Innovation Framework and Strategies: An APO Perspective

November 2008

Preface

The drivers of productivity and competitiveness are increasingly shifting from efficiency and quality to innovation and entrepreneurship. It is important to note, however, that rather than the latter replacing the former, the latter are being added, similar to the addition of another layer of excellence. With the proliferation of products in the marketplace and rapidly shortening life cycles, it is vital to have efficient production as well as new products and services. Even as the more economically advanced countries progressively increase their innovative capabilities, it is necessary for them to continue to improve their infrastructure and processes. Conversely, developing countries should commit some resources to innovation while they strive to strengthen their basic structures and efficiency. The EU, USA, Australia, and others have been making strenuous efforts to devise and implement innovation strategies and programs. Similarly, some APO members have developed innovation blueprints and initiatives.

Realizing the importance of innovation, the APO organized a fact-finding mission in May 2007 to gain an in-depth understanding of the subject. The five-member mission visited France to attend the OECD Forum 2007 on Innovation, Growth, and Equity and met representatives of the Global Competitiveness Network of the World Economic Forum and Institute of Management Development in Switzerland.

As a follow-up to the fact-finding mission, the APO formed an Expert Group on Innovation and Competitiveness comprising selected national experts from Japan, the Republic of Korea, Republic of China, Singapore, Malaysia, Thailand, and the Philippines. The experts were responsible for formulating a common framework and strategy to harmonize the innovation efforts of member countries. Three meetings were held in Langkawi, Singapore, and Kuala Lumpur. The Malaysian Productivity Corporation and SPRING Singapore were the implementing agencies for the respective venues.

The kick-off meeting held in Langkawi, Malaysia, deliberated on issues pertaining to the formulation of a regional innovation framework and strategy for the APO. The follow-up meeting in Singapore refined the framework and innovation strategies by country clusters and identified role model countries to provide guidance on innovation and competitiveness. The findings of the expert group were shared at a forum of more than 100 stakeholders in the productivity movement in APO member countries. There was a call for open innovation and effective utilization of potential resources through global coevolution. The principle of formulating an appropriate innovation framework based on country clusters and stage of development of APO members was affirmed.

IMPORTANCE OF INNOVATION AND GLOBAL TRENDS

Today innovation can be seen from the perspective of economics, business, technology, sociology, and engineering. Innovation can relate to business models, markets, organizations, processes, products, services, supply chains, and virtually every other aspect of modern commerce. Innovation can be incremental or it can be breakthrough, disruptive, and radical in nature. There are myriad definitions of innovation. One is that of the European Union that defines innovation as consisting of "successful production, assimilation, and exploitation of novelty in the economic and social spheres." Innovation is widely recognized by nations to be an important cornerstone to achieve economic and social progress. For fruitful outcomes, innovation should be approached in a systemic, holistic, and timely manner. The World Economic Forum 2007/8 report recommends that the extent of commitment to innovation should be commensurate with the stage of national economic development, with the proposed figures of 5%, 10%, and 30% for countries in the primary, secondary, and tertiary stages of development, respectively. This suggests that even for economies that have attained an advanced stage of development ("the affluents"), innovation initiatives should be driven concurrently with continued strengthening of the basic and efficiency enhancing factors. At the other end of the scale, economies that are in the early stage of development should still attempt to allocate modest efforts and resources to lay the foundation for innovation.

The U.S. Council on Competitiveness introduced the national initiative "Innovate America" in 2003 with the statement that "innovation will be the single most important factor in determining America's success through the 21st century." Underpinning the U.S. national innovation agenda are the three crucial bases of talent, investment, and infrastructure:

1. talent – the building of a national education strategy for a diverse, innovative, and technically trained workforce, catalyzing the next generation of American innovators, and empowering workers to succeed in the global economy;
2. investment – revitalizing frontier and multidisciplinary research, energizing the entrepreneurial economy, and reinforcing risk taking and long-term investment; and,
3. infrastructure – creating a national consensus for innovation growth strategies, creating a 21st century intellectual property regime, strengthening America's manufacturing capacity, and building 21st century innovation infrastructures, i.e., the health care test bed.

The European Union launched the Lisbon Strategy in 2000 with the goal to "make the European Union the world's most competitive and dynamic economy by 2010." In a subsequent review in 2003, the concept of a multidimensional nature of the innovation phenomenon was introduced. It was postulated that while research is a major contributor to innovation, there is no value creation if there is no entrepreneurial action. Yet another observation was that further classifications in addition to technological innovations need to be identified. These include organizational innovation, business model innovation, and presentational innovation (covering design and marketing). The Entrepreneurship and Innovation Program (EIP) under the Competitiveness and Innovation Framework Program (CIP) was implemented for the period 2007 – 2013 and advocated the following:

4. access to finance for SMEs through EU financial instruments;
5. a network of business and innovation service centers;
6. support for initiatives to foster entrepreneurship and innovation;
7. eco-innovation – making sustainable development become a business reality; and
8. support for policy-making.

In May 2007, the Organization for Economic Cooperation and Development (OECD) embarked on an initiative to develop a broad-ranging innovation strategy. This strategy would incorporate:

9. a cross-disciplinary, mutually reinforcing package of policy elements and recommendations to boost innovation performance, covering non-technological innovation, both generally applicable and country-specific (good policy practices, and where appropriate, policy guidelines would be identified);

10. a framework that could be used to monitor and review the innovation environment and performance of the innovation system;
11. enhancement of the existing mechanisms and forums for international discussion and cooperation, including strengthened dialogue, especially with emerging economies and other important stakeholders;
12. analysis to clarify the links between the policy domains of a comprehensive strategy, such as those between innovation and entrepreneurship and how innovation contributes to economic, social, and environmental goals; and,
13. better metrics to identify and benchmark innovation performance and the factors and policies influencing it.

It was proposed that ICT, notably through the Internet, become a fundamental component of the global economic infrastructure. It was also observed that a coordinated, coherent, "whole-of-government" approach would be required.

Japan launched its "Innovation 25" strategy in 2006 to create a richly innovative society by 2025. This national strategy is aimed at integrating three key areas of innovation: innovation in science and technology, innovation in social systems, and innovation in human resources. The immediate measures identified for action included global environmental issues as a driver for economic growth and international contribution, doubling investment for the next generation, university reform, investment increase for science and technology to ensure the delivery of real value, and a comprehensive innovation review (of regulations, social systems, norms, and rules).

