

ASEAN in the Asia–Pacific Century: Innovating Education and Health Services Provision for Equity and Efficiency – The Role of the Private Sector, Technology, and Regulatory Cooperation

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Perspectives

Global context of innovation in ASEAN: Innovation¹ is elevated in the Association of Southeast Asian Nations (ASEAN) Socio-Cultural Community Blueprint (ASEAN, 2016a) in the context of **dynamism**, as well as engagement and benefits for all – inclusivity, sustainability, and resiliency. However, the regional integration effort is very much in a global community context for both education and health collaboration at the level of people, enterprises, and institutions. ASEAN directs them to be ‘more open and adaptive, creative, innovative and entrepreneurial’ in striving for quality and competitive higher education institutions and contributing to global health platforms.

Education is one of four areas identified in the Master Plan for ASEAN Connectivity (MPAC) 2025 (ASEAN, 2016b) where ASEAN ‘could be at the forefront of change as opposed to simply utilizing existing technologies’. The other three are e-commerce, payments solutions, and cloud-based technologies, which are clearly private sector-driven. As the ultimate soft connectivity (WEF, 2014), education can serve as a foundation for deeper and more expansive regional integration – the very spirit of the European Union (EU) Bologna education initiative.

¹ Innovation is defined to incorporate new inputs, processes, and outputs resulting from better or more effective technologies or ideas, processes, products, and services that are readily available to markets, governments, and societies. Any new education and health sector inputs, processes, and outputs unique to one country/region may count as innovation from that area’s perspective, but not another that has previously dealt with them (Mytelka, 2007). This is drastically different from purely disruptive changes that are impacting on broader global markets for the first time. Both types of innovation are considered in this essay.

Within the global and education contexts, the interest of the ASEAN Economic Community Blueprint (ASEAN, 2016a) in regulatory frameworks can be appreciated.

Three key issues: The open regionalism of ASEAN raises the need for an understanding of the role of ASEAN in the 21st Asia–Pacific Century, in and out of the region: **who** champions ASEAN for its people (how officials, business people, and other groups in society behave), **how** ASEAN contributes to global public goods (through coordination with dialogue partners, beyond them, or internally on some issues), and **what** chaotic situations face ASEAN in the new millennium with its own value-adding contributions. The theme of the 2017 ASEAN Meetings hosted by the Philippines combines these three issues in **Partnering for Change, Engaging the World**.²

These questions strike at the heart of the early 21st century scenarios for regional integration in the face of chaotic globalisation forces and rapid technological change. ASEAN can leave its indelible mark on contemporary international relations **through open regionalism** as it pursues innovation in two sectors where equity concerns interface with traditional economic efficiency concerns.

The ASEAN Situation

Environment for innovation: Innovation climates in developing countries are characterised by efficiency issues of poor business and governance conditions, low educational levels, and mediocre infrastructure (ASEAN–NDI, 2013). Yet innovation is now widely accepted to require a broader set of ecosystem participants, including social entrepreneurs in new business models as the four leaders in education and health fields in a section below show.

However, there is not one unique approach or entity that can meet the growing demands of poor and under-served populations throughout the developing world. Equity concerns cannot be discussed in the same framework as productivity-driven efficiency issues;

² This essay probes into ASEAN's future role for its own constituencies, not just in G2G (inter-governmental) or B2B (across businesses) but also in P2P (people-to-people) transactions, eventually across countries and sectors. The three ASEAN communities naturally blend in any programme or project discussion, hence integrating political into the economic and sociocultural dimensions of innovation in education and health provision – the systems approach needed in the 21st century. For example, strengthening (of) related regulatory frameworks and overall regulatory practice and coherence at the regional level as well as bolstering intellectual property rights registration in specific areas like food safety, medicines, traditional cultural assets, and bio-diversity-based products, relates to both liberalisation of trade in education and health services but also to equity issues in growth and development that feed into 'Brexit'-type issues critical to ASEAN today (ASEAN, 2025).

the public goods and externalities frameworks are suitable for the former. Of course, the two are related: the World Bank emphasises that more equal countries result in healthier and more efficient economies.³

Most of ASEAN's members are classified as lower-middle-income to low-income countries, although many are rapidly developing (Global Innovation Index, Appendix B), with the CLMV countries – Cambodia, the Lao PDR, Myanmar, and Viet Nam – projected to have higher growth rates (Intal et al., 2014), and others expected to be scientifically proficient within the decade in some areas. This provides room for a co-competition strategy – simultaneous competition and cooperation (Macaranas, 2012) – which requires recognition of the chaotic conditions of the 21st century (the **what** issues in the trilemma in Appendix A), the shared leadership across sectors within member states as well as dialogue partners (**who** issues), especially on regional public goods that have global implications (**how** issues).

ASEAN Member States are spread across the three stages of economic development identified by the WEF (2015–16) (see Figure 1); they strive for a common vision in the face of the vast income and wealth gaps compared with other regional groupings like the EU (Apotheker, 2014) now faced with the 'Brexit' issue. Indeed, social concerns will be ever more present in the 21st century. Differing levels of economic development and openness to collaboration in the areas of education and health can hasten progress towards ASEAN 2025 as market competition is harnessed.

