Chapter 6

Identifying Opportunities in the Midst of Global Megatrends: A Tool for Policymakers

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6.1. Introduction

One of the many characterisations of global megatrends defines them as "overarching global forces that stem from the past, are shaped in the present, and will transform the future" (Singh et al. 2009). The ubiquitous nature of these megatrends implies that the policy environment cannot operate detached from them. Effective public policy and programmes should go beyond achieving the objective of improving society's welfare and its distribution to also assist economic agents in coping with risks and turning challenges into opportunities. Moreover, a broad swathe of issues affected by global megatrends is likely to generate externalities, which can be directed and mediated through effective policymaking.

Given the magnitude of the effects of global megatrends–often depicted as pervasive, massive, transformative, structural, irreversible, and even disruptive– the traditional linear model of policymaking process of conceptualisation, implementation, evaluation, and review may no longer be adequate (Da Costa et al. 2008). The traditional policymaking process is often confined to short-term goals, bounded by short-term constraints and trade-offs. These limit the effectiveness of policy to address long-term phenomena driven by global megatrends. Given that megatrends spread out into the long-term future, policy making in this context requires advanced methods to foresee possible outcomes.

The current state of the literature on global megatrends shows a breadth of analyses. The majority of existing analyses focuses on characterising the megatrends specific to an economic sector or activity e.g. mapping out key opportunities arising and risks borne out of the megatrends and setting out strategic responses, often within the realm of business strategies. Analyses on the public policymaking aspect of global megatrends are fewer. Existing policy assessments have often been carried out through narrower contexts specific to certain approaches or methodologies (e.g. foresight method) or presented as casual empirics (e.g. "case studies" approach) limiting the generalisation of their findings to broader policy contexts. Consequently, there is an information deficit in the analytical spectrum of global megatrends which defines a broad framework and practical steps to guide public policymaking in general.

This chapter aims to contribute to the analyses on global megatrends through developing a conceptual policy approach and practical steps for strategising policy responses to the changes driven by megatrends. While the approach presented is mostly developed for policy makers, other stakeholders such as business practitioners (including micro, small and medium enterprises (MSMEs)) and researchers, may use these as resources to anticipate and, where possible, participate in possible reconfiguration of public policymaking to respond to global megatrends. A special focus will be given to the ASEAN regional context by presenting a non-exhaustive review of both existing ASEAN-wide as well as country-specific initiatives on addressing global megatrends implemented by ASEAN Member States (AMS) and identifying possible efforts at the regional level to better respond to the megatrends.

At the regional level, global megatrends have been given a new emphasis in the ASEAN Economic Community (AEC) Blueprint 2025. The Blueprint envisions ASEAN further maximising the benefits of regional integration and cooperation by capitalising on global megatrends, as defined under the second characteristic of "A Competitive, Innovative and Dynamic ASEAN", where Element B9 explicitly refers to "Global Megatrends and Emerging Trade-Related Issues". Despite the recognition of the importance of global megatrends in the region's economic integration agenda, most global megatrends-related initiatives in ASEAN are still at the country-level, while the more collective responses are sector-specific (e.g. science, technology and innovation (STI)) and many are implemented as short-term projects with limited interactions with policy making processes both at regional and national levels. The cross-cutting nature of global megatrends and the increased interconnectedness of the region requires a more holistic approach to global megatrends. This chapter explores a more regional approach to address global megatrends, set within the parameters of ASEAN existing practices and in line with the AEC Blueprint 2025.

The remainder of this chapter is organised as follows: section 6.2 presents a review of relevant frameworks and approaches of the policymaking process relevant to megatrend analyses. Section 6.3 follows up with discussions of the practical steps to respond to global megatrends using the four-stage public policy cycle approach, and section 6.4 reviews select case studies of global megatrends-related initiatives in ASEAN. Finally, section 6.5 rounds up the discussion highlighting possible ways forward.

6.2. Global Megatrends and Public Policymaking - A Review

Public policy is an inherently complex discipline. Attempts in the literature on policy science to arrive at a single definition of public policy have proven to be a challenge. The literature instead highlights its key attributes, from its purpose and coverage to

the actors involved (Birkland 2014; Sabatier and Weible 2014). Seen through the lens of economics, public policies are crafted as responses to economic phenomenon aimed to maximise overall societal welfare, improve the welfare distribution through the allocation of resources, and to correct market failures. The complexity of public policy is evident when it involves a set of actors who may have different motivations and interpretations of identified problems (Birkland 2014) and are faced by a set of alternative policy instruments. Such a 'policy menu' often requires prioritisation, which may in turn be subjective. There is also the consideration of the overall milieu or environment within which the policy will be implemented, consisting of institutional arrangements, stakeholder networks, regulatory frameworks, and the overall macroeconomic backdrop.

The Policymaking Process

The policymaking process illustrates the complexity of public policy from translating policy ideas and agenda into actual policies (Birkland 2014). A widely-cited policy approach is the stages-heuristic or policy cycle approach, which breaks down the policymaking process into sequential stages of agenda setting, policy formation, decision making/policy adoption, implementation, and evaluation.[1] The policy cycle approach draws strength from its practicality to navigate the complex process of policymaking by breaking down the complexity into manageable, sequential stages with defined actions and best practices in each stage ensuring policy success (Anderson 2014; Benoit 2013; Cairney 2015; Young and Quinn 2002).

Albeit widely accepted, the linearity of the policy cycle approach has also received some criticism. It is stated to be detached from the dynamic nature of policymaking, where stages are iterative rather than linear, and occurring in parallel rather than sequential. Several frameworks and approaches were developed as alternative orientations, such as the Advocacy Coalition framework, Institutional Analysis and Development framework, Multiple Streams approach, Policy Diffusion approach and Punctuated Equilibrium model (Nowlin 2011). These alternative frameworks attempt to mirror the multidimensional aspects and dynamism of policymaking but often fall short of practicability and comprehensiveness in the policy process (Bergeron 2016; Cairney 2015).

The relevance of the policy cycle approach remains, especially if the cycle is seen as inherently iterative and collaborative, where each stage has the potential to inform

[1] The stages model of the policy process relates to *systems thinking*, defined as "a way of thinking about natural or social phenomena as a system, in which various inputs into a system are handled, processed, and interact with each other to create a set of discernible outputs" (Birkland 2014). The policy system can be modeled as an input-output model which constitutes: i) inputs include the various issues, pressures and information; ii) processes, which define and guide the policy system, normally codified in the 'rules of procedure' of the government or similar documents to specify how the government makes decisions; and iii) a policy decision as the output/product of the system.

previous and following steps along the stages (Young and Quinn 2002). Likewise, the practical aspect of the policy cycle approach–its key strong point, is further enhanced if the approach is seen as flexible, where additional stages can be introduced that would strengthen the description and analysis in addressing the problem (Anderson 2014).

