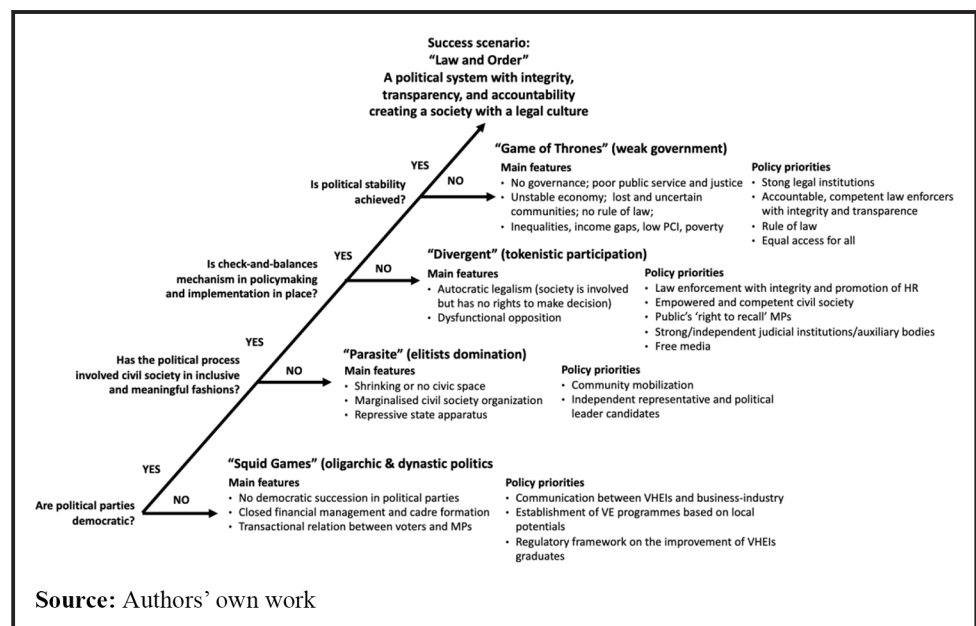
**Figure 3**    Deductive scenario mapping on "political system and government" (Directorate of Law and Regulation, Bappenas)
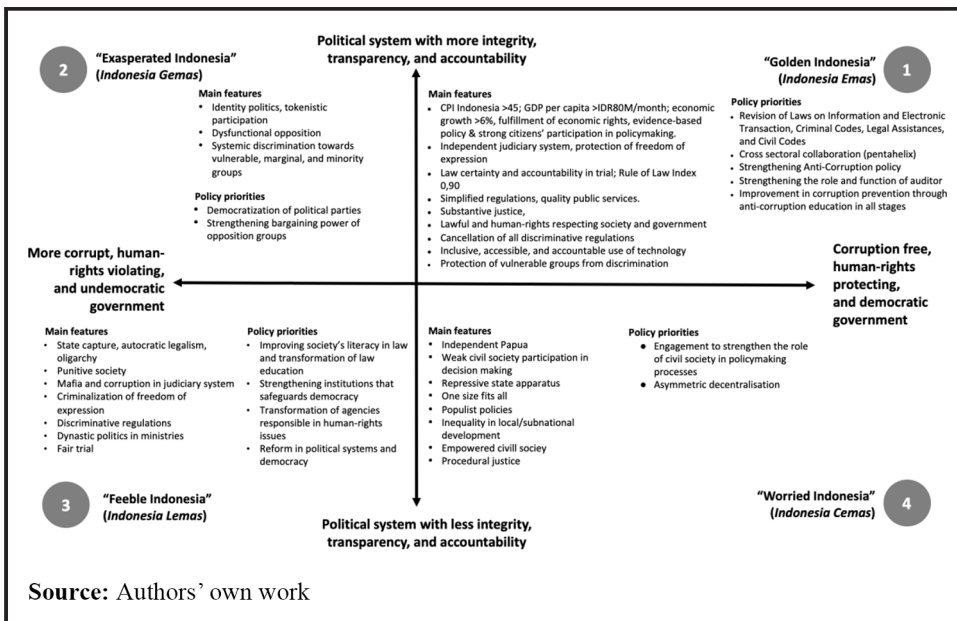