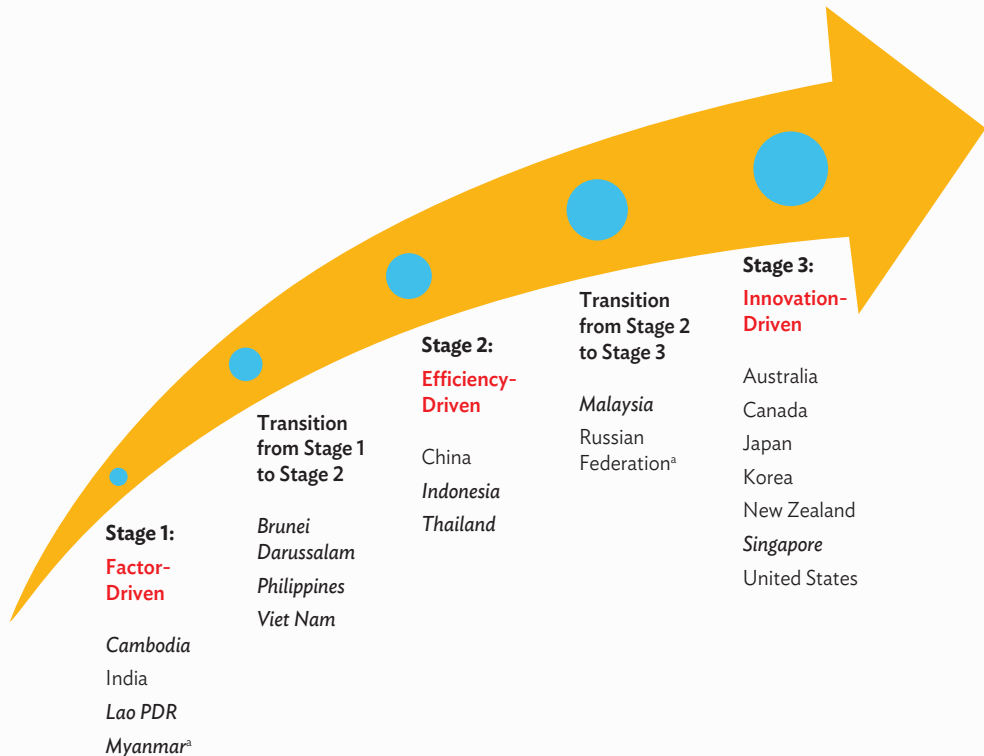
Efficiency vs. equity issues: Singapore is classified as the only **innovation-driven** ASEAN member by the World Economic Forum (WEF). Malaysia is at the transition stage from the lower **efficiency-driven** level where Indonesia and Thailand are.⁴

³ The World Bank Institute (WBI) has taken it upon itself to assume the role of catalyst for development in this regard. By leveraging the global reach of new and innovative technologies, it is creating tools, methods, and online platforms to facilitate an open and collaborative development process between governments, citizens, etc. (The World Bank Institute [n.d.]. Retrieved from <http://wbi.worldbank.org/wbi/about/innovation-for-development>. See also, Aubert [2004]).

In a separate publication, *Poverty and Shared Prosperity 2016: Taking on Inequality*, the World Bank reports that 'more equal countries tend to have healthier people and [are] more economically efficient than highly unequal countries. And countries that have invest(ed) smartly in reducing inequality today are likely to see more prolonged economic growth than those that don't.'

⁴ Singapore (7th) and Malaysia (32nd) are the only ASEAN countries within the top 50 of the Global Innovation Index 2015 based on the number of patent applications per million of the population as an indicator of innovation (Cornell University, INSEAD, and World Intellectual Property Office) (See Appendix B).

Figure 1: ASEAN and Dialogue Partners at Various Stages of Development, 2015



ASEAN = Association of Southeast Asian Nations; Lao PDR = Lao People's Democratic Republic.

^a based on WEF World Competitiveness Report 2015–2016.

Source of basic data: WEF World Competitiveness Report 2016–2017.

Similarly, Brunei Darussalam, the Philippines, and Viet Nam are at the transition stage from the lowest **factor-driven** level of Cambodia, the Lao PDR, and Myanmar.⁵ Overall, it is the combination of strong institutions, human resource talent, and innovation capacity that makes any economy successful as it pursues productivity, social development, and environmental stewardship (WEF, 2015); interestingly, WEF health and primary education factors are separated from tertiary education and advanced training for classifying development stages that Social Progress Index social outcomes clarify in greater detail.

⁵ The innovation rankings decline as one moves down the stages of development. Can countries leapfrog to catch up with more advanced ones in certain sectors like education and health, through alternative systems mediated by new apps? Cambodia and the Lao PDR leapfrogged to mobile telephony over fixed landlines with the legacy problems of old technologies; this will however require more open policies. Many fortunes in the ASEAN telecoms industry, amongst others, were built from diaspora funds, technology transfer, and foreign investment partnerships with local firms and even with governments in innovative variants of build-operate-transfer schemes.

The Social Progress Index (SPI) of Porter et al. (2016) (Table 1)⁶ outcomes reveal vastly divergent situations in the three major groupings of equity indicators, especially regarding opportunity measures (columns 1–3 in Table 1). However, as a group, ASEAN members perform well in general on **Access to Basic Knowledge** (column 2-a), but fare divergently in **Access to Advanced Education** (column 3-d) with CLMV countries once again at the lower end. Similarly, broader indicators for **Nutrition and Basic Medical Care** (column 1-a) fall within a relatively narrow band, but **Health and Wellness** (column 2-c) indicators are more dispersed. The poor scores on advanced education (column 4-d) of CLMV result from the **inadequate education of the workforce**; the latter is also impacted by the quality of primary and secondary school preparation for vocational or academic/professional learning tracks, identified as amongst the other top four problematic factors for doing business in 2015 of this group (WEF, 2015).

Table 1: ASEAN Social Progress Indicators, 2015–2016

Country	GDP PPP per capita	Social Progress Index	1	2	3	1-a	1-b	1-c
			Basic Human Needs	Foundations of Well-being	Opportunity	Nutrition and Basic Medical Care	Water and Sanitation	Shelter
Singapore	78,958	ND	ND	ND	67.10	ND	100.00	92.31
Malaysia	24,460	70.08	88.45	73.31	48.48	97.24	94.48	87.06
Thailand	15,012	67.43	80.46	73.11	48.72	94.78	84.89	82.49
Indonesia	10,033	62.27	72.68	69.72	44.41	91.49	56.34	72.81
Philippines	6,649	65.92	69.94	72.02	55.81	87.52	71.43	63.71
Viet Nam	5,370	ND	78.15	ND	36.50	91.55	71.45	74.36
Lao PDR	5,076	52.54	65.84	56.93	34.85	78.61	56.74	51.93
Cambodia	3,113	54.28	59.14	64.23	39.46	86.48	45.44	44.26
Brunei*	-	-	-	-	-	-	-	-
Myanmar	-	49.84	63.11	55.94	30.47	82.89	56.36	47.04