The Policy Dimension of Global Megatrends

The foresight method is the prevalent framework used to synthesise futures issues like global megatrends (European Commission 2007; Hajkowicz et al. 2013; Meharg et al. 2015; UNDP 2014a). The method has been known as early as the 1940s when advanced economies such as the United States developed its military strategies and military technology deriving ideas from management science (UNDP 2014a). Technology foresight's popularity took off in the 1990s, when European economies together with other economies looked for new policy tools to deal with a broader range of issues in their science, technology and innovation systems (Miles 2010).

The foresight method consists of three dimensions: (i) collecting information or 'horizon scanning,' which identifies all potential geopolitical, economic, environmental, social, and technological changes; (ii) interpreting the data and formulating versions of the futures; and (iii) developing options for actions. The method is distinguished from forecasting. While the latter is a statistical exercise to predict future trends based on historical time series data, the foresight method instead focuses on improving preparedness on future developments by mapping and analysing general trends and drivers of the phenomenon (Olsmats and Kaivo-oja 2014).

Despite its usefulness however, the foresight method has received criticism. It often fails to encourage policy makers to produce new and transformative insights given the difficulty of visualising and moving on from 'the future' to 'futures' as well as turning insights into concrete actions (UNDP 2014a, 2014b). Likewise, the selection of participants in the foresight exercise broadly influences the quality of insights and, therefore, the implementation (UNDP 2014b). A common approach implemented by several governments is to address the weakness of the approach by embedding foresight initiatives in the conventional strategic planning structure, for example, by establishing dedicated foresight teams in ministries (UNDP 2014b). Such a structure facilitates the translation of foresight perspectives into policy choices and, subsequently, actions in the government, better positioning foresight work as part of the main policy process.

The Role of Policy Toolkits

Global megatrends warrant a policy toolkit to address goals within a multi-layered and multi-actor policy arena. Policy toolkits offer a concise manual for policymakers to come

up with a policy response. Several policy toolkits have been developed to respond to economic issues, for example, non-tariff measures (Cadot et al. 2012); consumer issues (OECD 2010); competition (OECD 2007); inclusive value chain development (MP4 2008); gender issues (APEC 2015; Asian Development Bank 2013; FAO 2013); rural finance (IFAD 2010); and the broader contexts of regulatory issues (OECD 2008; Schmeer 1999; Sutcliffe 2006). A comparison among policy toolkits draws out common elements, as summarised in Box 6.1.

Box 6.1: Common Elements of Policy Toolkits

- **Practicality:** Practical steps presented at each of the clearly defined stages of the policymaking process.
- **Multi-stages approach**: Consists of: (i) problem identification; (ii) identification of policy options; (iii) analysis of the costs and benefits of possible policy options; (iv) stakeholder engagement; and (v) monitoring and evaluation. Many policy toolkits also include capacity building programs.
- **Supporting information:** Collected from a wide range of sources (e.g. primary research or survey, interviews with stakeholders as well as the use of secondary data).
- **Stakeholder engagement**: Conducted throughout the policymaking process, to not only ensure broad-based support of a policy proposal but also to obtain feedback on its implementation.
- **Specific objective:** In most cases, the development of a policy toolkit is tailored to a specific objective of the policy intervention. For example, the Regulatory Impact Assessment (RIA) (OECD 2008) is developed to examine and measure the likely benefits, costs, and effects of a new or existing regulation, while the Stakeholder Analysis (Schmeer 1999) and Evidence-based Policy Toolkit (Sutcliffe 2006) focus on utilising information from stakeholders and informing policy decision by robust evidence, respectively.

Source: Authors' compilation.

Despite its widespread use, the development of a policy toolkit in response to global megatrends has been limited, with only a few studies conducted to date (Frost and Sullivan 2013; Hajkowicz et al. 2013; KPMG International 2014; Meharg et al. 2015; OECD 2017). There is the policy-oriented foresight, which provides policymakers with long-term insights within the context of the foresight method but this too is still meager in terms of analyses and applications (Van Asselt et al. 2014). This highlights a knowledge gap to be filled.

Recalibrated Approach

Considering the constraints of existing methods such as the foresight method, "enhanced" traditional models could serve as alternative policy approaches to better address global megatrends. There is a tendency to regard conventional or traditional approaches as irrelevant in response to global megatrends as the latter allude to something

of the future (Da Costa et al. 2008). However, the longevity of these conventional policymaking approaches, in particular the policy cycle approach, is a testimony of their relevance. Noting the difficulty of translating innovative ideas into practical steps, a hasty replacement of conventional approaches may not gain traction, especially in developing countries where there is lack of awareness on global megatrends. Therefore, using the traditional policy cycle approach nuanced to the unique characteristics of global megatrends is a more constructive starting point. The key attributes of the policymaking process, which could appropriately address global megatrends, should be given prominence. To this end, Box 6.2 provides a summary.

Box 6.2: Key Attributes of Policymaking Process to Address Global Megatrends

The recalibrated approach emphasises key attributes of the policymaking process, which aim to strike a balance between the practical realities of policymaking and the future orientation of global megatrends.