Singapore laid down the National Innovation Framework for Action (NIFA) in 1998 as a starting point to nurture innovation and develop an innovation roadmap. Eight key factors were identified as critical to the success of the innovation movement: 1) education and training, 2) government policies, 3) government support, 4) information, 5) infrastructure, 6) technology, 7) markets, and 8) human resources. Recommendations made to address the gaps were: enhance innovation education, strengthen innovation training, strengthen the linkages between market and technology, review government support, strengthen infrastructural support, improve the innovation environment, improve awareness, and review government policies and regulations.

In the Republic of Korea, innovation is focused more on government than on the private sector. In 2004, the Republic of Korea launched innovation audit programs across all 48 governmental agencies including the ministries. In fact, the World Economic Forum (WEF) reported that the Innovation and Sophistication Factor value of the Republic of Korea jumped from 4.75 in 2004 to 5.08 in 2005. In 2005, the Republic of Korea started building a "Knowledge-Based Service Industry Roadmap for 2015" for promulgating the learned concepts from the government sector to the private industry. All public companies have begun to follow this innovation roadmap. As a result, a new government division to specifically address the "Knowledge-based Service Industry" was formed under the Ministry of Industry and Energy in 2006. In 2007, innovation had further spread into the technology innovation level. Subsequently, "Integrated Industry Technology Roadmap 2020" was promulgated for all 15 industries categories in 2007. The convergence of industries has now started and the innovation has been widely understood as one of the national megatrends. In 2008, after the presidential election, the Ministry of Industry and Energy even adopted the new name of "Ministry of Knowledge and Economy" to reflect the importance of the innovation results.

In 2007, the Philippines announced the National Innovation Strategy to strengthen the country's competitiveness in the global knowledge-based economy and to transform the country into a technology hub for Asia. The strategy was to focus on four key areas: strengthen human capital, support business incubation and acceleration efforts, regenerate the policy environment for innovation, and upgrade the public mindset toward a culture of innovation.

So far, most of the other Asian countries, including technology leader Republic of China, have yet to promulgate specific national innovation strategies. In the case of Thailand, the National Innovation Agency was set up in 2003 as the core organization to coordinate, foster, and partner academia, research organizations, private enterprises, investors, and financiers. Malaysia has factored in an innovation-led strategy in its ninth Malaysia Plan. In it, emphasis is given to service innovation, and a multidisciplinary approach is taken that encompasses technology innovation, business innovation, demand innovation, and socio-organizational innovation.

While some Asian countries have drawn up their own respective national agendas to instill innovation in their societies and industries, so far there has been little collective effort to synergize and share plans and programs. Useful lessons can be learned from the initiatives and experiences of the European Union, which, like APO member countries, comprises countries at various stages of economic development. Table 1 shows the distribution of EU countries as well as APO members based on categorizations suggested by the World Economic Forum. It is clear that the spread is much wider for APO members than for the EU countries.

The Global Innovation Scoreboard (GIS) and Global Competitiveness Index (GCI) are two notable efforts to measure and compare competitiveness and innovation across nations. The GIS, adapted from the European Innovation Scoreboard (EIS), rates innovation on five key dimensions: innovative drivers, knowledge creation, innovation and entrepreneurship, application, and intellectual property. The GCI comprises 12 pillars under the headings of Basic Requirements, Efficiency Enhancers, and Innovative and Sophistication factors. The pillars under *Basic Requirements* are institutions, infrastructure, macroeconomic stability, health, and primary education. The pillars under *Efficiency Enhancers* are higher education and training, goods market efficiency, labor market efficiency, financial market sophistication, technological readiness, and market size. The pillars under *Innovation and Sophistication Factors* are business sophistication and innovation. The GIS covers the European countries, the U.S., and the five Asian economies of the Republic of China, the Republic of Korea, Hong Kong, India, and Singapore, and is innovation-centric. The GCI includes data on 131 global economies – including all APO members except Lao PDR, Fiji, and Iran, and provides a more broad-based assessment of a country's competitiveness and innovation. Since APO economies lie across a wide spectrum of economic development, the GCI would be a more appropriate platform to adopt for the proposed APO Innovation framework. For a more detailed study of innovation *per se* the GIS can be used.

Table 1: Countries/Economies at Each Stage of Development

Stage 1	Transition from Stage 1 to 2	Stage 2	Transition from Stage 2 to 3	Stage 3
APO Members				
Bangladesh (BD) Cambodia (KH) India (IN) Indonesia (ID) Mongolia (MN) Nepal (NP) Pakistan (PK) Philippines (PH) Sri Lanka (LK) Vietnam (VN)		Malaysia (MY) Thailand (TH)	Republic of China (TW)	Hong Kong (HK) Japan (JP) Republic of Korea (KR) Singapore (SG)
European Union				
		Bulgaria (BG) Latria (LV) Lithuania (LT) Poland (PL) Romania (RO)	Czech Republic (CZ) Estonia (EE) Hungary (HU) Malta (MT) Slovakia (SK)	Austria (AT) Belgium (BE) Cyprus (CY) Denmark (DK) Finland (FI) France (FR) Germany (DE) Greece (GR) Ireland (IE) Italy (IT) Luxembourg (LU) Netherlands (NL) Portugal (PT) Slovenia (SI) Spain (ES) Sweden (SE) United Kingdom (UK)

Figure 1 shows the scores of the top four EU countries for the basic requirements (BR), efficiency enhancers (EE), and innovation and sophistication factors (ISF). It is observed that all four countries have a high BR score of around 6. Denmark has the highest BR and EE scores, and the lowest ISF score. Germany, on the other hand, has the lowest BR score but the highest ISF score.

Figure 2 shows the BR, EE, and ISF scores for Hong Kong, Japan, the Republic of Korea, Malaysia, the Republic of China, Thailand, and Singapore. Japan has a relatively low BR score of 5.41 but matches the ISF score of 5.70 for Germany. Among APO members, the Republic of Korea has the second highest ISF score of 5.42, followed by the Republic of China (5.31), and Singapore (5.14).