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⁶ Singapore and Viet Nam have data for at least nine components of the 10 SPI indicators but do not have sufficient data to calculate an overall Social Progress Index score. Brunei Darussalam lacks sufficient data to meet this threshold needed for partial inclusion in the Index (Porter et al., 2016). As the Social Progress Network built around the SPI data continues to grow and capture attention, new opportunities arise. Amongst others, sub-national competitiveness indices in Malaysia, Indonesia, and the Philippines can be enriched with social equity information (SPI 2016 cities-based data of Malaysia's Scope Group; Tan et al. [2014] has Indonesian provincial data; National Competitiveness Council Philippines 2015 reports various city sizes and municipalities).

Table 1: Continued

Country	1-d	2-a	2-b	2-c	2-d	3-a	3-b	3-c	3-d
	Personal Safety	Access to Basic Knowledge	Access to Information and Communications	Health and Wellness	Environmental Quality	Personal Rights	Personal Freedom and Choice	Tolerance and Inclusion	Access to Advanced Education
Singapore	89.21	ND	77.69	78.14	82.90	49.07	82.59	66.33	70.43
Malaysia	75.02	88.39	75.00	63.14	66.71	32.52	60.84	45.72	54.84
Thailand	59.67	91.50	67.95	67.23	65.78	31.87	72.04	40.24	50.74
Indonesia	70.09	88.65	63.17	65.02	62.03	48.60	61.80	29.57	37.67
Philippines	57.10	89.94	68.74	60.53	68.85	53.74	67.14	54.53	47.83
Viet Nam	75.23	ND	58.78	76.28	58.20	8.24	65.09	44.25	28.42
Lao PDR	76.07	76.20	38.80	57.36	55.35	13.07	58.15	50.87	17.30
Cambodia	60.39	69.90	61.01	72.76	53.26	38.49	63.52	38.44	17.38
Brunei ^a	-	-	-	-	-	-	-	-	-
Myanmar	66.14	77.87	42.33	61.39	42.16	5.73	60.47	29.11	26.56

^a No data for Brunei for all indicators.

ASEAN = Association of Southeast Asian Nations; GDP = gross domestic product; ND = no sufficient data for a particular indicator; PPP = purchasing power parity.

Source: Social Progress Index 2016.

Coopetition in basic vs. advanced levels: The types of coopetition in basic vs. advanced levels of education/training and health will differ according to the degrees of competition or cooperation inherent in a given project or situation – alienators or partners for basic levels vs. contenders or coopetitors for advanced levels (explained further in Luo, 2004).⁷ Homegrown or ex-ASEAN multinationals using Southeast Asia as production base opt for the latter for global market positioning; they compete in early stages by engaging their own people sometimes in their own corporate universities or training institutes in concept/R&D, branding, and design, while cooperating in manufacturing/assembly production, and some distribution part of the value chain. Later they compete again in marketing and sales/after sales service (Macaranas et al., 2015).

⁷ In the spirit of behavioural approaches in economics and management, Luo (2004) created categories of high or low levels of competition (CM) or cooperation (CO). These result in **alienators** (low CM–low CO: compliance and circumvention strategies), **partners** (low CM–high CO: accommodation, co-optation, adaptation strategies), **contenders** (high CM–low CO: bargain, challenge, appeasement strategies), and **coopetitors** (high CM–high CO: compromise and influence strategies). The relevant economic concern is on transactions costs in innovative Asian business systems (Redding et al., 2014).

The SPI details interesting information on **basic** human needs. Singapore's status in water and sanitation (column 1-b) is attributed to huge public investment in new technologies in rainwater harvesting, desalination (reverse osmosis for seawater, and electro dialysis and multi-flash stage distillation for brackish water), water use and re-use (through advanced purification and membrane technologies); these result in two-way (fresh for treated) water trade with Malaysia (Segal, 2004); as it became an independent state, its water-dependence on Malaysia led to competition strategies.

The 100% score of Singapore in this one key determinant of basic needs (column 1 as a composite of columns 1-1 thru 1-d) was addressed well before climate change issues prompted more extensive research in other fields and areas. (See Box 1 on efforts of three research institutions with public-private collaboration, noting that public goods paid for by governments in the last century for early research stages are now also funded by private groups [Macaranas, 2012]).

Education as a driver of regional integration: The factor vs. efficiency vs. innovation-driven growth amongst ASEAN members points to the need for rapid development of their human capital and workforce skills – which is at the heart of the Bologna process in the EU.⁸

The Bologna process in the EU initiated in 1999 serves as a model for ASEAN integration through the educational system, as do Latin America and Africa, driving closer socio-cultural ties that make for more effective long-term integration (WES, 2016; Loades, 2005). When 29 European countries signed the Bologna Declaration, it was simply to reform higher education a decade later, however, ET 2020 (Education and Training 2020) expanded beyond education by setting four common EU objectives, echoed in many meetings of education ministers in ASEAN on essentially the political, economic, and social foundations of the ASEAN community, e.g. active citizenship, social cohesion, enhanced creativity, and innovation including entrepreneurship.⁹

⁸ In fact, 11% of ASEAN's population have no education, roughly 60% have only primary education or lower, and around 30% of the workforce, or some 92 million, live on less than US\$2 a day. By 2030, Indonesia and Myanmar will have combined projected undersupply of 9 million skilled and 13 million semi-skilled workers; by 2025, highly skilled workers will fill up only half of such required quality employment in six members (Cambodia, Indonesia, the Lao PDR, the Philippines, Thailand, and Viet Nam) (ASEAN, 2016b).

