

## Key Issues:

- **ASEAN Member States** need to greatly enhance their 'innovation capability' to achieve technology-driven sustainable development.
- **Government initiatives matter** for innovation in ASEAN that has just started industrialisation based on innovation and technology.
- **ASEAN Member States should:** (1) establish a single government body that is responsible for leading and coordinating innovation policy; and (2) set R&D intensity goals to motivate governments to ensure sufficient budgets for steadily implementing necessary policies.

## Government Initiatives Matter for Innovation in ASEAN

Masahito Ambashi

ASEAN member states (AMS) need to greatly enhance their 'innovation capability' to achieve technology-driven sustainable development, and there still remains much room to do so. AMS governments should function as active agents in controlling and coordinating systematic innovation policies, including R&D incentives, human resources development, and industrial policies. In this sense, government initiatives matter for innovation in ASEAN where industrialisation has just started based on technology and innovation. Since the problem most AMS face is the absence or functional failure of the government organisation in terms of policymaking processes, it is important to give responsibility for innovation policy to preferably a single body in a government organisation. This government body should hold unified authority with strong leadership under government control to lead and coordinate innovation policies developed across various departments from a holistic viewpoint. Furthermore, AMS may well be able to set goals of R&D intensity through government initiatives, which are expected to motivate AMS governments to secure sufficient budgets for steadily implementing necessary policies

## Introduction

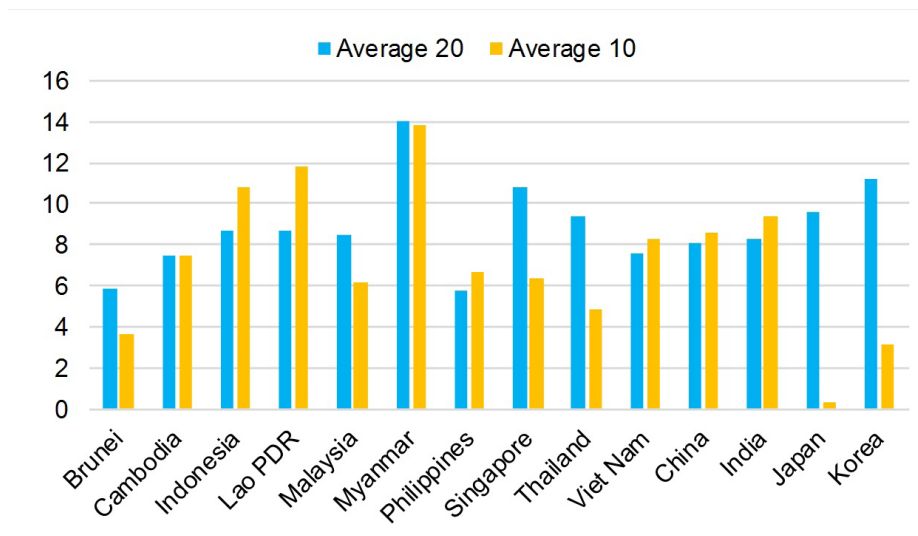
In considering the development of the Association of Southeast Asian Nations (ASEAN), concern is growing that some ASEAN member states (AMS) will fall into the so-called 'middle-income trap', where their growth in gross domestic product (GDP) per capita stagnates at the upper middle-income level for a prolonged period after achieving a certain level of economic development. Figure 1 shows the comparison of the highest average real GDP growth rates achieved over a 20-year period before 2005 versus the 10-year average growth rate during 2005–2014. It is revealed that several AMS – Brunei Darussalam (hereafter, Brunei), Malaysia, Singapore, and Thailand – finished their high-speed growth periods more than a decade ago

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**Masahito Ambashi** is Economist at Economic Research Institute for ASEAN and East Asia (ERIA), Jakarta.

He can be contacted at  
masahito.ambashi@eria.org

Figure 1: Comparison of Real GDP Growth Rates (%)



Brunei = Brunei Darussalam, GDP = gross domestic product, Korea = Republic of Korea, Lao PDR = Lao People's Democratic Republic.