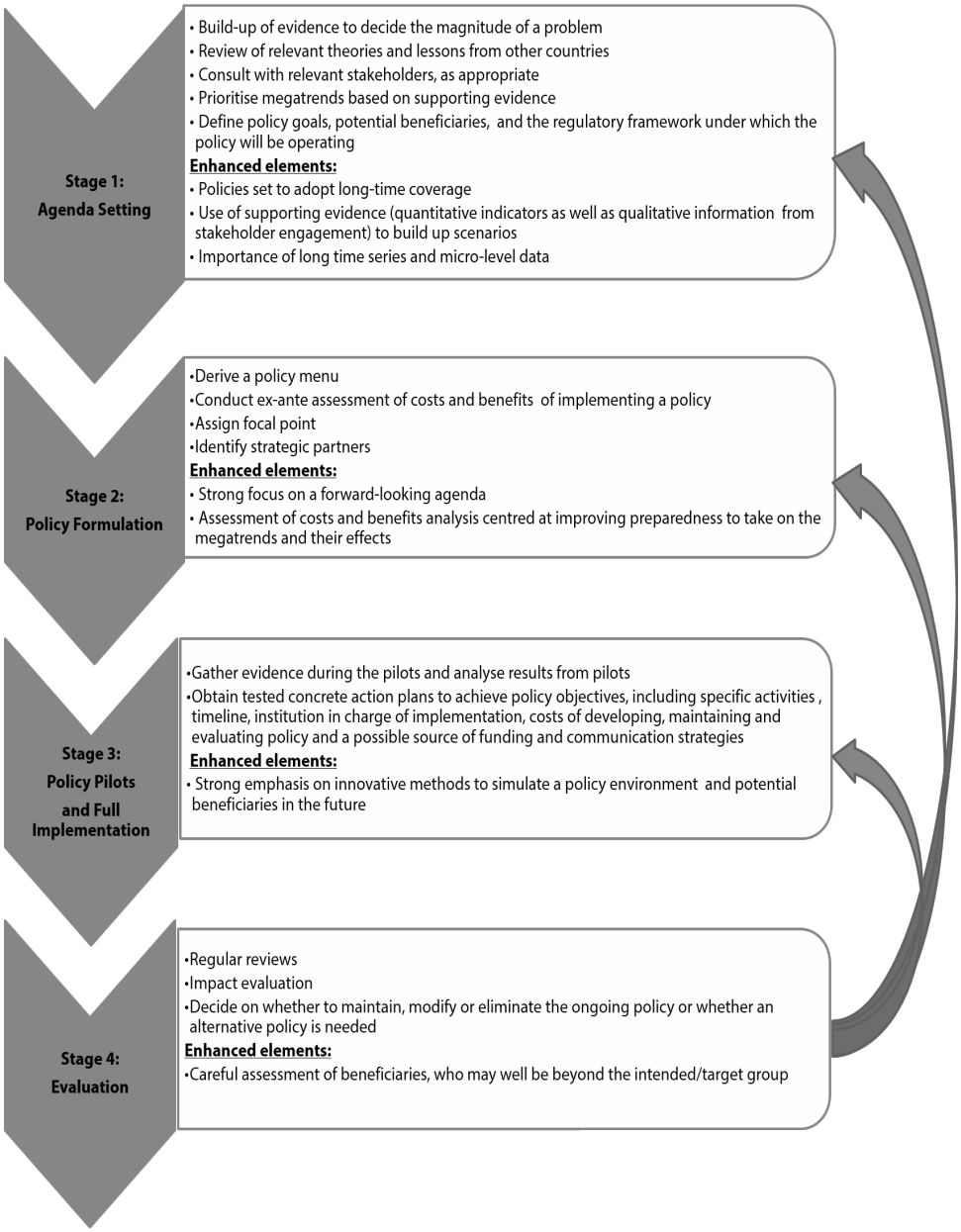
- Practical and experimental: Feasible and allows for a certain degree of experimentation ("thinking out of the box")
- Informed and anticipative: Anchored on evidence and data analysis as well as on scenario building
- Iterative and systematic: Recycles through the processes and ensures the linkages are clear
- Flexible and collaborative: Open to prompt refinements and participatory across disciplines, levels and actors

Source: Authors' compilation.

6.3. Practical Steps to Respond to Global Megatrends

This section presents a practical approach to respond to global megatrends by following the four-step policy cycle, as summarised in Figure 6.1. Case studies are included in each step to further illustrate 'real-world' applications. The policymaking process, from Stage 1 to Stage 4, should be seen as an iterative process rather than a static and sequential one, where one policymaking stage may be conducted simultaneously with one or even several stages. The process, however, should still be 'systematic', where changes in policy responses to a specific sector or area may create 'spillover effects' in other policy areas. Hence, an adequate flow of information between involved parties or relevant policy areas about any adjustments in the policy, is needed.

Figure 6.1 – Practical Steps in the Four-Stage Policy Cycle



Source: Authors' compilations.

Stage 1: Agenda Setting

The complexities of issues facing public policy makers and their resource constraints place the setting of policy priorities as one of the key elements during agenda setting. In this stage, the following should be taken into account: the objective of government policy, the results from evaluation of past policies, the predicted (ex-ante) impacts of the proposed policy and the concerns of different groups. The build-up of evidence is key to assess the magnitude of a problem before deciding whether the problem should be included in the policy agenda (Sutcliffe 2006). Lessons from other countries adopting a similar policy should also be considered to understand how the policy works in differing contexts.

The evolving and dynamic nature of global megatrends implies that the agenda setting process should also be sufficiently "flexible", adapting to changing perspectives, needs and expectations over time. Thus, the enhanced approach emphasises on the need to not only collect quality indicators as baseline information but also to build possible scenarios. Box 6.3 briefly presents examples of agenda setting process.

Table 6.1 presents the relevant information that should be considered during the agenda setting process through select global megatrends in the existing literature and a non-exhaustive list of possible indicators to measure global megatrends. [2] While macroeconomic data remain useful, micro-level data – both qualitative and quantitative, ideally long-time series – are needed to capture permeating changes driven by global megatrends.

Box 6.3: Case Studies: Agenda Setting

Various methods have been developed to engage stakeholders and stimulate effective discussions during the agenda setting and policy prioritisation. One example is 'Driving Forces Cards 2035' introduced by Singapore-based Centre for Strategic Futures (CSF).[3] The method challenges policy makers and other stakeholders to visualise the key forces of change in the next 20 years and help prioritise issues for further research and policy development.

Another method widely used for agenda setting and prioritisation is utilising a Foresight exercise. One of the many foresight projects is the 'Foresight for Transport' project supported by the European Community under the Competitive and Sustainable Growth Programme (1998-2002) for "visioning" transport and mobility futures. The study entailed organising thematic expert panels' consultations, a Delphi survey involving 165 experts around Europe and the establishment of a meta-database system for monitoring and evaluation. Foresight was selected to overcome limitations of the mainstream policy assessment methods, in particular transport models, which are unable to identify and evaluate non-transport factors (EC - JRC 2005). While useful for agenda setting, the study involved a considerable cost at nearly one million Euros.

Source: Authors' compilation.

[2] See also European Commission (2007) for examples of foresight initiatives addressing various global megatrends.