⁹ EU 2020 also added two other objectives: lifelong learning and mobility, and improved quality and efficiency of education and training. Most striking is the concern for people **creating jobs as entrepreneurs** rather than **looking for** them for productive participation in any economy; this is a major objective of outcomes-based education, which relies on competencies that regional groupings want to harmonise. However, a framework for cooperation like the EU's ET 2020 will have to be designed and practiced more widely in ASEAN for sharing best practices, evidence-based workable models, and policy reform options.

ASEAN has yet to adopt **numerical** target benchmarks for education similar to that of ET 2020. Indicators such as participation in early childhood education, lifelong learning, study/training abroad for the vocationally qualified, and employment of those with secondary education (EU 2020) are not yet reported by ASEAN on a cross-country basis.

Box 1: Innovation on Basic Needs Provision

Climate change has belatedly focused innovation efforts on basic needs in the ASEAN region. For example, it is only in the last 10 years that some 44 weather-resilient rice varieties by the International Rice Research Institute (IRRI) in the Philippines have been released out of around a thousand improved rice varieties since its founding in 1960. Research is now advancing on the 3-in-1 variety that is resistant to drought, saltiness, and floods; the private sector is active in some areas, e.g. research on golden rice with beta carotene for improving nutrition of impoverished groups funded by the Bill and Melinda Gates Foundation at IRRI, with its final distribution subject to national rules on genetically modified organisms (Interaksyon, 2014).

In view of climate change-induced diseases, access to basic medical needs through the lowering of prices of drugs, vaccines, traditional medicine, and diagnostics via an ASEAN innovation network was targeted only at the end of the first decade of the millennium. Tropical diseases still considerably burden many of the poor in the region. As a result of wet and tropical climate conducive to vector and water-borne diseases, 25% of the global burden of infectious and parasitic diseases, mainly malaria, dengue, and tuberculosis, is in Southeast Asia, which accounts for only 9% of the global population. This ASEAN hub-and-spokes innovation network is now pursuing networked intelligence across R&D stages through communities of practice (ASEAN-NDI, 2008; see also leadership story of Krisana Kraissintu of Thailand in a section further below).

Similarly, the Coral Triangle in Southeast Asia has not been as much researched recently, especially for food and medicinal drugs. The region has been known for quite some time to possess the richest marine biodiversity (corals and reef fish) on the planet; it took a group from ASEAN under the leadership of Indonesia to create the collaboration with other Pacific Island economies in 2009 to address dwindling resources due to destructive practices amidst climate change, resorting amongst others to eco-tourism for livelihood alternatives. (<http://www.coraltriangleinitiative.org/>)

These are the key areas for promoting equity in ASEAN through closer cooperation for basic human needs in the 21st century as the private sector responds to the rice, fish, and medicine needs for its marginalised segments. Most of the cooperation strategies (cooperate in early stage R&D and standards setting, compete in later commercial product development and marketing) rely on public institutions, private firms/associations, and university linkages; since their implementation receives funding from multiple sources, issues of IPR sharing, technology transfer laws, and implementation rules are raised.

ASEAN = Association of Southeast Asian Nations, IPR = Intellectual Property Right, R&D = research and development.
Source: Author.

The goal of an integrated area of higher education similar to Europe, or Latin America and the Caribbean, is under discussion in some ASEAN fora, but is likely to follow the slower steps of Africa, which has a harmonisation project; a similar effort was instituted

in ASEAN through the SEAMEO RIHED harmonisation roadmap for higher education in its 2008 meeting, followed by the ASEAN Quality Assurance Framework of 2014 (Bautista, 2016).

ASEAN has programmes on student mobility, credit transfer systems, and university networking. The connection to the whole economy in terms of a qualifications reference framework (endorsed by the economic, labour, and education ministers in 2015, and now with guidance on governance and structure adopted in 2016), must be more broadly linked to mutual recognition arrangements (MRAs). Eight of these exist for professional services that have competency-based occupational standards (accountancy, dentistry, medicine, engineering, nursing, surveying, architecture, and tourism).¹⁰ Indeed, it is the jobs–education–training nexus that various ministers and private sector leaders across ASEAN need to jointly address.

Open regionalism: Under the General Agreement on Trade in Services (GATS) modes for trade in services, education and health service providers from outside ASEAN must be able to enter markets in each member state.¹¹ Various domestic regulations from visa restrictions, professional qualifications, to training of locals and other non-tariff barriers, however, challenge ASEAN even as the ASEAN Economic Community (AEC) was supposed to have opened up markets by December 2015 (Basu Das et al., 2013). Labour mobility issues are the most contentious in global affairs at this point of the globalisation debate.¹²

It is obvious from the pace of work of ASEAN education and health ministers that more liberal policies will take time to implement in many member states as constitutions are amended, national laws are legislated and executed along varying sentiments through the business cycle and trend factors in economic growth; the latter include education and health sector-specific governance issues, e.g. procurement practices and public workforce assignment across districts, states, or provinces (ADB, 2015).

¹⁰ Education and training are part of the ongoing implementation activities of MRAs. These also include comparison of policies and regulations, registration, temporary licensing or registration for limited practice, expert visits, humanitarian missions, and research (Bautista, 2016).

¹¹ The World Economic Forum finds that ASEAN is a more open market than the EU or the United States in its Global Trade Enabling Report 2016.

¹² Indeed, Stage 3 Innovation-driven Singapore, rated as the world's best on basic indicators, second most efficient, and 11th most innovative, is faced with skilled labour mobility issues; the push and pull factors are unique to individual ASEAN Member States (Macaranas, 2016). In fact, Singapore's **restrictive labour regulation** is a major concern of WEF survey respondents, reflecting the tight link between worker productivity and macro/monetary goals of the small open economy (Desai and Veblen, 2004). Nevertheless, Singapore is most open to various programmes and providers mobility in education in part due to the network effects of highly skilled workers, e.g. in biomedical sciences and the financial sector, which replaced different industry priorities in earlier national plans.