Note: The table compares the average growth rate between the 'highest growth rate for 20 years' (Average 20) and 'recent 10-year growth rate between 2005 and 2014' (Average 10). The 20-year period is as follows for each country: Brunei Darussalam, 1989–2008; Cambodia, 1994–2013; Indonesia, 1972–1991; Lao PDR, 1995–2014; Malaysia, 1965–1984; Myanmar, 1965–1985; the Philippines, 1952–1971; Singapore, 1965–1985; Thailand, 1959–1978; Viet Nam, 1995–2014; China, 1992–2011; India, 1992–2012; Japan, 1951–1970; Republic of Korea, 1969–1988.

Source: University of Groningen, Groningen Growth and Development Centre, The Database, Penn World Table version 9.0.

Particularly for Malaysia and Thailand, the decline in the growth rates seems to have occurred while they are still at the upper middle-income stage. Although these two countries have achieved some degree of diversification and upgrading of their industrial and export structures from primary to manufacturing products (e.g. automobiles and automotive parts in Thailand; electrics and electronics in Malaysia), it might still be insufficient. Moreover, when we turn to innovation-related data, research and development (R&D) intensity as a percentage of GDP reveals that all AMS except Singapore have maintained low investments in R&D compared with Japan and the Republic of Korea (hereafter, Korea), which have an R&D intensity in excess of 3% (Table 1). While Malaysia's R&D expenditure has been rising rapidly and reached 1.30% in 2015, Thailand's has been low even since the 2000s and was 0.78% in 2016. Worse still, the other countries (Brunei, Cambodia, Indonesia, Lao PDR, Myanmar, Philippines, and Viet Nam) have made minuscule investments in R&D or have no definitive records.

## Government Initiatives for Innovation

These observations indicate that AMS need to greatly enhance their 'innovation capability' to achieve technology-driven sustainable development, and there still remains much room to do so. In the framework of national innovation systems (NIS), AMS governments should function as active agents in controlling and coordinating systematic innovation policies to work, including R&D incentives, human resources development, and industrial policies. In NIS, they also need to encourage public research institutes, universities, and the private sector to be continuously involved with innovative activities. Even for the CLM countries (Cambodia, Lao PDR, and Myanmar), developing their abilities to adopt innovations will be critical to help them adapt to the rapid technological development.

Table 1: Gross Domestic Expenditure on R&D per GDP

Country	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Brunei	..	..	..	..	..	..	..	..	..	..	..	..
Cambodia	..	..	..	..	..	..	..	..	..	..	0.12	..
Indonesia	..	..	..	..	0.08	..	..	..	0.08	..	..	..
Lao PDR	..	..	..	..	..	..	..	..	..	..	..	..
Malaysia	..	0.61	..	0.79	1.01	1.04	1.03	1.09	..	1.26	1.30	..
Myanmar	..	..	..	..	..	..	..	..	..	..	..	..
Philippines	0.11	..	0.11	..	0.11	..	0.12	..	0.14	..	..	..
Singapore	2.16	2.13	2.34	2.62	2.16	2.01	2.15	1.99	1.99	2.16	..	..
Thailand	0.22	0.23	0.20	0.20	0.23	..	0.36	..	0.44	0.48	0.62	0.78
Viet Nam	..	..	..	..	..	..	0.19	..	0.37	..	0.44	..
China	1.31	1.37	1.37	1.44	1.66	1.71	1.78	1.91	1.99	2.02	2.06	2.11
India	0.84	0.82	0.82	0.87	0.84	0.82	0.83	..	..	..	0.62	..
Japan	3.18	3.28	3.34	3.34	3.23	3.14	3.24	3.21	3.31	3.40	3.28	3.14
Korea	2.63	2.83	3.00	3.12	3.29	3.47	3.74	4.03	4.15	4.29	4.22	4.23

Brunei = Brunei Darussalam, GDP = gross domestic product, Korea = Republic of Korea, Lao PDR = Lao People's Democratic Republic, R&D = research and development.

Source: UNESCO Institute for Statistics, Data for the Sustainable Development Goals.