[3] Driving Card Forces 2035 can be downloaded from: http://www.csf.gov.sg/our-work/our-approach.html

Table 6.1 Selected Types of Global Megatrends and Possible Policy Responses

Types of Megatrends (i)	Key Issues (ii)	Possible Indicators (iii)	Possible Policy Responses (iv)	Relevant Stakeholders (v)
Cross-cutting issues		**- State of the Future (SOFI) Index.(a)**		
Economic aspects	Interconnected economies	- GDP, - FDI Inflows and Outflows, - Total Trade (regionally & internationally), - Total trade as % of GDP, - Connectedness Index:[(b)] 1) McKinsey Global Institute (MGI) Connectedness Index 2) UNIDO Connectedness Index	• Improve the national regulatory regimes to be on a par with international regulatory regimes (e.g. standards, professional qualification certification, tariff commitments, competition laws, regulations on the movement of skilled labour); • Human capital development and investments in research and development (R&D); • Support for businesses including MSMEs to access global markets (e.g. trade-facilitative initiatives, infrastructure development, etc.); • Enhance economic partnerships with regional and global partners; • Enhance participation in global value chains through greater focus on connectivity and lowering trade barriers.	• Relevant ministries/ agencies including Ministry of Trade, Ministry of Commerce, Ministry of Industry, Investment promotion agency, Customs agency • Exporters and importers • Investors (domestic as well as multinational enterprises) • Port authority • Freight forwarders • Private sector including business associations and MSMEs. • Consumers • Researchers
	Rising middle income	- GDP per capita, - Income inequality measures such as Gini index.	• Re-assess income distribution to tackle income inequality (e.g. through improved tax systems); • Align economic and industry policy with opportunities emerging from growing middle class markets characterised by changing lifestyle and dietary preference, improved awareness of food safety and other food attributes, increased demand for professional services, increased demand for technologies and communication devices, and many others.	• Tax authority • Finance companies • Consumer goods industry • Leisure (including recreation, entertainment, sports and tourism) industry practitioners • Food safety certification bodies • Food producers • ICT sector practitioners

Demographics	Aging population	- Age dependency ratio, old (% working-age population) - Youth dependency ratio (% working-age population) - Life expectancy at birth - Crude Birth Ratio - Crude Death Ratio	• Forecast a 50+ year view of population growth; • Collaborate with multiple government agencies and the private sector to meet the needs of aging populations e.g. health and aged care; • Improve social security of elderly people as well as pension schemes of those still active in the labour market to address the future retirees' needs (e.g. adjustment in pension entitlement age, change the eligibility, and increase provision in pension investments); • Analyse a possibility of extending working years or rising the legal retirement age; • Collaborate with businesses to open job opportunities for older workers, including on a part-time basis taking into consideration their specific roles and schedules.	• Health care service providers • Pharmaceutical industry • Financial intermediaries which provide pension funds • Private sector • Ministry of Health and other ministries responsible for aging population • Ministry of Labour or Department of Employment responsible for determining retirement age and pension entitlement.
	Urbanisation	- GDP per capita - Population density - Population growth rate - Urban population (% total population) - % of population below the National poverty line - Migration rate - Proportion of population with access to safe drinking water - Proportion of population with access to improved sanitation - Land use distribution [(c)]	• Forecast a 50+ year view of urbanisation and income growth to identify the changing needs of urban population affecting the provision of transportation, infrastructure, utilities, technology, education, health, dietary needs and preference, housing, administrative services and other goods and services through the development of a long-term blueprint; • Build an integrated urban planning by formulating cross-jurisdictional and cross-governmental planning forums and mechanisms.	• Urban development authority • Rural community • City planners • Construction companies • Real estate developers • Financial services • ICT, health, education, transportation and food sector practitioners

Technology	Disruptive technology	- Number of internet users - Internet penetration rate (% of population) [(d)] - Mobile phone density per 1000 population - Global Innovation index [(e)]	• Collaborate with businesses, researchers, IT experts, and other stakeholders to identify potentials from emerging technologies, their trends and relevance to governments in order to identify strategies to unleash full potentials from enabling technologies; • Increase awareness and optimum and safe use of new technologies and innovations through training and development programs to targeted audience including (but not limited to) government executives, small businesses, youth and school-aged children, educators, elderly people and others requiring 're-skilling training programs; • Improve the regulatory framework to encourage innovations and protect users through protecting Intellectual Property Rights (IPR); • Facilitate information sharing and networking to stimulate ideas and creativity at the universities and business-level; • Investment in research and development (R&D); • Developing cybercrime legislation to protect digital users against growing challenges of cybersecurity; • Develop personal data protection framework; • Improve consumer rights and protection laws to meet growing use of e-commerce.	• Information technology companies • Innovators (rights holders) • Internet intermediaries (i.e. internet service providers, e-commerce intermediaries, web hosting, data processing, online payment system) • Internet users • Patent, trademark and IPR agencies • Education sector practitioners • Cybersecurity agency

Sustainability	Climate change	- CO2 emission (metric tons) per capita - CO2 emissions (kg per PPP $ of GDP) - Greenhouse gas emissions - Temperature and rainfall data - Consumption of ozone-depleting substances - Electric power consumption (kWh per capita) - Forest area (% of land area)	• Develop a framework and set cross-sectoral integrated policies to address climate change impacts and reduce carbon usage in national levels; • Promote best practices in production and distribution systems; • Assess a possibility of applying market-based approach (for example carbon pricing) to achieve climate change mitigation goals; • Support the development and utilisation of low carbon technology; • Invest in renewable energies to reduce the CO2 emissions.	• International body for climate change • Environmental agency • Transport authority • Civil society organisations • Development partners • Private sector (e.g. manufacturers, producers of green technologies, etc). • Industry associations • Local community (particularly engaged in climate change adaptation activities)
	Resource depletion	- Energy supply per capita - Renewable electricity production - Total Renewable Water Resources per capita [f]	• Create a monitoring system and database for both demand and supply sides of food, water, energy, and other mineral resources; • Ensure secured supplies of food, energy, water and other mineral resources through improved engagement with all value chain participants including producers, suppliers and governments; • Build public infrastructures that consider climate change, particularly related to water security i.e. clean water production, water storage capacity; • Develop regulations that encourage behavioral changes, i.e. phasing out high energy consumption technologies with the efficient ones, prohibit the use of non-biodegradable plastic bags, water conservation, etc.	• International body dedicated toward renewable energy • Engineers • Industry engaged in renewable or alternative source of energy (i.e. wind, solar, biomass, hydroelectric, etc.) • Relevant ministries responsible for public sector infrastructure • Local communities • Industry associations • Farmers and other agriculture sector practitioners.