For education, open regionalism means **provider mobility** (more foreign branch campuses, independent institutions setting up local facilities, study centres/teaching sites, mergers/acquisitions, affiliations/networks) as well as **programme mobility** (franchising, twinning, double or joint degree, articulation, validation, and e-learning/distance learning). ASEAN is in the Asia–Pacific region that is acknowledged as the major global player for cross-border education, but has limited resources and political will for more relaxed restrictions under all four GATS modes compared with its developed dialogue partners (Findlay and Tierney, 2010).

Similarly, open regionalism must allow foreign players in the construction and management of health facilities including various **build-operate-transfer schemes** (Zen, 2012); this also calls for review of the corresponding **financing issues** on national health insurance systems and health maintenance organisations. Although there are fewer restrictions on foreign ownership in the healthcare sector in Cambodia, the Lao PDR, Viet Nam, and Singapore than in the rest of ASEAN, the region in general suffers from lack of physicians and nurses, which constrains efficient delivery of hospital services. The exceptions on the **shortage of medical professionals** are Singapore, the Philippines, and Brunei (Nikomborirak and Jitdumrong, 2013). These impact the national health issues for all ASEAN countries – system coverage, financing (including out-of-pocket costs), and structure to improve health status and delivery/access, as well as customer satisfaction and risk reduction (ASEAN–NDI, 2012; Roberts et al., 2004).

Leadership Issues

Who will champion ASEAN for its own peoples? The leadership challenge of ASEAN in the 21st century, as the trilemma (Appendix A) suggests, is for its original inter-governmental focus to be supplemented by cross-business and cross-people approaches. In providing regional public goods, the inclusion of dialogue partners later may, however, weaken the role of ASEAN governments in shaping the rest of the dynamic 21st century. Reinventing partnerships across groups and countries (G2B, B2P, G2P) within ASEAN thus seems to be the way forward; identifying the leaders in these issues will be critical.

Innovative regional leaders need to surface or be developed to promote ASEAN's existence beyond the present generation, given the ominous message of populism and the emergence of supra-nationalism in the age of globalisation (Ramos, 2013; Almonte, 2004). What can the private sector do that the public sector cannot? The usual argument is that directions from the latter guide the former in crafting actual programmes that implement the vision of a country, a region, or an industry. This may come in the form of ASEAN-affiliated organisations as well as G2G and B2B forms.

But it is stories of people with greatness of spirit that will catch the attention of the world today and shape the views of survey respondents. Beyond creativity and competence, the ASEAN context in the next decades requires an essence of leadership that is service-oriented, transformative, and even heroic, as demonstrated by many successful examples in Box 2.

Box 2: Three Leadership Stories

A Thai pharmaceutical researcher, Krisana Kraintu, successfully reduced the cost of branded antiretroviral drug (ARV) for HIV/AIDS by four times with the world's first generic version of AZT (zidovudine), cutting the risk of mother-to-child transmission. She faced tremendous challenges – lack of support (working 'in solitary toil with toxic materials in a windowless lab'), scepticism of colleagues, and lawsuits from drug firms while in government service. Her persistence paid off with a second generic ARV drug ddl (didanosine) and eventually 'GPO-VIR' that decreased by 18 times the cost of multiple pills/cocktail drugs for HIV/AIDS. Leaving her government post, she extended her research and cheaper medicines crusade to sub-Saharan Africa.^a She returned to Thailand and heads the Oriental Medicine research at Rangsit University from where she continues to extend her work to other ASEAN countries and beyond.

A Karen refugee fleeing the civil war in Myanmar, Dr Cynthia Maung established a makeshift clinic in Mae Sot at the Thai border, improvised rudimentary equipment, trained refugees to lend their hands in the clinic and become 'backpack' medics working in the areas across the border. She eventually grew the one-room facility into one providing comprehensive health services to more than 30,000 people annually, with the help of international doctors and scores of health workers she trained.

Chris and Marivic Bernido, both holders of doctoral degrees in physics from the United States, gave up jobs abroad and in urban Manila, to turn around a small private high school in rural Visayas of the Philippines to address the shortage of qualified physics teachers in the country. They also initiated the innovative Dynamic Learning Program (DLP), which revolves around student-driven activities 70% of the time, but is supported by skilfully crafted learning plans and performance tracking systems; an expert teacher on one subject is able to handle three simultaneous classes with the assistance of facilitators. Based on its success in vastly improving scores in national exams and top university admissions, the DLP has been copied by many countries around the world, including private universities owned and managed by Phinma, a Philippine education enterprise.

The greatness of spirit in these three leadership stories demonstrate ASEAN's blending of innovation and concern for people at the heart of development.

ASEAN = Association of Southeast Asian Nations.

^a She moved to sub-Saharan Africa in 2002 where she worked in armed conflict zones, travelled great distances, and even more substandard facilities than in Thailand, to produce similar ARV drugs from local raw materials; she then redirected her R&D efforts to anti-malarial research and affordable drugs production in 13 other African countries. In 2009, she won the Ramon Magsaysay Award, Asia's Nobel Prize equivalent (Ramon Magsaysay Awards Foundation, 2009 – citation for Krisana Kraintu). Retrieved from: <http://www.rmaf.org.ph/Awardees/Citation/CitationKraintuKri.htm>. The next two stories are also Magsaysay Award winners.

Redesigning Systems

How will ASEAN contribute to the promising albeit chaotic Asia–Pacific Century for its peoples and the rest of the world? Systems redesign is most important with technology disruption evident even in the way the financial sector is shaping up after the Asian financial crisis and the financial technology (fintech) developments around the Great Recession a decade later (Dietz et al., 2016).

Learner-centred education systems: In this light, education must be redesigned away from the industrial model of the last century into a network and ecosystem model that focuses on student-centred, collaborative, and ‘construction’ learning (Tapscott and Williams, 2010) similar to what corporate universities and company training programmes do (Findlay and Tierney, 2010).

The eight areas of the ASEAN Work Plan on Education 2016–2020 can be redesigned to accommodate student-centred education across ASEAN in the new millennium. They eventually lead to national qualifications frameworks about learning outcomes, not knowledge as inputs; to institutional effectiveness rather than efficiency; to student outcomes measured by competency-based standards; and to ASEAN-wide acceptance through mutual recognition agreements (Bautista, 2016).