**Source:** Authors' own work

**Figure 4**    Inductive scenario mapping on link-and-match between vocational higher education institutions (VHEIs) and business-industry (Ministry of Education, Culture, Research and Technology)
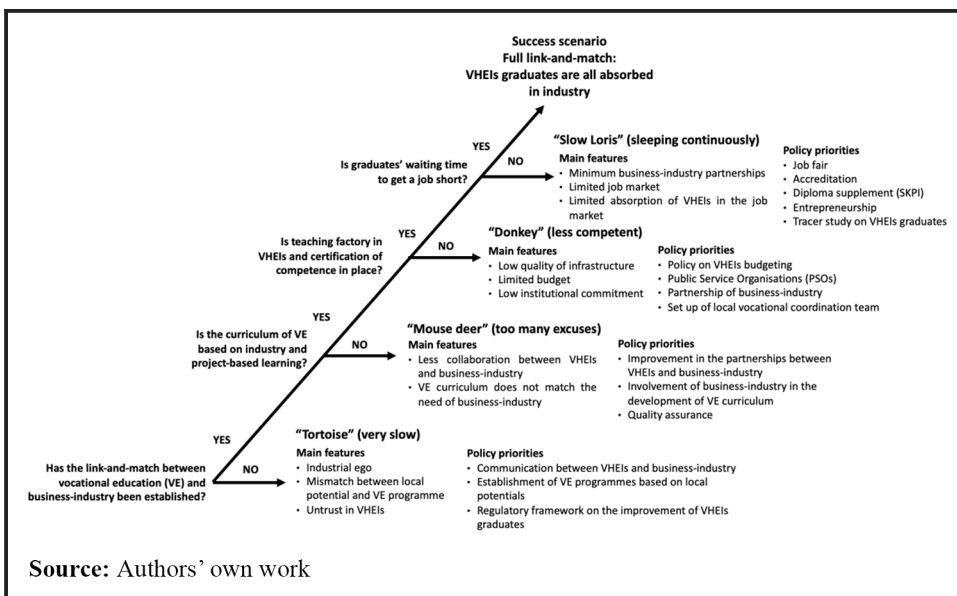


**Source:** Authors' own work

Firstly, the nature of the process, in which all participants were given equal opportunities to speak both in the plenary and group discussions, altered the barrier of traditional and hierarchical mode of communicative interactions in the government's bureaucracy. This positive practice embraces a more democratic process of policy construction by means of collective intelligence. Secondly, the process of horizon scanning enabled a more systematic way to capture events and trends that are crucial to shape the designated future of Indonesia.

**Figure 5**    Deductive scenario mapping on link-and-match between VHEIs and business-industry (Ministry of Education, Culture, Research and Technology)

**More collaborative link-and-match between vocational HEIs (VHEIs) and business-industry**

**2**   "Shake & wiggle" (*Goyang Dumang*)

**Main features**
- 60% absorption of VHEIs graduates in the job market
- More VHEIs graduates available but do not work optimally
- Skill gaps
- Minimum business-industry support
- Job market mismatch
- Uncompetitive products
- Limited career choice

**Policy priorities**
- Matching VHEIs curriculum with business-industry needs
- Standardisation of VHEIs' products

**Main features**
- Improvement of innovation and productivity
- Increase in industrial investment
- Decrease in unemployment
- Development of local economy
- New industrial complex
- Increase in R&D activities
- More project-based learning
- Curriculum matches market supply-demand
- Integration and utilization of technology
- Workforce certified and matches the need of industry
- VHEIs' products commercialized

**1**   "Intimacy" (*Kemesraan*)

**Policy priorities**
- Regulations (national and subnational) on VHEIs
- Improvement in VHEIs and business-industry partnerships
- Business-industry need-based R&D
- Industry-based curriculum
- Strengthening ecosystem based on local potentials
- Pentahelix fora

**Economic growth driven more by conventional education** ←

**Economic growth driven more by vocational education** →

**Main features**
- Low (<=10%) or zero absorption of VHEIs graduates in the job market
- Less developed industries
- Low global competitiveness
- Increasing number of foreign workers
- Curriculum developed only by VHEIs
- High unemployment rate
- Gaps in industrial development
- *Supply – demand* in products and workforce do not match

**Main features**
- 40% absorption of vocational HEIs graduates in the job market
- Vocational products only for education purpose
- Dependency on foreign workers
- Underemployment
- VHEIs do not match business-industry needs
- Innovation hampered
- Less trust in VHEIs
- Technological progress in business-industry do not match with vocational HEIs trainings
- VHEIs' products do not sell.