Since innovation is frequently brings about spillover effects to other economic agents via, for example, R&D activities, its social return could be much higher than it's private return because of positive externalities. This reality leads to the argument that government interventions (e.g. subsidies, grants, patents, tax reduction/deduction, policy-based finance, social experiments, and guidelines/plans) could be justified to offset market failure of social under-investment in R&D and innovation. Although policymakers need to strike an appropriate balance between market-oriented and government intervention approaches depending on their countries' specific situations, the need for government initiatives in laying out innovation policy is particularly the case with AMS that have just started industrialisation based on technology and innovation.

## Responsible Government Organisation in Innovation Policy

Meanwhile, the problem most AMS face is the absence or functional failure of the government organisation in terms of policy making processes. In principle, they need to control and coordinate the innovation policies that are formulated and implemented across various government departments within a country. However, systemic and systematic organisations have not been fully established in AMS yet. In ASEAN, Singapore is an exception for having succeeded in institutionalising them, as the Economic Development Board of the Government of Singapore has systematically advanced technological department, world-class infrastructure, efficient public services, and the provision of incentives to provoke innovation in the country.

It is therefore important to give responsibility for innovation policy to preferably a single body in a government organisation. This government body should hold unified authority with strong leadership under government control to lead and coordinate innovation policies developed across various departments from a holistic viewpoint. Thailand, for example, established the National Science, Technology and Innovation Policy Committee and the National Research Council, both of which are government bodies aim at accelerating its national innovation policy. But the leadership to manage them as a strategic policy driver is not necessarily sufficient, resulting in a serious lack of governance and ownership given the cross-departmental nature of R&D and innovation policies. Despite good intentions, weak coordination and implementation prevent most of these bodies in most AMS from functioning as they should.

A useful reference can be found in Japan's NIS. In 2001, the Japanese government set up the Council for Science, Technology and Innovation (CSTI), with great responsibility for setting and evaluating science, technology, and innovation (STI) policy, under the Cabinet Office to strengthen the coordination function within the government. The CSTI is attended by relevant ministers and professionals from academia and the private sector and chaired by the prime minister. It is vested with strong authority to determine the future direction of Japanese STI policies and prioritise the STI field to which resources should be intensively devoted. While ministries still enjoy a degree of autonomy for their innovation policies, the CSTI has significantly contributed to improving coordination amongst them.

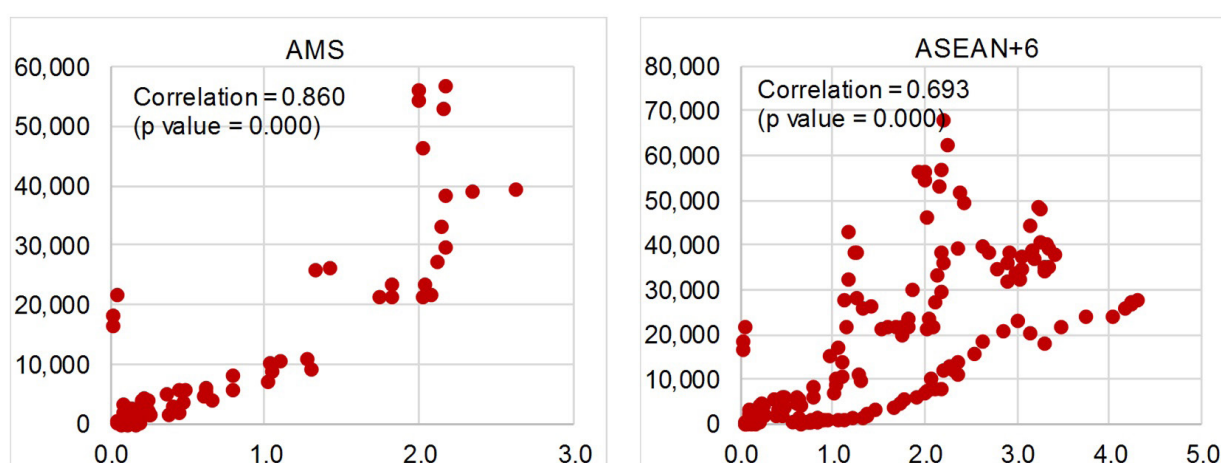
Through such government organisations for the control and coordination functions, AMS governments can strategically drive and implement harmonised innovation policies, as well as evaluate and monitor their effectiveness. By doing so, AMS should more rapidly tackle issues such as building science and technology infrastructure (including physical and human resources), enhancing intellectual property rights, and establishing favourable regulatory climates for technological development and innovation.