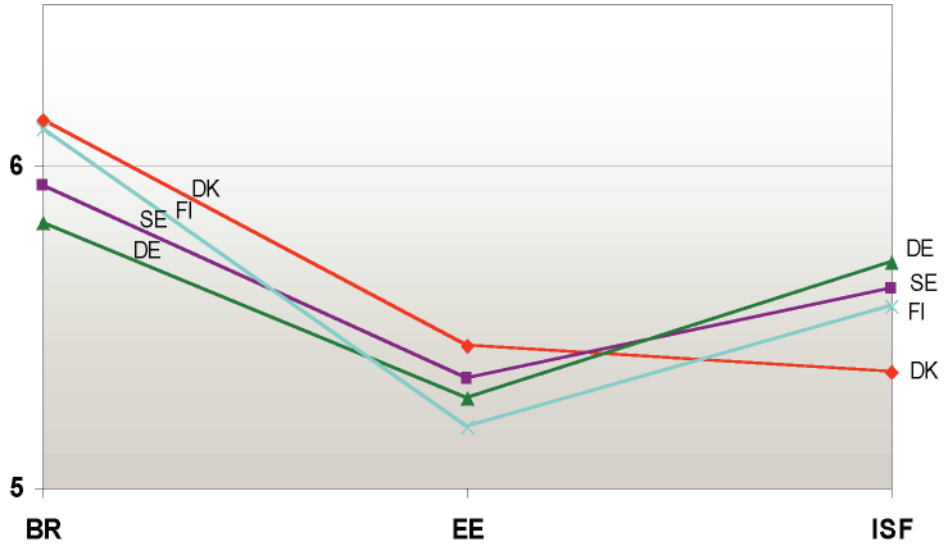

Figure 1: European Union (Top Four)

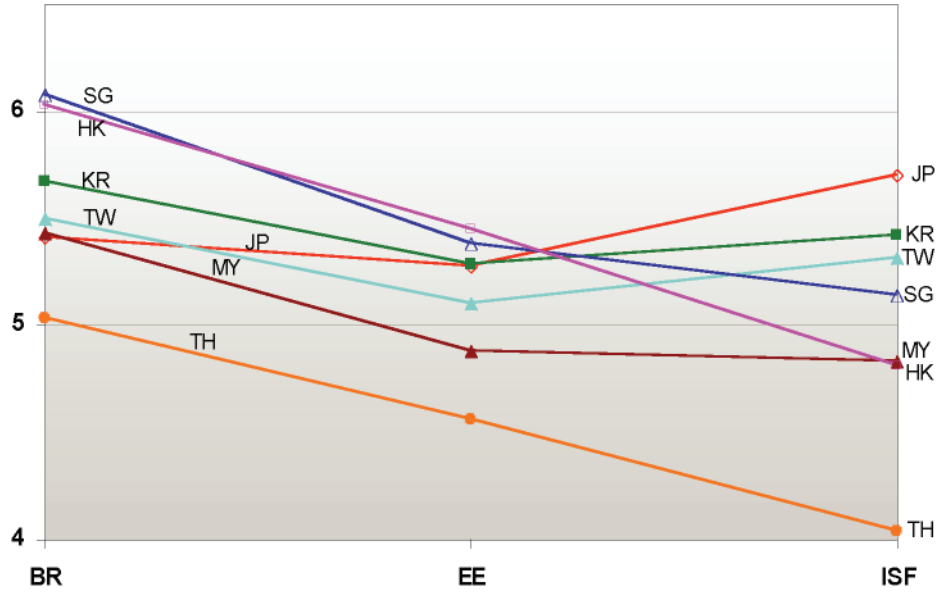

Figure 2: APO members (Top Seven)

Figure 3 provides a comparison of the top four EU countries and the top four APO members. Excluding Singapore, the BR scores for APO members are lower than for their European counterparts. The spread for the EE scores is narrower. For the ISF scores, Japan ranks well while other APO members have some catching up to do.

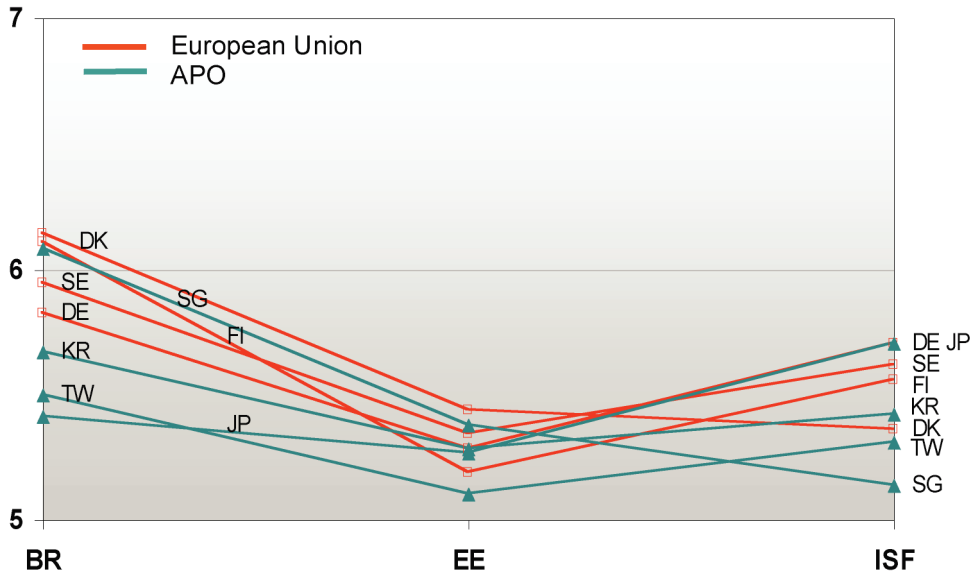

Figure 3: Comparison of APO and EU (Top Four)

Figure 4 shows the scores for the bottom four EU countries. Although Greece is categorized in stage 3 and Malta in transition from stage 2 to 3 of economic development, their overall scores of 4.21 and 3.97, respectively, are lower than those of Latvia (4.41), Lithuania (4.49), and Poland (4.28), as countries all still in stage 2 of economic development. For the bottom four countries the BF scores are between 4 and 5, the EE scores around 4, and the ISF scores between 3 and 4.

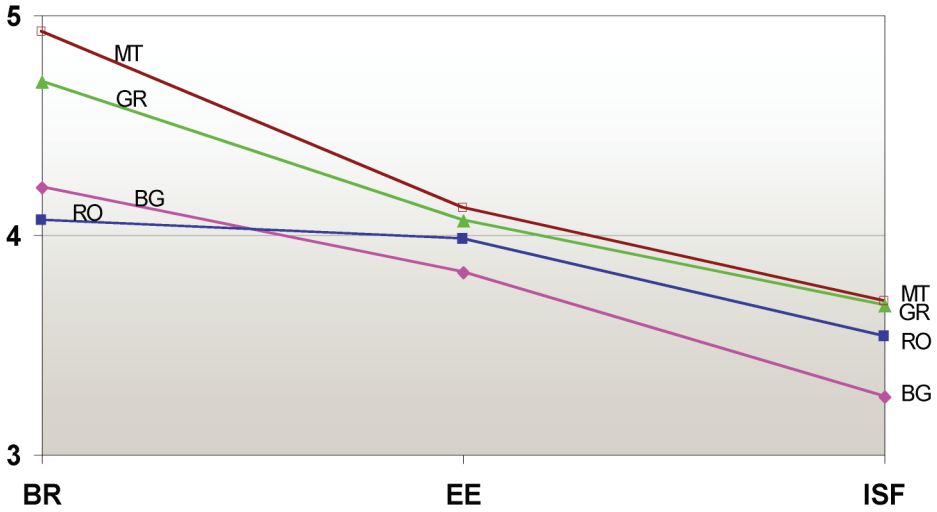

Figure 4: European Union (Bottom Four)

Figure 5 shows that for the other 10 APO member countries, three distinct tiers can be discerned: (i) India and Indonesia, (ii) Sri Lanka, the Philippines, Vietnam, Pakistan, and (iii) Cambodia, Bangladesh, Mongolia, and Nepal. India and Indonesia have BR, EE, and ISF scores of above 4. It is noteworthy that the EE scores are higher than the BR and ISF scores. For the tier (ii) countries, the BR scores are around 4 while the EE and ISF scores are between 3.4 and 4. Countries in tier (iii) have BR scores clustering around 3.5, EE scores under 3.5, and ISF scores at around 3.