**Policy priorities**
- Research on link-and-match programmes
- Improvement of industrial-based teaching factories
- Strengthening of VHEIs
- Public campaign of VHEIs' excellence

**3**   "You are there, I am here" (*Kau di sana, ku di sini*)

**4**   "Let there be no lies between us" (*Jangan ada dusta di antara kita*)

**Partial (less collaborative) link-and-match between vocational HEIs (VHEIs) and business-industry**

**Source:** Authors' own work

This was useful to refine the pre-defined vision which tend to be centralised on an economic theme rather than an overarching goal for sustainable development. Upon obtaining a long-list of events and trends, a content analysis using NVivo 12 was conducted to map the key issues, which the participants found useful as a reference for discussions on each specific task force theme. In the end, the high-level workshop reached a consensus to come up with a vision of Indonesia as a "Sovereign, Advanced, and Sustainable Archipelagic Nation".

Beyond Bali, we facilitated two other follow-up exercises with Polkom and Kumlasi, Bappenas, to help cascade the results of the Bali Workshop. Similarly, the participants found the overall process of horizon scanning useful to accommodate a stronger exploration of events and trends. Hereinafter, participants engaged in a role playing as experts, in "dummy" Delphi consultations to identify discontinuities, weak signals and wildcards. This exercise was found both interesting and challenging as they were asked to think beyond the scope of their policy domain. This stage was profoundly useful to unfold deeper layers of problems and uncertainties which provided them a stronger ground to identify the drivers of change. Upon identifying the drivers, we then facilitated the mapping of scenarios. Participants were asked to explore plausible alternative futures and identify adaptive policies through inductive and deductive approach. The use of this technique enabled a more systematic process of pathway/road mapping and defining the specific, measurable, attainable, realistic and time-bound indicators for achieving the policy goals.

Ultimately, having identified social (the capacity of civil society) and political (the capacity of democratic institutions) drivers of change, Polkom Bappenas formulated "Building an independent, inclusive and participatory civil society" as their mission statement in support of the "Indonesia Emas 2045" vision. Meanwhile, Kumlasi, which came up with political (political system with integrity, transparency and accountability) and values (Democracy, Human Rights and anti-corruption) drivers established "Achieving fair, certain, helpful, and human rights-based national laws".

Briefly, participants found foresight was useful to map the horizon of policy domains and to identify cross-cutting issues and develop integrative multiple-domain policies, thus a

powerful instrument to facilitate policy cascading. The Indonesian experience has shown that future-looking analysis was favourable for policy-makers due to its innovative and creative nature which brings new nuance to institutional policy planning. But there are also drawbacks in an operational or technical context which challenge the application of foresight, which we will discuss in further details across Sections 4.3 and 4.4.

## 4.3 Building an in-house capacity

It is imperative for government agencies to adopt a proactive approach to foresee forthcoming challenges and opportunities, thereby enabling them to make well-informed decisions. What we learn from the exercises in Indonesia suggests that the establishment of an internal capability for conducting foresight exercises is of utmost importance. The followings are our reflection on the essential processes and factors involved in building government's capacity to conduct foresight exercises:

- *Leadership commitment* is essential. The successful implementation of foresight programmes requires a sustained commitment of both long-term dedication and resource and its integration into strategic planning process with substantial support from top-level authorities. The Bali high-level workshop shows that leadership commitment is needed in the policy formulation process and this is demonstrated by the full presence of the relevant leaders.

- *Identification of foresight champions* is key for promoting future thinking in organisation. Individuals who exhibit a strong dedication to foresight and possess requisite skills and abilities. They can assume leadership roles, effectively coordinate efforts, inspire their peers and encourage the adoption of foresight-oriented thinking. The exercises with Polkom and Kumlasi were aimed to create and nurture foresight champions in Bappenas.

- *Assessment of current capabilities is* needed to evaluate agency's existing capabilities and preparedness to engage in foresight exercises. This involves assessing data infrastructure, analytical proficiency and level of expertise with foresight approaches. It helps understand the initial level of performance and suggests specific areas for improvement. The case of Polugri shows that understanding of organisational capability is advantageous in identifying challenges and mitigation plan in foresight exercises.

- *Training and capacity building* enhance skills and capabilities of organisations' human resource. Key training in foresight techniques such as scenario planning, trend analysis and other pertinent skills are imperative, as well as engagements with experts and specialists. The exercises with ANTB, Polugri and Marves also served as training and capacity building to help widen policymakers' perspectives and enhance capability in using new instruments and methods.