Notes: Many indicators can be found from online databases such as World Development Indicators by the World Bank, ASEAN Statistical Yearbook (for ASEAN Member States), UNSTAT, FAOSTAT and FAO AQUASTAT. Data availability may differ between countries.

(a) State of the Future (SOFI) Index is comprised of cross-cutting indicators that could help to illustrate the overall outlook for the future. The index can be accessed at: http://www.millennium-project.org/millennium/SOFI.html.

(b) i. UNIDO Connectedness Index takes into account international, inter-organisational, and intra-organisational networks established by each country. The index can be accessed at: https://www.unido.org/mdgf.html.

ii. Mckinsey Global Institute (MGI) Connectedness Index looks at connectedness in five types of globalflow—goods, services, finance, people, and data and communication (available at: http://www.mckinsey.com/business-functions/digital-mckinsey/our-insights/digital-globalization-the-new-era-of-global-flows).

(c) Land Use Distribution refers to the utilisation of land, reflecting how land use is distributed for agricultural area, forest area, urban area, and others. The data is available at http://www.fao.org/faostat/en/#data/RL.

(d) Internet penetration refers to the percentage of total population of a given country that uses the Internet. Available at: http://www.internetworldstats.com/asia/index.htm.

(e) Global Innovation Index ranks the world economies according to their innovation capabilities and results that go beyond the traditional indicators of innovation (level of research and development). Available at: https://www.globalinnovationindex.org/analysis-indicator.

(f) Total renewable water resources per capita are inland waters renewed by global water cycle, a sum of renewable surface water and groundwater divided by total population (available at: http://www.fao.org/nr/water/aquastat/sets/index.stm#main).

Source: Authors' compilations from various sources (Bloom et al. 2011; KPMG International 2014) and the AEC Blueprint 2025.

Stage 2: Policy Formulation

In the following stage, the so-called *policy menu* can be built based on the list of priority issues derived in Stage 1. Given the long-term nature of global megatrends, while the above practical steps remain relevant, the policy formulation should place a stronger focus on anticipating future changes, including those that may not be apparent at present. Column (iv) of Table 6.1 illustrates the policy menu for different types of global megatrends.

The multidisciplinary nature of global megatrends strongly emphasises the importance of a whole-of-government approach, –featuring horizontal coordination and integration in policy design and implementation, by focusing on strengthening coordination between relevant agencies and facilitating stakeholders engagement with the government (OECD 2011; UN 2012). In addressing new focus areas such as megatrends, the appointment of focal points at local, regional or national level, either within an existing institutional unit or an institution newly established for the purpose, may be required. For example, policy to address issues related to the emergence of disruptive technologies including e-commerce may be managed by a new division under the existing Ministry of Information Technology, with close coordination with Competition Commission, Ministry of Commerce and Trade, and Cybersecurity Commission as well consumer representative groups. National coordinating authorities may be needed to facilitate communication among relevant agencies, highlight best practice and leverage shared solutions; Likewise, the development of an integrated information portal, may be required to enhance 'public sector interoperability' (UN 2012).

Of the listed priorities, the most cost-effective policy option(s) will usually be selected based on an ex-ante assessment such as a Cost and Benefit Analysis (CBA). The long-term, disruptive and ubiquitous nature of global megatrends, however, may mean that government has a limited ability to produce accurate predictions and, thus, 'create an enabling environment.' Instead, the government's role should be centred at improving 'the preparedness' of the policy system. The enhanced application of the CBA analysis can help assess policies under various future scenarios (See Box 6.4).

Box 6.4: Case Studies: Cost and Benefit Analysis (CBA)

The CBA helps quantify in monetary terms the costs and benefits (including externalities and intangible aspects such as social cohesion) (OECD 2008; Yan and Long 2007). However, it faces difficulties to assess the effects of global megatrends in the longer term as well as identify winners and losers from the proposed policy given the pervasive nature of megatrends.

As an example of the application of the CBA to address futures issues is the CBA of climate-resilient housing in Central Vietnam (Anh et al. 2016; Rüland and Jetschke 2008). The present value of benefits from resilient housing is very sensitive to the expected timing of disaster events, which occur on a stochastic basis. The analysis therefore utilises a scenario-building approach to investigate the potential economic impacts of resilient housing by applying two scenarios assuming: (i) the intensity and frequency of future major events similar to that of the past 30 years; and (ii) an increased intensity of major events. A sensitivity analysis by applying a range of 2-10% discount rates is also applied. This analysis may need to continually be updated following changes in the assumptions underlying the analysis including costs, frequency of storm events, technology and other factors.

To this end, the CBA should therefore be seen as a heuristic tool applied through iterative rounds, used for the refinement of the policymaking process instead of as 'the final step' before selecting a deterministic, final, single policy response.

Stage 3: Policy Pilots and Full Implementation

Within the context of a traditional policymaking process, policy pilots allow one or more proposed policies to be tested, evaluated and modified if needed, before being rolled out to full-scale (Sutcliffe 2006). The full benefits of a policy pilot could only be gained if the results from the pilot have been analysed and acted upon prior to widespread implementation of the policy (Sutcliffe 2006). Thus, the pilot test should entail the gathering of evidence to allow the analysis at the end of the pilots.

Policy pilots should meet at least four criteria: independence, scale, timeline and resources, and data collection and analysis. On independence, pilot implementers should have the freedom to report both strengths and weaknesses of the draft policy or programme. Pilots which reveal weaknesses should be viewed as a success, not a failure.

In terms of scale, pilots should be proportionate to the policy's expected utility. Timeline and resources are another key property of the pilots, particularly highlighting the need for adequate training of staff, and optimum implementation of pilots and results analysis. Pilots should also include a systematic data collection and analysis, which should be presented in easily accessible reports needed for future settings.

To address global megatrends, pilots should also explore innovative methods to situate or mimic a policy environment close to that of the future and/or an environment under which its full-implementation will be applied. This implies that participants of pilot exercises should embody both today's and tomorrow's main beneficiaries. As an example, Box 6.5 discusses sandbox piloting, which has been increasingly used to pilot a new technology.

Guided by the results from the pilot tests, during the full-implementation of the policies to address global megatrends, many governments 'package' various planned policy measures and present them as a 'Vision'. Examples include Australia's "Vision 2040" for sustainable mining industry in Australia (Prior et al. 2013) and Future Radar 2030 (Zukunftsradar 2030) to address challenges from demographic change (European Commission 2007a).