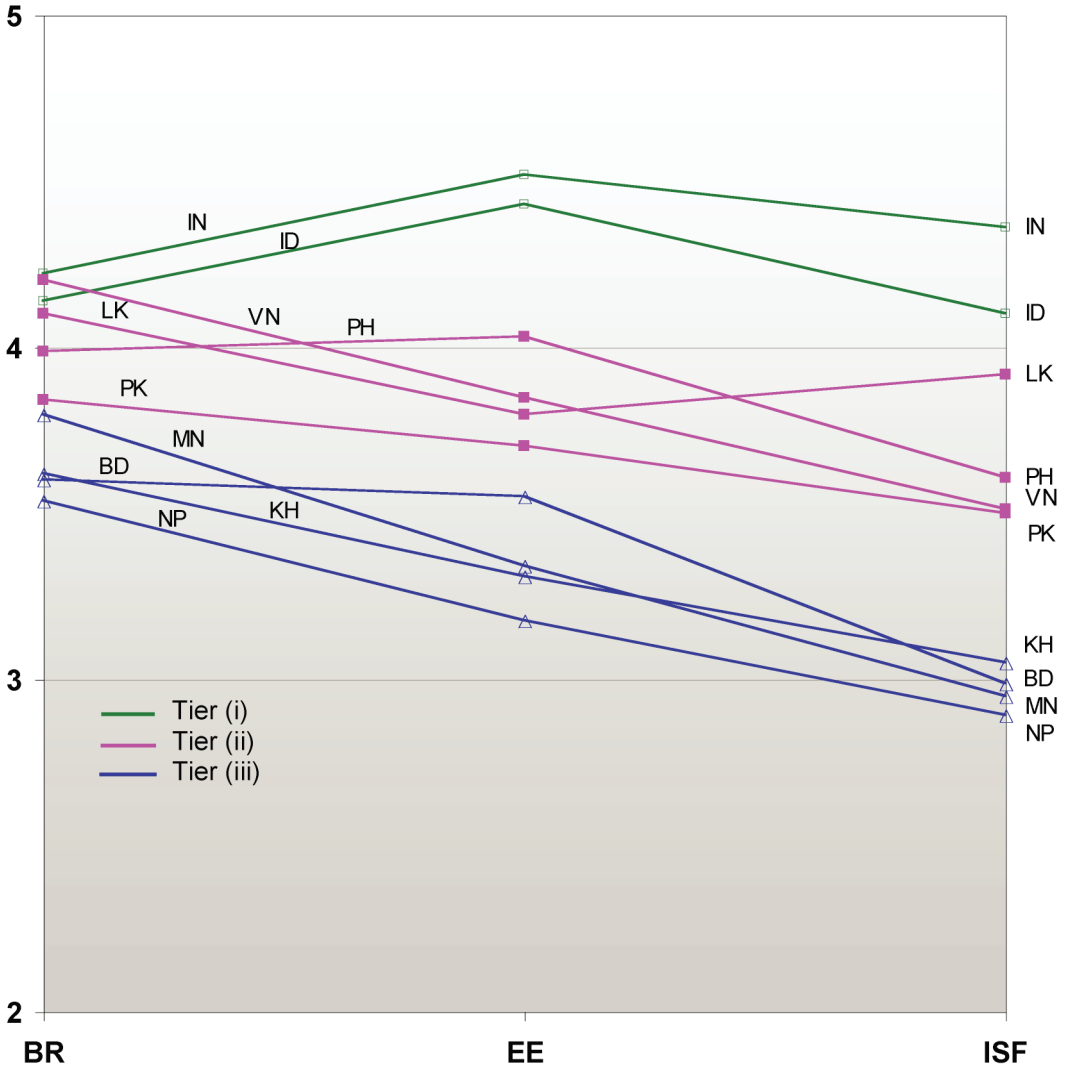

Figure 5: APO Members (Others)

Figure 6 shows that the tier (iii) APO countries have scores that are well below their European counterparts. Comparing the other end, the tier (iii) APO members are clearly behind their European counterparts in all three factors. A closer match is found for the tier (ii) members.

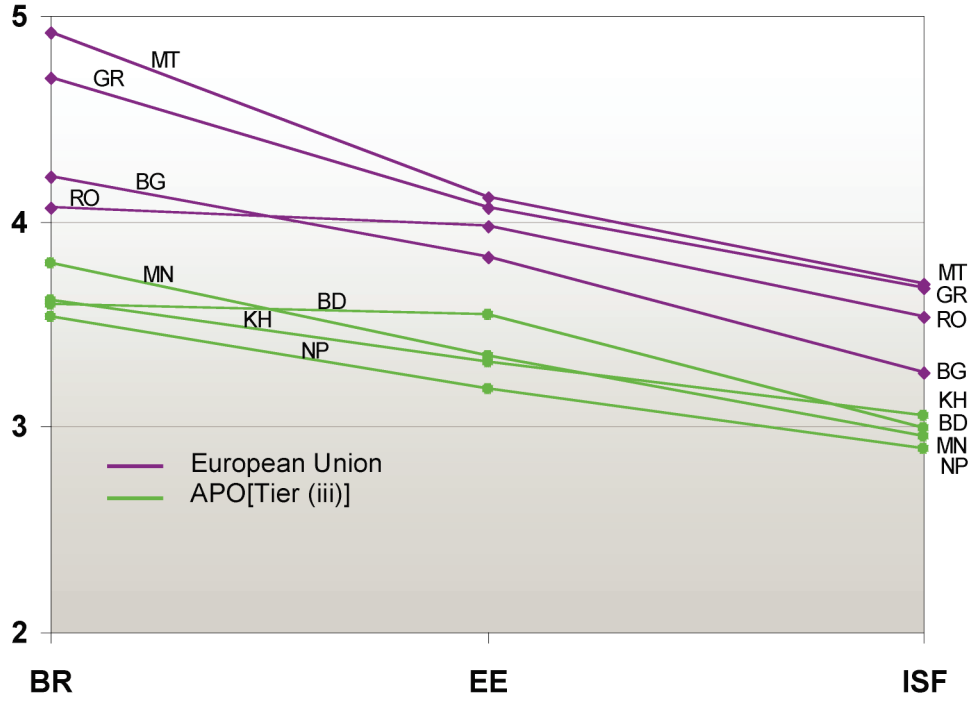

Figure 6: Comparison of APO and EU (Bottom Four)