In the context of ASEAN 2025, the major goal should be **significant re-skilling** in many job families where value added is expected to be higher for both advanced and emerging economies; the WEF singles this out as the foremost requirement for the modern workforce facing the fourth industrial revolution (WEF, 2016). This goes beyond the call of education ministers.

Responding to employment needs: The WEF Jobs Study 2016 recounts that 65% of children in primary school today will end up in completely new job types whose descriptions are not even known.¹³ Broadly, ASEAN’s job growth areas are in transport and logistics; sales and related areas; management; and business, legal, and financial services. Indeed by 2020, recruitment in the region will be harder in consumer and professional services, particularly financial analysts, and even in mass employment areas of assembly and factory workers; it is less so in new and emerging areas of business services and administration managers (WEF, 2016).

¹³ World Economic Forum, January 2016, notes that agriculture, fisheries, and forestry still account for the largest share of employment in many countries, including those in ASEAN. The report also noted that transnational corporations locate mass vs. specialist jobs in different groupings, like ASEAN and the Gulf Cooperation Countries, rather than individual countries.

Areas of skilled talent migration in many ASEAN countries to the advanced economies matter. Globally, by 2020 recruitment will be harder in professional services (especially business and financial operations) where training in **social skills** is required more than in cognitive and complex problem solving skills. The same is true of computer science and mathematics (especially data analysts, software applications developers and analysts) where **complex problem solving skills** are specifically needed for information security analysts, while **programming skills** are needed for database and network professionals.¹⁴

For the healthcare sector, the study stresses the business and financial operations area of this sector where different job skills will be required for 2020: **problem sensitivity** for regulatory and government occupations, **active learning** for associate professionals, **and critical thinking and management of financial resources** for sales and marketing professionals. Technological innovations will lead to increased automation of diagnosis, personalised treatments, and redefined roles of health practitioners as they translate and communicate data to patients (WEF, 2016).¹⁵

Other redesign issues: These are covered in Tables 2 and 3 on regional collaboration and health research cooperation in ASEAN respectively. The first covers ASEAN University Network (AUN) championing student-centred learning, specialised higher education institutions promoting participative learning models including the case method, and intellectual property (IP) asset creation and commercialisation through stronger national offices and a regional infrastructure and ecosystem. The second zeroes in on R&D matters for which the ASEAN Network for Drugs, Diagnostics, Vaccines, and Traditional Medicines Innovation (ASEAN-NDI) is responsible.

¹⁴ Unlike Brunei and Singapore, which allocate specific time for information and communications technology (ICT) subjects in basic education, the Philippines has inadequate preparation for ICT as a 21st century competency learning skill. In general, as a latecomer to K-12 education, the Philippines has to ‘cope with “Digital Age” literacy, inventive thinking and effective communication skills, high productivity, and essential values,’ especially through significant reform in the secondary education curriculum. In 2015, the country transitioned to added Grades 11–12, which should strengthen the ‘Net Generation’ knowledge base of students. (Philippines Department of Education and SEAMEO Innotech, K-12 Education in Southeast Asia: Regional Comparison of the Structure, Content, Organization and Adequacy of Basic Education).

¹⁵ Nearly two-thirds of ASEAN respondents to the WEF survey for Jobs Report 2016 believe that future **workforce planning** is a leadership priority; however, many perceived barriers exist – 40% see these as arising from short-term profitability views of private shareholders and resource constraints. Other reasons include insufficient understanding of disruptive change, and workforce strategy not aligned with innovation strategy.

For the **global healthcare sector**, WEF, *ibid.*, reports that 80% of respondents believe future workforce planning is a leadership priority with 70% believing the barriers arise from resource constraints.

**Table 2: Regional Collaboration Issues for Re-skilling
21st Century ASEAN Workforce**

1. ASEAN University Network should champion student-centred and collaborative learning in comprehensive university systems.
2. Specialised higher education institutions in management, medical sciences, technology, etc. should promote the case method, participative and dynamic learning systems, and academic–university linkages.
3. Intellectual property offices in ASEAN must be strengthened at national levels to support a dynamic regional infrastructure and robust ecosystem.
4. Intellectual property creation and commercialisation, especially geographic indications and traditional knowledge, should be fostered with inclusivity in mind.

Source: Author.

Table 3: Health Research Collaboration Concerns in ASEAN

1. R&D shift from communicable to lifestyle diseases should not neglect the potential pandemics in the region, noting ASEAN’s success in combating severe acute respiratory syndrome (SARS) through Dialogue Partner collaboration.
2. Lowering the costs of drugs, vaccines, traditional medicine, and diagnostics in ASEAN should be conducted with global communities of practice but with more funding at various phases of R&D.
3. ASEAN–NDI business plan must implement value chain in a hub-and-spoke system framework from basic to translational research, with various stages of testing through commercial development.
4. Continued global collaboration must involve public and private sector participants for particular priority diseases.

ASEAN = Association of Southeast Asian Nations; ASEAN–NDI = ASEAN Network for Drugs, Diagnostics, Vaccines and Traditional Medicines Innovation; R&D = research and development.

Source: Author.

Preparing for a More Chaotic Environment

What surprises will keep ASEAN together/apart in more volatile, uncertain, complex, and ambiguous (VUCA) times so that it can better help shape the Asia–Pacific Century? This chaos typology results from combinations of (a) the extent to which information is known to decision-makers, and (b) the degree to which actions predict outcomes (Bennett and Lemoine, 2014).

Learning how to re-define problems and how to relate past solutions to dramatically changing conditions is the major contribution of the VUCA paradigm, e.g. when ASEAN has to lead in explaining to its own people issues like the brain drain, pandemics, climate change, drug abuse, etc.; while dialogue partners may have more dominant voices on these in global fora, it is the coalition building for global public goods that becomes the new problem for ASEAN leaders (see Appendix A trilemma framework).