- The establishment of a *specialised foresight unit* or team within the organisation could be a game changer. Its main duty is to carry out proactive thinking activities and offer valuable perspectives to support the formulation of policies and oversight of the implementation. In practice, the establishment of foresight units in Indonesia is practically non-existent, although in the past it was once conducted, despite in limited fashion, by UKP4 (now KSP). Reflecting the foresight exercises at Dikbudristek, it is managed through a special unit within the ministry that involves 22 vocational high school consortiums to develop and implement innovation and workspace planning – a practice of "foresight for policy". This is interesting as an experiment as, in reality, foresight units are hampered by red-tape bureaucracy and the capacity of the civil apparatus.

- *Data collection and analysis* is instrumental for ensuring the richness of nuance in shaping the future through foresight. Organisations has to engage in collaborative alliances with research institutes, universities and industry professionals to gain access to diverse data sources and valuable insights. State agencies working with

cross-sectoral issues such as Marves or Bappenas need to be able to collect, analyse and triangulate data from multiple sources could benefit them in formulating more effective policies.

- *Scenario planning* exercise is recommended as a means to visualise a diverse array of potential future outcomes. These scenarios should be used to conduct stress tests on policies, evaluate their robustness and detect potential vulnerabilities. Exercises at Kumlasi and Polkom Bappenas showed that foresight with inductive and deductive scenarios has made policy formulation more realistic and able to identify unintended consequences of policy plans early on. The ability to take adaptive positions becomes more mature, and agile to all forms of risk of change and makes development plan more comprehensive and progressive.

- *Integration of foresight into the decision-making* needs to be strategised. It involves the formulation of explicit criteria for using foresight in the context of policy formulation, resource distribution and strategic decision-making. Bappenas high-level workshop managed to identify main trends and drivers contributing to the formulation of RPJPN vision, development targets, agendas, goals, challenges and indicators. The technocratic process of development planning can strategically incorporate foresight as a policy tool.

- *Continuous learning and adaptation* are integral to the practice of foresight. It is imperative for government agencies to cultivate an environment that promotes ongoing learning and adaptive behaviour. It involves encouraging employees to be informed about emerging trends and frequently reassess their strategy through foresight exercises to enhance their effectiveness. We reflect from the exercises that foresight can facilitate participants with dialogue and improve inclusiveness of governance processes while shaping the future.

- *Public engagement* needs to be incorporated in the process of foresight. As such, it improves the quality and reception of policies being formulated. Public engagement model varies depending on the scoping foresight. For example, Marve's exercise involved other government agencies such as KSP, coordinating ministry of economic affairs and the media. Bappenas high-level workshop was participated by all working units, from junior staff to the minister himself. Other exercises also involved a wide array of participants as foresight stakeholders: government agencies, civil society organisations, professionals, media, academics, among others. As such this involvement has fostered a sense of belonging to the formulation of policies and the results of a more holistic programme agenda.

As exemplified from the Indonesian cases above, the establishment of an internal capability for conducting foresight exercises within governmental organisations represents a strategic investment with long-term benefits. It empowers governments to take proactive measures to effectively tackle intricate difficulties, capitalise on favourable circumstances and strengthen their ability to adapt and withstand adversities through better informed, more innovative and adequately prepared policies.

### 4.4  Foresight and the collective future intelligence – significance, gaps and prospects

One of the biggest problems faced by policy-makers is the failure to understand the system – that uncertainties, wicked problems and tipping points– all leading to "expensive policy mistakes" (Ravetz, 2020). Foresight tries to bring-in an improved way to solve problems through deeper and wider observation of the horizon, looking at multilayers of problems, and mapping the forces and scenarios of change. The journey from smart/clever to wiser ways of policymaking (or transformation from Foresight 2.0–3.0) reflects the endeavour towards collective intelligence and the synergistic thinking involving systems analysis, future-oriented studies, forward planning and capacity building (Popper, 2012; Ravetz, 2020).

Indeed, for the participants of our exercises, Foresight 3.0 brings a whole new experience in policy-making. In mapping the events and trends, we asked the participants to think beyond their authoritative boundary. For instance, in Marves workshop we encouraged participants to think about the prospects of EV industrial investments from the challenge of promoting the use of public transport to raise issues on the difficulties to change the people's mindset about sustainable mobility. Another example was from ANTB Bappenas exercise, where we used the relocation of capital city as an issue to explore opportunities and challenges for better bureaucracy and talent management. The ability to see issues beyond their knowledge horizon brings an understanding about the institutions or society they need to work with and build synergies for collective actions. To reflect on the conducted exercises, we noted the significance, gaps and prospects for foresight and the future collective intelligence as follows:

*4.4.1 Significance.* Reflecting on the exercises we acknowledge how foresight was able to empower multisectoral and multiple-domain integration of policy goals and the formulation of targets and indicators of achieving them, done through a more synergised and democratic process of collective thinking. Indeed, this highlights an eminent advantage of foresight to channel positive transformation in Indonesia's policy planning.