FRAMEWORK ON INNOVATION

While Asia has emerged as a protagonist in the global economic scene, the techno-economic growth among Asian countries has been very uneven, resulting in a deepening of the divide between the front-runners and those lagging behind. The former cohort of APO members, namely Japan, the Republic of Korea, the Republic of China, and Singapore, has built up strong key institutions and they are striving to increase their innovation capabilities. These economies measure up well in the Basic, Efficiency, and Innovation factors compared to their European counterparts. The newly industrializing APO members, on the other hand, need to continue to strengthen their basic infrastructure and processes and make more headway along the innovation value chain. These economies are found to fare relatively less well against their European counterparts. In drawing up the APO Innovation Framework and Strategy it is necessary to take into account the Asian socio-cultural background as well as the varying needs and constraints across the APO membership. The framework will facilitate the charting of national and collective policies and programs and serve as a platform for exchanges and sharing of best practices.

After extensive deliberations in the Expert Roundtable meetings in Langkawi, Malaysia in August 2007 and Singapore in November 2007, the participants came up with the following terms of reference for the APO Innovation Strategy and Framework:

14. innovation shall be viewed from a broad perspective, not merely as technological improvements;
15. innovation shall be viewed across all economic sectors and industries;
16. the nature and level of commitment to innovation would vary according to the stage of national economic development;
17. clustering is a useful means to form groups with common interests and goals; and,

18. the use of role models is a good approach to level up on innovation.

Based on the rationale as outlined in the background and the findings from the APO fact-finding mission to France and Switzerland (proceedings of the 2007 OECD Forum on Innovation, Growth and Equity and visits to the WEF and IMD), the participants of the Expert Roundtable on Innovation formulated two versions of the APO Innovation Framework: a static interpretation and a dynamic view on innovation and competitiveness.

For the static framework, three major triangles of material, human beings, and knowledge form a cycle of knowledge creation by utilizing both material and human resources, as shown in Figure 7. The derived knowledge is fed into the resource side for further enrichment.

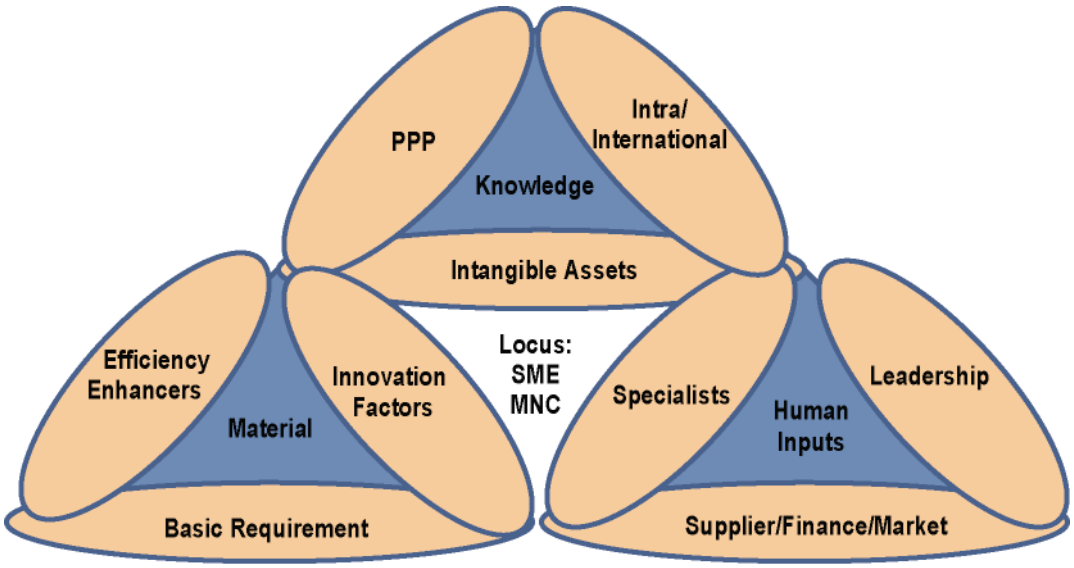

Figure 7: Static Interpretation of the Innovation Framework

At the 2007 OECD Forum on Innovation, Growth and Equity, the prerequisites of innovation were extensively discussed. In recent years, the specialist prerequisite is being emphasized alongside a focus on leadership requirements as well as intangible asset management. In fact, the focus has shifted from material-oriented innovation and competitiveness, to human- and knowledge-oriented innovation and competitiveness. Experts also stress that international and interregional partnerships as well as public/private partnerships must precede such prerequisites.

While material-related measures of competitiveness have been adopted by the Global Competitiveness Index and IMD, the OECD has proposed to also consider the aspects of the "human side" that create macro-economy, innovation, technology, and infrastructure. Although the GCI only focuses on the workforce at the labor and lower level, there is a need to focus on leadership and education to spur talent development of specialists in the areas of science and technology, research and development, and business. Likewise, while earlier models focus on investment and input resources and hope for results, we need to focus on tangible outputs of innovations, in particular, intangible assets. A diagram of partnerships and innovation prerequisites is given in Figure 8.