Specifically, resources may not be available for all member states for public goods in addressing the **global war for talent**, including health services and other professions where cyclical and cobweb-type demand models prevail. In cooperation programmes, ASEAN labour exporters' positions may be weakened because some immigration policies skim the best and the brightest human resources attached to international educational programmes. At the global level, the larger problem is sharing of human resources to address local education or health services shortages, but at the local level the short-term solution should factor in long-term sustainability of talent pool developers through faculty retention programmes in countries that are sources of the skilled workers, e.g. engineering, information technology, medical, marine officers, etc. Movements of overseas talents are not yet properly monitored across member states, although the age of big data may change this with proper ASEAN leadership.

Box 3 shows examples of innovative regulations (public sector) and innovative management (private sector) that respond to various VUCA environments; eventually, these lead to problem redefinition and accompanying new solutions.

Box 3: Examples of Innovative Regulations and Rationale

1. Governments regulate for quality assurance: privatisation, instead of government provision, encourages dynamic and competitive education and health services.
2. Governments promote industries through reverse regulation and deregulation: focus on growth in relevant geographic footprints of contestable markets in the single ASEAN production base.
3. Regulators focus on specific regions, provinces, cities, and towns: transport mobility and liberal policies promoting processing zones and eco-tourism enable certain places to innovate faster
4. Regulators adopt co-competition strategies: cooperation is needed for complex systems to survive (Ormerod, 2005).
5. Policymakers include equity factors in competition policy: long-term business (especially small and medium-sized enterprises) interests depend on raising the purchasing power of final consumers.

Examples of Innovative Management and Rationale

1. Systems thinking is adopted to respond to VUCA activities: various forms of chaos must be addressed by different problem statements and innovative solutions based on fast-changing conditions.
2. R&D is based on new innovation ecosystems: macro and micro policies for bricks and mortars, human resources, and knowledge management should be networked for effective delivery of services.
3. Target markets/communities are selected in South-South arrangements and for particular groups like women and youth: unique group characteristics cannot be approached with cookie cutter policies and production methods where approtech is accepted alongside 21st century technology innovations.

Source: Author.

Conclusion

Innovation for education and health in ASEAN through 2025 must be a joint public-private undertaking (not just G2G, B2B, or P2P); guidance by the first, implementation by the others. Sometimes even in terms of funding, such jointness is called for – e.g. in areas where government alone used to bear the financial burden of pure public goods and services, like basic research and basic education – because of the massive financing required in today’s chaotic world re-shaping them. Even the costs of re-skilling for jobs yet to be defined in the 21st century could not be charged to the corporate world alone – because the spillover effects of higher education go beyond their specific industries.

Lagging sectors within and across ASEAN must be accommodated as they adapt to multi-track/multi-speed growth and development paths in a VUCA world. ASEAN’s private sector leaders can help the world with lessons from the collaboration within their industries especially to respond to the hard and soft skills that jobs of the new millennium require.

The private sector as the source of creativity, innovation, and practical wisdom in the new century – for new goods and services responsive to the needs of rich and poor communities alike and the planet as a whole – will partner with governments and related inter-governmental organisations in different ways. The focus on global and regional public goods – like education and health – can be sharpened, based on ASEAN’s rich diversity of political, economic, and socio-cultural systems.

Leadership by those who govern must factor social equity issues into the private sector suffused with pure profit motives; unequal societies with worse education and health outcomes produce less sustainable growth. The mix of ASEAN members’ political and economic preferences, and the pendulum swing of people’s sentiments and behaviour, will check and balance the collective desire to keep One Community.

More granularly defined fairer distribution of job opportunities, income, and wealth (that big data can produce) will act as a major driver in ASEAN to prevent disintegration that is happening elsewhere. This may call for new forms of small entrepreneurs and large enterprises linking together for the eventual single production base and market goals in ASEAN, by innovating in inputs, processes, and outputs. Education and health systems must be made more responsive to 21st century VUCA conditions.

Finally, global players who infuse both efficiency and equity matters in their aspirations and operations should be welcomed for their concern for public goods in more open markets. ASEAN’s open regionalism, as **the** approach to integration in the 21st century,

is the region's answer to the evolution of capitalism – one in search for simultaneous competition and collaboration, notwithstanding regulation legacies of the 20th century. It is ASEAN's way of surviving the long-term challenge of contributing to the chaotic yet vibrant Asia-Pacific Century.

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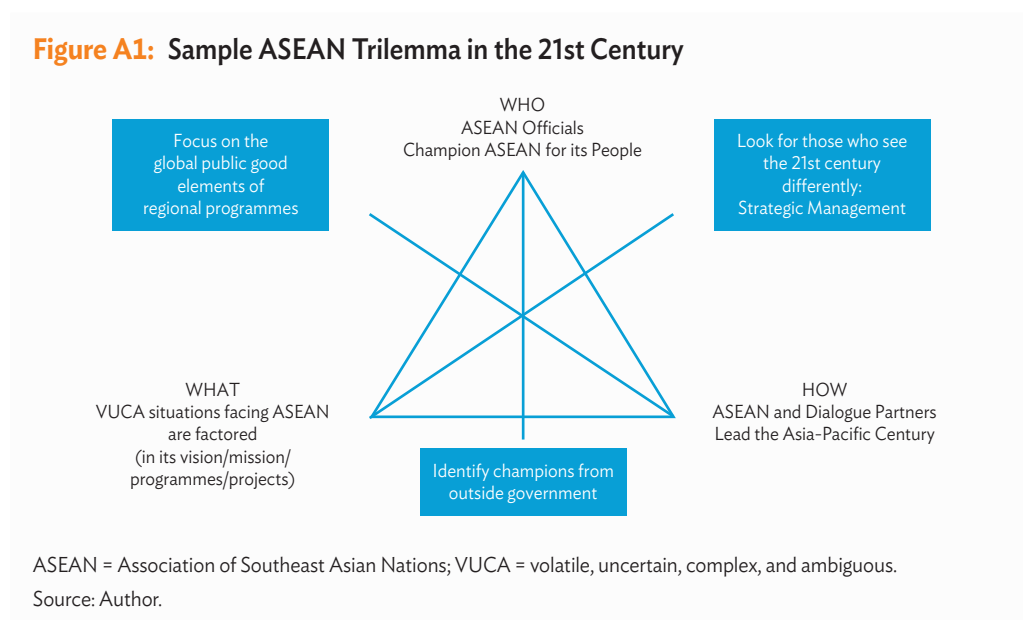
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Appendix A: The ASEAN Trilemma in the 21st Century