Since decentralisation, Indonesia has been dealing with problems of multiscale and multisectoral disintegration of policies (Hadiz, 2004, 2010; Aspinall and Mas'Udi, 2017). Institutions worked in silos and policies were overlapping across sectors and spatial jurisdictions. In this context, foresight can make a significant contribution in altering the barriers of inclusive decision-making by means of collaborative policymaking. This particular advantage was shown in the exercise conducted with Marves in which three different national institutions took part. The collective intelligence, through role playing, was effective to encourage participants to think objectively about the horizon and to alter the barriers of inter-organisational communication and authoritative decision-making.

We also noted another significance of foresight in the context of nurturing innovative policies. In several processes of policy planning, there has been a prolonged tradition of relying on positivistic methods. Although these methods can offer an instant interpretation and, thus, helping policy-makers to project growth and identify the necessary policies, problems are often more complex and interconnected and the future is immensely uncertain. In this regard, it might be more useful to incorporate a methodological framework that works better with complexity science rather than reductionism. Here, foresight propels the policy process through systematic and holistic mapping of the horizon and the exploration of plausible future scenarios which opens new and unforeseen avenues requiring policy interventions. Our exercises have shown how creative and innovative thinking encouraged by foresight's collective intelligence was effective to systematically cascade national long-term policy to the mid-term strategic and action plan of the respective directorates. Foresight helps planners open their horizons to see wider trends, challenges, and drivers and facilitate them in thinking about development priorities in both development and non-development fields in a more inclusive fashion.

*4.4.2 Gaps.* From the exercises also, we were able to harvest crucial notes on the barriers of foresight in becoming a noble methodology to shape Indonesia's future through multidimensional integration of development, in at least four areas:

4.4.2.1 Methodological gap. In the exercises, "introduction to foresight" has always been the most challenging session. Typically, participants would be questioning the empirical foreground or, in simple terms, how foresight can be equally reliable to the traditional positivist approach which they have been practicing on a regular basis. Indeed, seeing foresight as a pure qualitative method is not entirely correct. In fact, it serves as an umbrella for the use of different methodological frameworks, qualitative or quantitative, through a systematic thinking process. Consequently, some other participants perceived foresight as an alternative to the classic dynamic system modelling, but with greater complexity without

the help of a specific computing software. We realised that for policymakers who rely heavily on equational modelling, a focus-group style of decision-making and consensus-building might not be sufficiently convincing.

4.4.2.2 Engagements of actors. Another crucial note is the challenges towards ensuring foresight exercise is done with full engagement of the participants. Our experience shows that discussions are likely to be more effective if it involve a more homogenous group of participants, especially if they are already familiar with each other or have been previously working together. However, we are also conscious that the purpose of foresight is to enable exchange and collaboration among stakeholders with different views, interests and from different institutional settings. Thus, it is imperative that a full engagement of actors is met to ensure foresight channels an effective reciprocity. The challenge is when designated participants delegate their attendance to their staff causing different individuals of represented institutions having difficulties to catch up with discussions or to make decisions. This situation is indeed a barrier towards effective exercise and policy outcomes eventually.

4.4.2.3 Implementation of foresight against the policy planning mechanisms. As foresight sees consensus building and positive sum collaboration as an idealistic form of policymaking, the process could take from weeks, months to years particularly when it involves conflicting actors. This can be problematic if we try to fit in the process within the government's planning and budgeting time frame. Two of the exercises carried the mission to cascade the national long-term policy to the mid-term institutional goals, which considers the need to accelerate the process of policy-construction for immediate action. Thus, we had to truncate some of the stages, encourage voting to define drivers which could have been more substantial if it were produced through genuine consensus building.

The forward-looking nature and the orientation of foresight towards adaptive policies might not fully fit into the reality of planning which is rather rigid, linear and bureaucratic. Too often, innovation is done half-heartedly and, in this particular culture of policymaking, the barrier is always that policymakers tend to look at problems linearly while the reality is that the world is complex, inter-connected and surrounded by "elephants" of wicked problems (Ravetz, 2020).