Box 6.5: Case Studies: Sandbox Piloting

The design of a pilot test should generally reflect the actual set-up. As an illustration, a policy pilot to test the effectiveness of a cutting-edge technology may target young technology-savvy middle and upper income users. Testing an innovation in a secure, low-risk and resourceful policy environment, before scaling out the innovation to bigger markets, is generally desirable.

The Sandbox concept refers to the approach adopted by market regulators to allow the private sector to experiment within certain bounds to learn how to regulate and supervise their industry. The approach has been adopted by many advanced economies' regulators such as the UK's Financial Conduct Authority, the Monetary Authority of Singapore and the Australian Securities and Investments Commission. It has also been adopted by 'fintech' (financial technology) entrepreneurs in Singapore, who 'sandbox' their fintech innovations before scaling out to bigger markets (The Economist 2017).

Stage 4: Evaluation

Regular policy evaluation has been cited as one of the most important principles in regulatory practice (APEC 2008; OECD 2012, 2014). The reviews should be conducted after a policy has been put in place for a reasonable period of time, allowing policymakers as well as stakeholders, to identify the benefits and disadvantages during policy implementation using information gathered from the baseline study during Stage 1. Reviews, often undertaken through impact evaluation, provide a framework sufficient to identify whether the policy beneficiaries are truly benefiting from the policy and not from other factors (Khandker et al. 2010).

Within the context of global megatrends, key features of policy evaluation are not only to assess impacts on beneficiaries but also identify ways forward: whether the policy should be maintained, modified or eliminated; whether an alternative policy should be considered; whether enforcement should be strengthened; and whether the overall policy agenda (previously determined in Stage 1) should be re-assessed (OECD 2010). Identifying the impacts of the implemented policy on specific beneficiaries may prove challenging given the widespread, multidisciplinary nature of global megatrends. The initial target group may no longer be affected by the policy and, in contrast, externalities may impact wider communities. Box 6.6 presents an example of implementation of the M&E work.

Box 6.6: Case Studies: Monitoring and Evaluation (M&E)

M&E work supports evidence-based policymaking. While monitoring refers to a continuous process to track inputs, activities, and outputs, and outcomes, policy evaluations are periodic, involving an objective assessment of a planned, ongoing or completed policy. There is a growing body of literature on policy impact evaluation (Gertler et al. 2011; White et al. 2006).

An example of M&E implementation is Cambodia's M&E framework for climate change. The country adopted the Climate Change Strategic Plan (CCCSP) 2014–2023 in 2013 which acknowledges the importance of developing a national M&E framework that measures and tracks how well the country is managing climate risks and meeting development targets.

Two tracks of indicators are developed covering institutional readiness and impact indicators. On institutional readiness, scorecards were developed for each indicator to establish a baseline for the current status of national and sectoral institutional readiness after which an innovative readiness 'ladder approach' is used to understand Cambodia's current position within an overall process of climate change policy and institutional development. These indicators will be scored on a regular basis to track progress towards milestones. Findings from the M&E work are then used to inform future investments.

6.4. Global Megatrends in ASEAN

Increased interconnectedness between economies provides opportunities for them to establish a regional collaborative 'front' to respond to the effects of the megatrends. Instrumental in their own rights, national initiatives to address global megatrends may also serve as assets to initiate more concrete regional cooperation. Within the context of ASEAN, this 'bottom-up' approach may also be accentuated by building on existing ASEAN regional initiatives as well as leveraging on the expertise and best practices of AMS with more policy experience dealing with global megatrends. This section characterises AMS initiatives at the national level and regional initiatives in dealing with global megatrends. It also draws up possible options to better operationalise a collective response to global megatrends.

National Initiatives on Global Megatrends

At the national level, there is a growing number of initiatives among AMS to address global megatrends, notably those adopting the foresight method. In Singapore, foresight initiatives have started as early as the 1980s, given the challenges to effectively formulate its national strategies to cope with constraints in land use, urban design, transport needs, water and waste management, environmental and emissions policy, energy policy, and other areas (UNDP 2014a).

The *Sustainable Singapore Blueprint 2015* (Ministry of the Environment and Water Resources and Ministry of National Development 2014) presents a model of how a vision in the face of global megatrends is captured and acted upon, although methods being applied are not limited to foresight. The 2015 Blueprint builds on the 2009 Blueprint, which was developed following the establishment of the Inter-Ministerial Committee on Sustainable Development (IMCSD) in 2008 and involved intensive stakeholder engagement including public fora, interviews and surveys (Ministry of the Environment and Water Resources and Ministry of National Development 2009). Singapore also has several foresight units, one of which is the Center for Strategic Futures (CSF). Established in 2009, the CSF aims to empower government capabilities to anticipate and adapt to changes, as well as manage a complex and fast-changing environment (CSF 2016). Various tools have been produced by CSF to improve its foresight activities. Several AMS have likewise established formal government units to carry out work futures-oriented initiatives.

In Malaysia, the bulk of the work on advancing high technology industries is coordinated by the Malaysian Industry Government Group for High Technology (MIGHT), launched in 1993 as an independent, industry-driven, and non-profit organisation under the Prime

Minister's Department of Malaysia. MIGHT foresight activities in its scope of work and provides a platform for collaboration between public and private sectors (Cruz et al, 2016). In its 2015 Annual Report, MIGHT reported various industry applications from Smart Grid to Smart Mobility under the theme of Green Sustainability, Mobility and Safety and Security (MIGHT 2016).

In Brunei Darussalam, the Centre for Strategic and Policy Studies (CSPS) (established in 2006), undertakes independent and objective policy research and analysis on strategic issues. Responding to the ever-changing policy environment and increased interconnectedness between policy areas, in 2016, CSPS' Brunei Futures Initiative was set up to reflect CSPS' aspiration to be an "Internationally Recognised Foresight Think Tank".

In Indonesia, various futures-oriented initiatives have also been implemented by the government since the 1990s. In 1996, one of the first technology foresight projects was conducted by BPPT (Agency for the Assessment and Application of Technology) using the Delphi survey to review industry's technological needs (Saputra 2012). An improvement in foresight activities was achieved through partnership with external organisations such as the Ministry for Research and Technology's PERISKOP project on science and technology for development, conducted in 2000-2002 (Albrecht et al. 2002); and the CoLUPSIA (Collaborative Land Use Planning and Sustainable Arrangement) project for the period 2010-2013 to develop new institutional arrangements and environmental policies (Liswanti 2012; Shantiko 2012).