The Association of Southeast Asian Nations (ASEAN) in the new millennium faces a trilemma¹ in terms of its role in the 21st Asia–Pacific Century – **who** champions its efforts in building the ASEAN Community (officials vs. business people and various groups in society); **how** can it participate as a group in the Asia–Pacific region that will be the centre of global economic gravity (through Dialogue Partners, beyond them, or alone on some issues); and **what** chaotic situations in the new millennium can it address in some unique way with its own value-adding contribution (based on its experience in addressing global issues such as food security, pandemics, and political security).²

Figure A1: Sample ASEAN Trilemma in the 21st Century



There is a trilemma because the **three key questions of who–how–what** force some trade-offs: only two of these may be answered given an education or health situation in ASEAN as it tries to contribute to understanding a regional opportunity/problem that may become a global public ‘good’ or ‘bad’.

¹ A trilemma is a situation in which a decision maker is faced with three almost equally undesirable alternatives, or is a quandary posed by three different courses of action when only two may be accepted and a third is logically excluded.

² While food security is considered an economic community concern, pandemics one for the social community, and anti-terrorism one for the politico–security pillar, they all converge on – as the ‘Kuala Lumpur Declaration on ASEAN 2025: Forging Ahead Together’ suggests – a people-oriented and people-centred ASEAN in a region of peace, stability, and prosperity.

For example, the **what and who** issues can be addressed in some cooperation schemes. (Recall that the ‘what’ concerns the chaotic issues in our economic, social, and political environments as ASEAN tries to add value to the understanding of and solution to problems, while the ‘who’ refers to the champions building the ASEAN Community in the issues.)

In this example, **limited official ASEAN resources for cooperation schemes do not allow for implementation of many regional programmes across all member states**, as in student and faculty exchange and research collaboration for greater appreciation of cross-cultural similarities and differences. **How** can ASEAN play a larger role in greater regional understanding in Asia-Pacific if its own resources do not allow for the sharing of the programme beyond ASEAN, if indeed ASEAN is to have an impact outside its own borders?

These are amongst the ‘**how**’ issues in the trilemma that ASEAN participation in global public goods design and implementation can address. The **solution is to expand the stakeholder interests to the larger community of nations beyond ASEAN**. But that weakens the intended effect on ASEAN beneficiaries.

The second example is on the **who and how** pertinent in examining ASEAN’s role in global issues emanating from within its grouping. (Recall that the ‘who’ concerns ASEAN champions for the ASEAN Community while the ‘how’ involves its manner of participating in the 21st century.) This becomes a trilemma when **ASEAN becomes too reliant on Dialogue Partners to obtain a better understanding of chaotic problems**. Education in and outside formal school systems on intellectual property protection, pandemics, terrorism, drugs, and corruption are a few of these.

To what extent are local government officials in the countries involved in shedding light on the root causes of the problem? The chaotic conditions at the local government level may be rooted in political factors, which are the more difficult ‘**what**’ issues in the trilemma.

The final trilemma example is of the combined **what and how** (what chaotic situations and how ASEAN can play a role in the 21st century), which may isolate ASEAN from global issues as **Dialogue partners dominate transactions and activities**, e.g. in 21st century education and health. Examples are the varying commitments of ASEAN stakeholders to produce more affordable pharmaceutical drugs (which an underfunded ASEAN innovation network is addressing), and alternative education systems for marginalised communities including minorities (which technology is alleviating). The ‘**who**’ issues left out of the trilemma are **addressed in part by the private sector in ASEAN** in these examples, which, if failing to be institutionalised, will not be effective solutions in the long term.

Appendix B: Global Innovation Index (GII) 2016

Country/Economy	Score (0-100)	Rank	Income	Rank	Rank	Efficiency Ratio	Rank
Singapore	59.16	6	HI	6	1	0.62	78
Malaysia	43.36	35	UM	2	8	0.67	59
Thailand	36.51	52	UM	8	9	0.70	53
Viet Nam	35.37	59	LM	3	11	0.84	11
Philippines	31.83	74	LM	8	12	0.71	49
Indonesia	29.07	88	LM	11	13	0.71	52
Cambodia	27.94	95	LI	3	14	0.59	90
Brunei ^a							88 ^b
Myanmar ^a							138 ^b
Lao PDR*							

HI = high income; Lao PDR = Lao People's Democratic Republic; LI = lower income; LM = lower middle income; UM = upper middle income.

^a No data for 2016, ^b Brunei 2014 data, ^b Myanmar 2015 data.

Source: Global Innovation Index: <https://www.globalinnovationindex.org/gii-2016-report>

Appendix C: Percentage of Students Enrolled in Privately Managed Schools, ASEAN Countries – 2014

Country	Primary	Secondary	Tertiary
Brunei Darussalam	39.23268	16.81324	9.47574
Cambodia	2.57784	-	-
Indonesia	18.40642	43.35569	66.94486
Lao PDR	4.53259	3.03139	30.55688
Malaysia	13.94894	13.36705	30.65254
Myanmar	0.21168	1.2679	-
Philippines	8.31874 ^a	19.36102 ^a	56.81611
Singapore	-	-	66.02441 ^a
Thailand	19.98975	16.784 ^a	15.81985
Viet Nam	0.59545	-	13.80802

ASEAN = Association of Southeast Asian Nations; Lao PDR = Lao People's Democratic Republic.

^a 2013 data.

Source: UIS 2014, <http://data.uis.unesco.org/>