4.4.2.4 Policy implementation and power relations As essential as policymaking, ensuring implementation is also crucial. However, there is always an ultimate challenge: the political orders, power structures and the informal arrangements. Foresight might produce policies to shape an ideal future. However, politicians or other powerful actors might have different interests and thus potentially cause diversion. Consequently, real decisions are made elsewhere and often through informal institutional arrangements. Therefore, the question in foresight endeavour is about ensuring the involvement (and engagement) of the most powerful actors to ensure policy buy-in.

*4.4.3 Prospects.* Foresight serves as a valuable instrument for strategic planning and decision-making, facilitating the enhancement of adaptive strategies in the face of uncertain futures. As such, it helps to effectively navigate and address the uncertainties at hand. Based on the exercises, we highlight some prospects of foresight to improve policymaking in Indonesia. Firstly, foresight enables policymakers to anticipate forthcoming events and shape their own future. Horizon scanning assists them in identifying novel challenges and possibilities. As a result, policymakers have the capacity to shape the future rather than just responding to events. This is crucial for countries like Indonesia as they need to transform from a reactive to more proactive policymaking.

In addition, foresight offers a comprehensive understanding of complex, interconnected situations. In the context of contemporary challenges such as climate change, resource scarcity, economic imbalance and cybersecurity dangers, the efficacy of conventional policy analysis methods may be compromised. The ability to anticipate and comprehend the intricate nature of these difficulties enables politicians to devise solutions that are more efficacious. The application of foresight can also enhance the capacity for resilience and

flexibility to anticipate and plan for potential future events and to mitigate policy failures and enhance the ability of society to navigate unforeseen challenges.

The practice of foresight overcomes compartmentalisation and siloed bureaucracy as it involves the collaboration of numerous specialists, community members and impacted parties. Foresight also promotes a mindset that prioritises long-term perspectives and considerations and mitigate the effects of short-term thinking in decision-making process. As such it also empowers policymakers to thoroughly evaluate the enduring consequences of their policies. The practice of foresight compels politicians to transcend political cycles and short-term gains, fostering a sense of accountability and a proactive mindset. Therefore, it offers an opportunity to ensure sustainability of policies regardless despite the change of political leaders and administration which by far has affected effective policy implementation in Indonesia.

Nevertheless, it is imperative to recognise the inherent constraints of foresight. While Indonesia is progressing towards an accelerated economic growth, uncertainties and an unpredictable future are perpetual phenomena. The use of foresight can be advantageous as it helps policymakers strike a delicate equilibrium between proactive planning for diverse scenarios and the capacity to respond flexibly to unforeseen circumstances. As foresight helps enhance the efficacy of adaptive policymaking in the face of uncertainties through systematic structure for the anticipation, comprehension and response to intricate circumstances, governance can be more effective, resilient, inclusive and long-term thinking.

## 5. Conclusion

Despite slow uptake, foresight came into prominence following more intensive promotion of evidence-based policymaking in Indonesia and now has attracted attention from a growing number of institutions in the country seeking for innovative ways in formulating policy and planning. Reflecting on our case study exercises, we highlighted the significance, gaps and prospects of Foresight as a methodological endeavour to improve policymaking.

Beyond decentralisation, Indonesia has been struggling with multiscale and multisectoral disintegration of policies. Thus, the emphasis towards collaborative policymaking serves as a key significance in altering the barriers of inclusive decision-making. However, there are gaps and challenges that need addressing. Among others are reliable and precise data and active involvement of diverse groups of stakeholders, and most importantly, political will and resource allocation. In addition, we found some resistance from the proponents of pure positivist tradition, difficulties in fostering synergies and collaboration of multiple actors and the framework of foresight that might not fully fit into the current planning and policy mechanisms. However, we also learnt from the exercises that foresight has the prospect and opportunity to make positive contribution in at least two aspects: foresight method enables a more systematic exploration of events, trends and eventually drivers with which plausible future scenarios could be explored, thus leading to more adaptive policies, and imperatively, foresight opens new avenues to understand wider and deeper problems (Ravetz, 2020), and, consequently to promote the creation of adaptive rather than rigid, lateral rather than linear policies to shape the future in the midst of uncertainties, uneven power relations and actor-sector disintegration.

Ultimately, if we champion foresight and collective intelligence as a symbol of progressive political ideology, we suggest the need for collaboration, inclusivity, and lifelong learning to grow as a fundamental culture and value in institutions and wider societies in Indonesia.

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