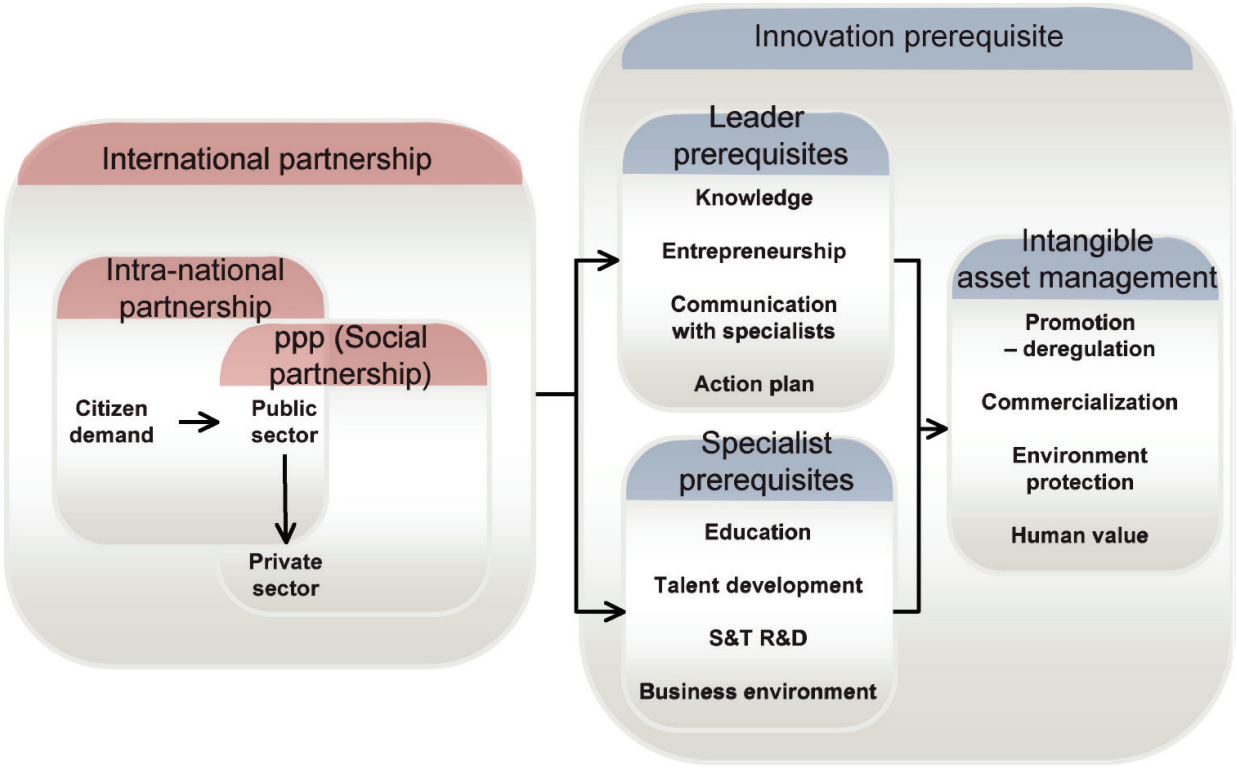

Figure 8: Partnerships and Innovation Prerequisites

The dynamic Innovation Framework as shown in Figure 9 incorporates the factors and prerequisites of innovation and competitiveness. The experts recommended that each country should create the appropriate basic requirements and economic enablers labeled as "conditions" and "infrastructure." Governments will have to establish the infrastructure and provide the material resources required for innovation. The material resources include the transportation, communications, financial institutions, legal institutions, and structures that facilitate innovations. The "conditions" include focus on leadership and training and education to foster talent development for specialists and the commercialization of innovations.

Innovations are defined broadly to include business models, products, services, processes, market relations, and new methods of organization and production. These advances that countries desire are the outcomes of innovation. This includes the creation of new knowledge, intangible assets, and improved institutional systems. The roundtable experts also highlighted that international and interregional partnerships as well as public/private partnerships are essential and must precede the prerequisites for innovation.

A continuous review and introduction of appropriate programs would ensure that the innovation drive is kept dynamic and effective. The locus or major players of the intended programs are SME (Small & Medium size Enterprises) and/or MNCs (Multi-National Corporations). Particular efforts should be made to tailor programs for SMEs. With limited resources and generally more short-term perspectives, SMEs require support in technology development and acquisition, finance, manpower, and markets. To achieve maximum impact, governments may choose to prioritize and pay greater attention to certain industry sectors and/or companies. Some countries have also decided to work through business and trade associations. It is worthwhile for APO members to learn from the best practices of one another.

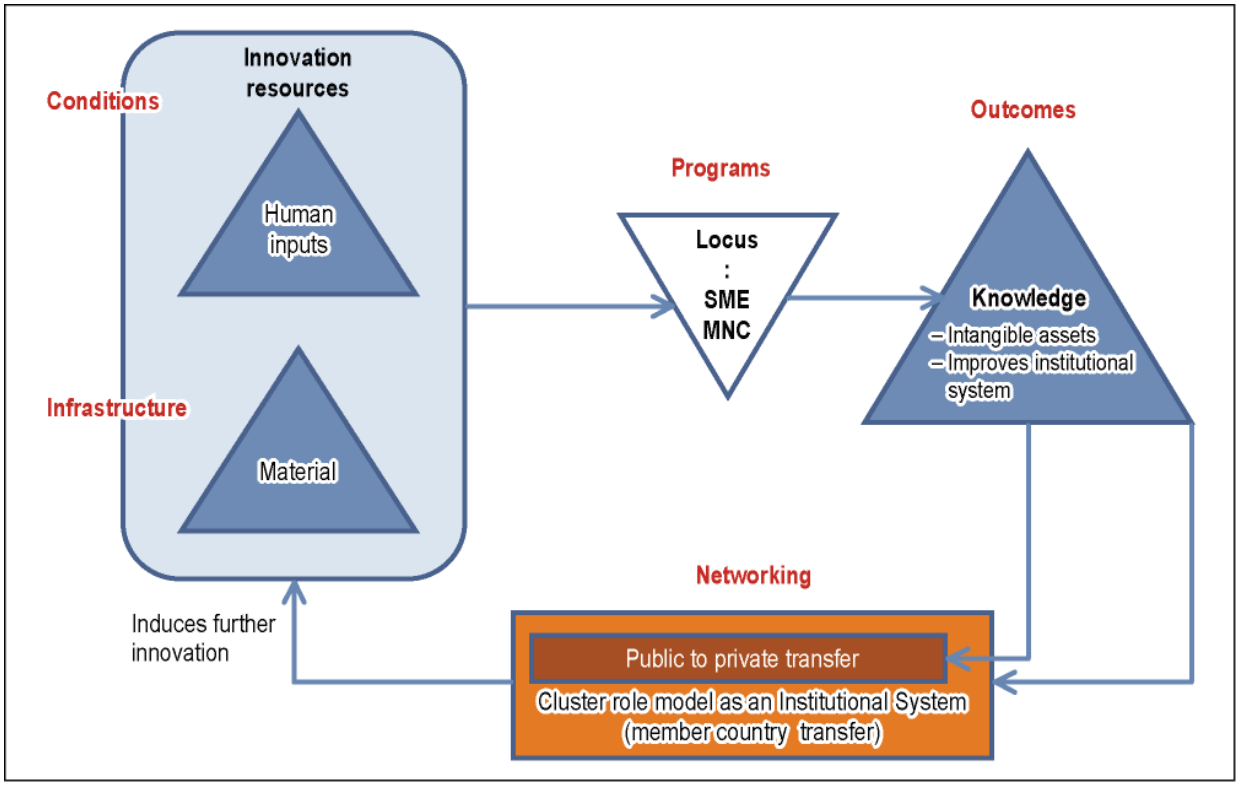

Figure 9: Dynamic Innovation Framework

When applying the proposed innovation and competitiveness model at the interregional level, for example to APO member countries, more-specific considerations are required. Unlike the cases of the GCI and IMD report, the number of countries covered is small and their economic situations are more heterogeneous. Therefore, a clustering of APO member countries into relatively more homogeneous groups is necessary. Data for the proposed model can be accumulated in future studies. For the time being, it is only possible to undertake partial analysis utilizing the material-side data available in the GCI for all APO members except Nepal, Fiji, Iran, and Lao PDR. Based upon the 2006/7 and 2007/8 GCI data, four groups from the APO members can be identified; namely:

19. Group 1: Japan, Singapore, the Republic of China, the Republic of Korea, Malaysia, and Hong Kong
20. Group 2: Thailand, India, and Indonesia
21. Group 3: Philippines, Pakistan, Vietnam, Sri Lanka, and Iran
22. Group 4: Bangladesh, Fiji, Mongolia, Cambodia, Nepal, and Lao PDR

Observing each member country's movement between groups for the most recent six years, Japan continued to maintain the top position of Group 1 while Singapore joined the top position in 2004. The Republic of China joined in 2006 while the Republic of Korea joined in 2007. Malaysia moved to Group 1 from Group 2 in 2004. Thailand consistently maintained its position in Group 2. From 2003, for 3 years, India joined Group 2, then moved back to Group 3. Indonesia joined Group 2 in 2004, then moved back to Group 3. The Philippines maintained its position in Group 3. Sri Lanka and Vietnam joined Group 3 in 2003. Bangladesh and Mongolia have constantly remained in Group 4. In Mongolia's case, GCI data were reported starting from 2005. Four members, Nepal, Iran, Fiji, and Lao PDR are not included in the table below due to unavailability of GCI data.

Table 2: Movement of APO Members within the Groupings over the Last Six Years

	2002	2003	2004	2005	2006	2007
Japan	1+*	1+	1+	1+	1+	1+
Singapore	1	1	1+	1+	1+	1+
ROC	1	1	1	1	1+	1+
ROK	1	1	1	1	1	1+
Malaysia	2	2	1	1	1	1
Thailand	2	2	2	2	2	2
India	3	2	2	2	3	3
Indonesia	3	3	2	3	3	3
Philippines	3	3	3	3	3	3
Sri Lanka	4	3	3	3	3	3
Vietnam	4	3	3	3	3	3
Bangladesh	4	4	4	4	4	4
Mongolia				4	4	4

* In the above, "rank+" means by the higher factor value in the same group.

By monitoring the growth pattern of members, it is possible to trace the development path and identify the appropriate role model for members in the lower groups. For example, Indonesia can serve as a role model for the Philippines, and Malaysia for Thailand and Indonesia. Likewise, the Republic of Korea can be a role model for Malaysia and India, as indicated in Figure 10.

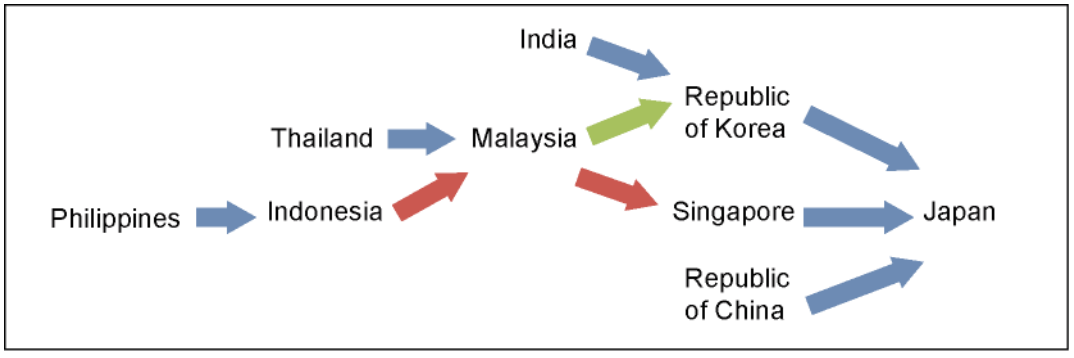

Figure 10: Potential Role Models Among APO Member Countries

In a similar vein, developed OECD countries can be used as possible role models for Group 1 APO members – Japan, the Republic of Korea, the Republic of China, Singapore, and Malaysia. Detailed analysis for the Group 1 members and quantitative analysis have been worked out during the studies. Developed countries identified as useful role models are the United Kingdom, Canada, Norway, Sweden, Switzerland, Denmark, the Netherlands, Austria, Australia, and Ireland.

We try to identify the role model countries factor by factor. For example, Canada can be a role model for the Republic of Korea in both factors of Basic Requirements and Efficiency Enhancers. By observing the most recent five-year trends of both countries, Canada's Basic Requirements (BR) factor scores are higher than those of the Republic of Korea while both countries share the same growth pattern in respect to Efficiency Enhancers (EE). However the Republic of Korea's Innovation and Sophistication Factor (ISF) scores demonstrate very unique growth patterns as opposed to those of OECD countries (Figure 11). You may observe the exceptional growth in 2007.