Likewise, a national agency in the form of the National Science and Technology Development Agency (NSTDA) has been at forefront in Thailand conducting several foresight projects as early as the 1990s. Thailand has also been hosting the Asia-Pacific Economic Cooperation (APEC) Centre for Technology Foresight (APEC CTF) since 1995. Between 1999 and 2000, the Science and Technology in the Year 2020 project was conducted to set a long-term vision and strategies for science and technology in Thailand for the period 2000-2020. Moreover, a study on "Global Risk Foresight and Impacts on Thailand" was conducted in 2010, from which recommendations were presented to Thailand's Office of the National Economic and Social Development Board (NESDB) as input to the formulation of the 11th National Development Plan (2012-2017) (APEC CTF 2010).

Other AMS have pursued a more project-based sector-specific approach, often in collaboration with multilateral institutions and international organisations, in their work related to global megatrends. In the Philippines, various initiatives on futures studies and foresight have been implemented with the support from international organisations such as the United Nations Educational, Scientific and Cultural Organization (UNESCO)

and its partner, the World Futures Studies Federation (WFSF). In 2015, for example, capacity building activities were conducted to promote the foresight awareness of policy makers and wider stakeholders involved in shaping disaster reduction and management programs and city development planning in highly vulnerable cities and communities to climate change in the Philippines (WFSF 2015).

In Viet Nam, much work has been done on advancing innovations and technologies in various sectors. Supported by the United Nations Industrial Development Organization (UNIDO), the Viet Nam Ministry of Science and Technology used a combination of foresight tools alongside with the traditional policymaking method to formulate its *Science and Technology Strategy 2011-2020* (Aguirre-Bastos and Weber 2012). This parallel use of foresight and the traditional method was perceived as a 'promising tool' in addressing the complexity of public policymaking in science, technology and innovation in developing countries such as Viet Nam.

Futures-oriented initiatives have also been implemented in Myanmar. Founded in 2013, the inaugural Myanmar Futures Exchange (MFE) in 2013 was the first multi-stakeholder futures event in Myanmar (Bhagat 2014). Providing an avenue for stakeholders to discuss and empower them "to create their preferred futures", the MFE engaged government representatives, businesses, civil societies, futurists, researchers, and wider stakeholders to analyse and map the risks and drivers of change to shape pathways to Myanmar's future. Building on its 2013 achievements, the 2014 MFE focused on systems change, activating leadership, and identifying key drivers likely to shape Myanmar through 2025.

In Lao PDR, a number of initiatives to address sustainable development have been implemented. One of the initiatives is the *Lao PDR - United Nation Partnership Framework for Sustainable Development 2017-2021* to support Lao PDR achieve its national development goals (UN 2016a). The Framework replaces the UN Development Assistance Framework (UNDAF) developed using the foresight method and 'crowdsourcing', where contributions from external parties as well as the usual stakeholder involvement are solicited, and utilising 'Futurescaper', a cloud-based collective intelligence platform (UN 2016b). Results from the crowdsourcing feed into the Lao PDR-UN Partnership Framework (2017-2021) by exploring alternative perceptions on Lao PDR's current key development issues, their causes and effects, and priorities for Lao PDR's future to 2021 (UN 2017).

In Cambodia, while the application of foresight and other innovative approaches in public policymaking remains limited, long-term public policy 'visioning' has been adopted in various sectors. In tourism sector, Cambodia developed *Tourism Development Strategic Plan 2012-2020* reflecting its vision towards sustainable development through cultural

and ecotourism. It also adopted Cambodia Industrial Development Policy: 2015-2025 to promote the country's industrial development that will help maintain sustainable and inclusive high economic growth. In the education sector, Cambodia launched "Policy on Higher Education Vision 2030" that will ensure equity and access to higher education.

The above national initiatives highlight that all AMS, in one way or another, have embedded practices within their individual sphere of public policymaking related to futures-oriented activities, including addressing global megatrends. A more formalised approach is present in some AMS where established government units undertake these activities, which are likely to result to certain regularity in carrying out these activities. Several AMS have undertaken futures-oriented activities which are project-based in relation to a specific sector, where international organisations and multilateral institution play a key collaborative role in carrying out these projects.

Futures-Oriented Initiatives in ASEAN

As stipulated in the AEC Blueprint 2025, global megatrends are high on ASEAN's regional economic integration agenda. Turning the Blueprint into concrete actions, various activities have been implemented to initiate futures-oriented programmes at the regional level, organised by AMS or in collaboration with Dialogue Partners and international institutions. Many of these ASEAN-wide initiatives, though they do not necessarily use the term megatrends, fall under the areas of Science, Technology and Innovation (STI) in addition to other sectors including energy and food sectors.

The ASEAN Policy Framework on Public-Private Partnerships for Technology Development (PFW) was initiated in 2014, and was developed under the project 'Promoting Innovation and Technology in ASEAN Countries' (the ASEAN-PIT Project). The Framework aims to strengthen public-private cooperation on technology development and innovation (ASEAN PIT Project 2015).

Likewise, in the energy sector, the ASEAN Centre for Energy (ACE) and the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) commissioned the 4th ASEAN Energy Outlook (AEO4) in 2016, scientifically supported by Fraunhofer Institute for Systems and Innovation Research ISI. The AEO4 presents energy trends and challenges in ASEAN up to the year 2035. The outlook supports the implementation of *the ASEAN Plan of Action for Energy Cooperation 2016-2025,* by recommending strategies to address future energy needs in the region (ASEAN Centre for Energy 2016).

In addition to project-based initiatives, multiple events have been conducted to promote public awareness of the importance of futures-oriented programmes. The ASEAN STI Forum 2016 was a forum for policy makers and practitioners to discuss STI issues and

challenges facing ASEAN. More recently, the ASEAN-EU STI Dynamic Workshop was held in month 2017 as part of the "ASEAN Next 2017: Creating Smart Community through STI Collaboration", where the special talk on 'STI Megatrend for the Future of ASEAN' was held. In the food sector, the 13th ASEAN Food Conference was organised by the ASEAN Committee on Science and Technology (COST) in 2013, in collaboration with several Singapore-based agencies, with the theme of "Meeting Future Food Demands: Security and Sustainability" attracting participants from 27 countries. The Conference provided a platform to discuss trends and developments in food science and technology and the role of food science and technology in improving nutrition, health and global food safety.