## Goal Setting of R&D Intensity

Considering the fact that AMS have conducted low investments in R&D, as shown in Table 1, it remains essential for them to spend a larger share of their budgets on R&D activities. Specifically, AMS should take initiative to further increase the research budgets allocated to public research institutes and universities, which currently have more research potential than private research institutes in terms of professional human resources. In addition, AMS should orient their innovation policies more towards encouraging R&D activities of the private industrial sector. Possible inducements government initiatives can provide to avoid under-investment by the profit-seeking sector include subsidies, tax deduction, and policy-based financing for R&D activities, grants for targeted invention and innovation, and so on.

Figure 2 demonstrates the relationship between R&D intensity and GDP per capita across AMS and ASEAN+6 countries (AMS plus Australia, China, India, Japan, Korea, and New Zealand) from 1996 to 2016 (i.e. pooled data). It is clearly observed that there is a strong positive correlation, but not causation, between the two variables. In other words, we can see that the larger the R&D intensity is, the higher GDP per capita is. Thus, if AMS governments achieve a high national income level, a further increase in R&D investments seems necessary.

Figure 2: R&D Intensity and GDP per Capita



GDP per capita: left axis (current USD), R&D intensity, right axis (%).  
AMS = ASEAN member states, ASEAN + 6 = AMS plus Australia, China, India, Japan, Korea, and New Zealand.  
GDP = gross domestic product.  
Source: UNESCO Institute for Statistics, Data for the Sustainable Development Goals; World Bank, World Development Indicators

In 2000, the European Union (EU) formulated the 'Lisbon Strategy', which aimed to leverage R&D investments to boost its economies. This strategy was followed by an action plan, 'Investing in Research' in 2003, which laid out an ambitious goal of achieving 3% R&D intensity by 2010 (the so-called '3% Barcelona target'). This goal is currently regarded as a numerical criterion that developed countries are encouraged to achieve.

In a similar manner, AMS may well be able to set goals of R&D intensity through government initiatives to lead innovation policy. The open goals are expected to motivate AMS governments to ensure sufficient budgets for steadily implementing necessary policies. Indeed, it seems that immediate achievement of the 3% target advocated by the EU is too ambitious for current AMS (except Singapore) which have not yet established physical, institutional, and human infrastructures sufficiently to conduct high-level R&D investments. However, it is essential that, in accordance with their development stages, each country sets its own goal to realise innovative and productivity-driven economy - for example, 3% for Singapore (cf. technologically advanced countries like Japan and Korea); 2% for Malaysia and Thailand (cf. technologically emerging countries like China); 1% for Indonesia, the Philippines, and Viet Nam (cf. current Malaysia and Thailand); and 0.5% for CLM countries (cf. technologically developing countries). These R&D intensity goals could be attained provided AMS governments can lead initiatives to carry out all possible measures.

## Conclusion and Policy Recommendation

Government initiatives matter for innovation in ASEAN. AMS need to immediately establish unified government organisations that are responsible for controlling and coordinating innovation policies across government departments within a country. By doing so, AMS can strategically drive and implement harmonised innovation policies, and prioritise and evaluate them. In addition, the R&D intensity goals established by government initiatives would be a substantial driver for AMS to implement innovation policies.

## Related Research

Ambashi, M. (ed.) (2018), *Innovation Policy in ASEAN*, Jakarta: Economic Research Institute for ASEAN and East Asia (ERIA). <http://www.eria.org/research/innovation-policy-in-asean/>

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 **ERIA** Economic Research Institute for ASEAN and East Asia  
Sentral Senayan 2, 5th and 6th floors  
Jalan Asia Afrika No.8  
Senayan, Central Jakarta 10270, Indonesia  
Tel: (62-21) 57974460  
Fax: (62-21) 57974463  
E-mail: [contactus@eria.org](mailto:contactus@eria.org)