Various futures-oriented programmes have also been organised by external organisations involving AMS or ASEAN. In 2013, the APEC-CTF and Thailand's National Science Technology and Innovation Policy Office in partnership with the Rockefeller Foundation hosted the Integrated Foresight for Sustainable Economic Development and Eco-Resilience in ASEAN Countries Workshop addressing futures of energy-water-food policies, and identifying ways to use the foresight method to support sustainable development in ASEAN (APEC-CTF 2013). In the fishery sector, the updated fish model analysis of the International Model for Policy Analysis of Agriculture Commodities and Trade (IMPACT) of the International Food Policy Research Institute (IFPRI) provides an example of ASEAN-wide analysis to project 'Fish to 2050' taking into account the dynamics in fishery industry-specific biophysical and socioeconomic factors when predicting aquaculture and capture fisheries production as well as exports in ASEAN (Chan et al. 2017).

Despite gradual progress made in transforming policy paradigm among AMS, through the above initiatives, the project-based nature of the regional initiatives raises concern over their sustainability. Some possible ways forward are reviewed in the next section.

Going Forward: Exploring an ASEAN Regional Approach on Global Megatrends

As illustrated in the previous sections, initiatives to address global megatrends whether in the mold of formal institutions or foresight activities embedded in policy practices have largely been undertaken at a national scale and in an ad-hoc project basis in all AMS. Such initiatives, however, have yet to gain traction within a regional context. Nonetheless, the very nature of the effects of global megatrends being pervasive and massive, cutting across a broad array of activities and physical boundaries, make a strong case to pursue a regional response to global megatrends. For ASEAN, a 'multi-track approach', covering multiple 'tracks' from the formation of a Community of Practice (CoP) to a more formal track including different forms of regional policy frameworks as

defined below could be explored. This approach should be set within the parameters of ASEAN practices and processes and anchored on the AEC Blueprint 2025.

Leveraging on existing work in the region on futures-oriented activities, a Community of Practice (CoP) could be formed, which would formalise the linkages among experts and entities involved in work related to specific global megatrends. A broad representation is expected of the envisaged CoP, which should go beyond the public sector and national entities to also include policy think tanks, business groups and international institutions. AMS with experience on global megatrends could take the lead in forming the CoP. The CoP would create the appropriate forum to nurture the work on global megatrends through exchange of knowledge and best practices administered through regular policy dialogues, collaborative work, and socialisation activities, to name a few. A web-based interactive platform, for example similar to the Innovation Policy Platform (IPP), developed by the World Bank Group and the Organisation for Economic Co-operation and Development (OECD), [4] could be set up to provide easy access to knowledge resources and the primary gateway for exchanges among the CoPs working on different thematic areas.

ASEAN could also pursue the track of developing a more formal regional policy framework on global megatrends, which could take several forms. It could be a set of guiding principles which set out key precepts on how to calibrate policymaking to be more nuanced to respond to global megatrends.[5] The regional framework could also take the form of a formal work programme— whether general or on specific megatrends, which builds on existing national initiatives and takes into consideration nascent regional efforts. One could also adopt the approach used in operationalising cross-sectoral issues under the AEC Blueprint 2025. The development of the ASEAN Work Programme on Electronic Commerce for the period of 2016-2025 is a case in point.[6] Key to the exercise is the identification of relevant sectoral bodies whose work plans reflect action lines which are relevant to the area of global megatrends. Bringing together the right set of people to deliberate on the relevant issues towards conceptualising the Work Programme is also critical, and together with the relevant sectoral bodies, the involvement of the CoP would further enrich the process.

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[4] The IPP can be accessed at https://www.innovationpolicyplatform.org/frontpage

[5] The Policy Framework for Investment (OECD 2015) could be used as a reference, where core questions and principles are set out to provide guidance for policymakers about the economy, institutions and policy settings to develop an effective set of policies to improve the quality of a country's enabling environment for investment. The same exercise of identifying a core set of questions and principles could be done on global megatrends. In addition, in its G20 Innovation Action Plan (G20 Information Centre 2016), G20 also set out 'guiding principles' to enhance a dialogue and cooperation on innovation covering the principles of synergy, cooperation, openness, inclusiveness and creativity

[6] This 'work programme' approach has also been implemented by other international institutions including APEC's Policy Partnership on Science, Technology and Innovation Strategic Plan (2016-2025) (APEC 2016) and G20's Innovation Action Plan (G20 Information Centre 2016), as mentioned above.

The discourse related to global megatrends has resonated in various fora, often coordinated by multilateral organisations including APEC, OECD, World Bank as well as international institutions such as World Economic Forum and G20. ASEAN and individual AMS should take advantage of their participation, actively participate in these fora to broaden the region's role in shaping the discourse, and thereby, ensure that concerns on global megatrends most relevant to ASEAN are addressed. Seeking active participation in international fora is very much in line with one of the five main characteristics of the AEC Blueprint 2025, i.e. a Global ASEAN where the region builds on gains from its global engagement and continues to promote active participation in global and regional fora. ASEAN's international engagement on global megatrends is one way to carry out the AEC Blueprint 2025.

6.5. Concluding Remarks

Global megatrends will profoundly shape our futures. To be ahead of the curve or at least nearer to the frontiers pushed by global megatrends, policymakers and wider stakeholders need to adapt and pursue progressive measures to leverage on megatrends. Against this backdrop, this study proposes a policy toolkit to develop global megatrends-compatible policies aimed to generate policies that harness the benefits and reduce the risks posed by global megatrends. Taking the conventional four-stage policy cycle as a basis, the enhanced approach reflects and adjusts to global megatrends by putting strong emphasis on attributes like innovativeness, participatory, forward-looking, long-term coverage and the significance of scenarios building. It also can uphold the continued importance of quality data, stakeholder engagement and rigorous policy impact evaluation as have been long stressed upon by traditional policy making.

Within the context of ASEAN, the proposed toolkit highlights directions for future policymaking process in response to megatrends. Bolder commitment can be taken through concrete and collaborative efforts to visualise and act on the ASEAN futures that they want to achieve. In such a process, selected futures-oriented initiatives in each AMS and the proposed regional initiatives presented in this Chapter can be used as a reference. The process can all be initiated with futures-oriented exercises visualising ASEAN in a few decades' time and inquiring, for example, "How can the digital economy sustain ASEAN's economic growth and competitiveness?; "How could technological innovations help ASEAN address its social concerns and improve peoples' welfare?"; "How should ASEAN respond to accelerating urbanisation?"; and most importantly "How could ASEAN continue to be relevant to the needs and expectation of its peoples in the constantly changing world?".

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