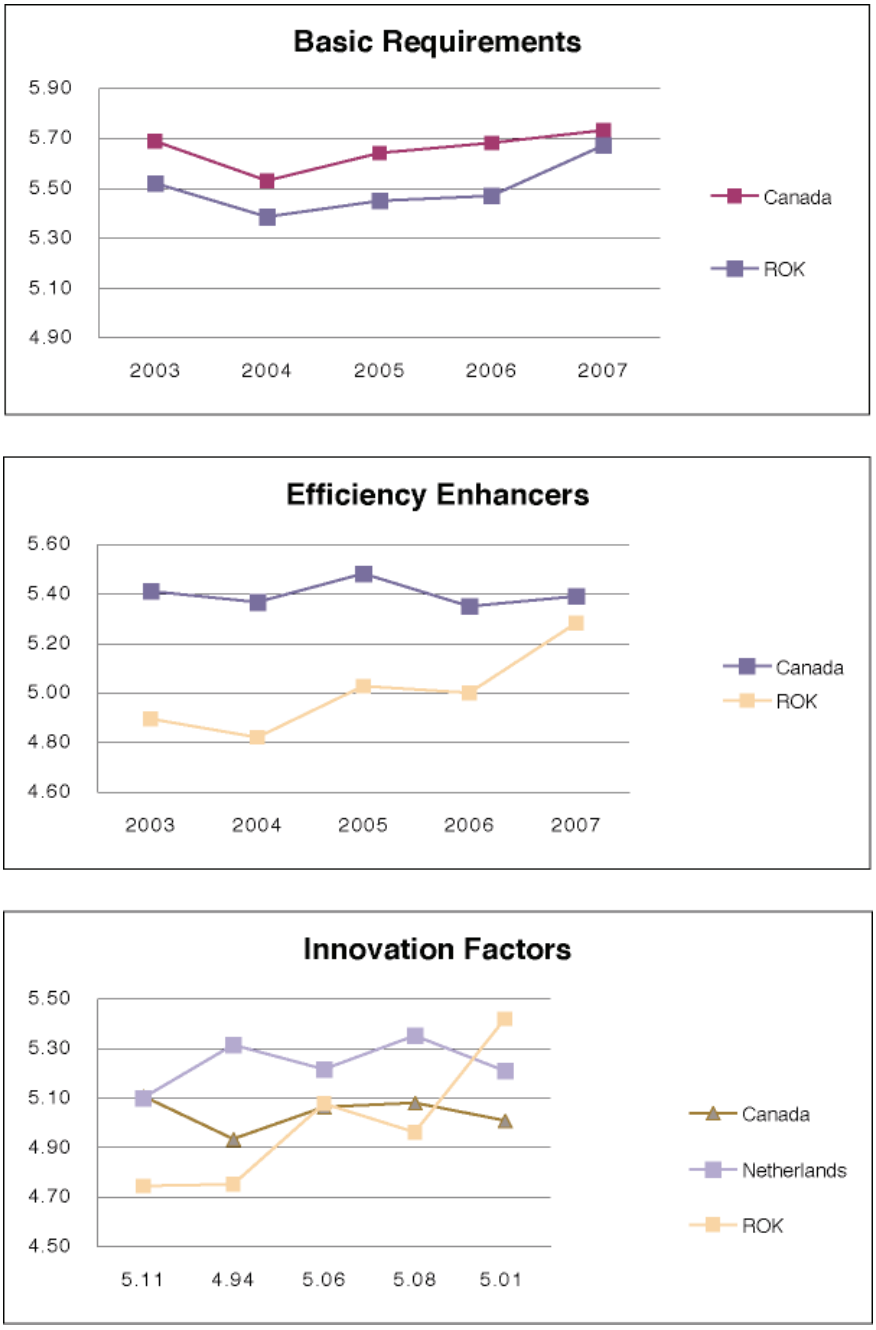

Figure 11: Example of Factor-By-Factor Role Model Countries (Republic of Korea)

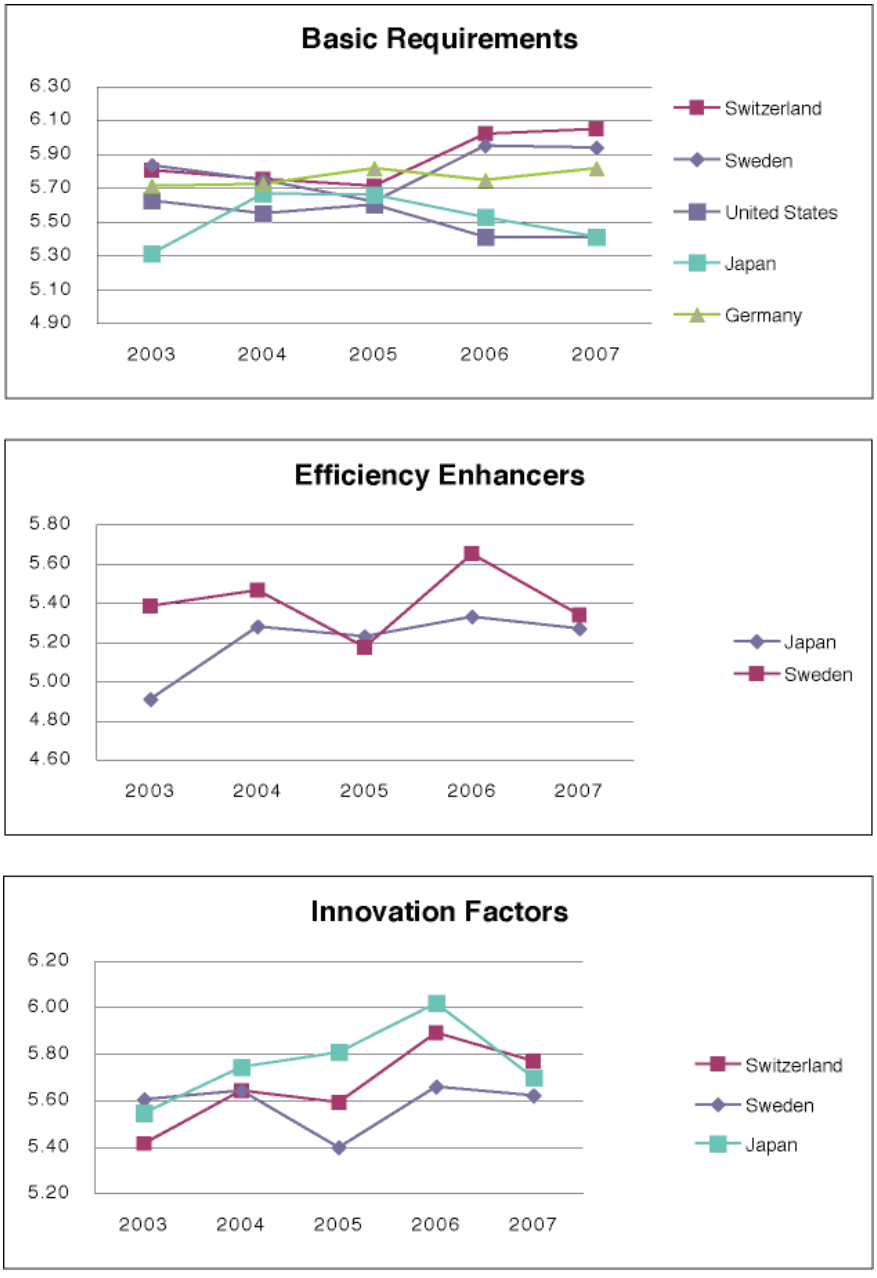

Figure 12: Example of Factor-By-Factor Role Model Countries (Japan)

Unlike other APO Group 1 countries, the Republic of China has role model countries, such as Ireland and Norway, whose factor scores are lower than those of the Republic of China while the growth pattern is the same.

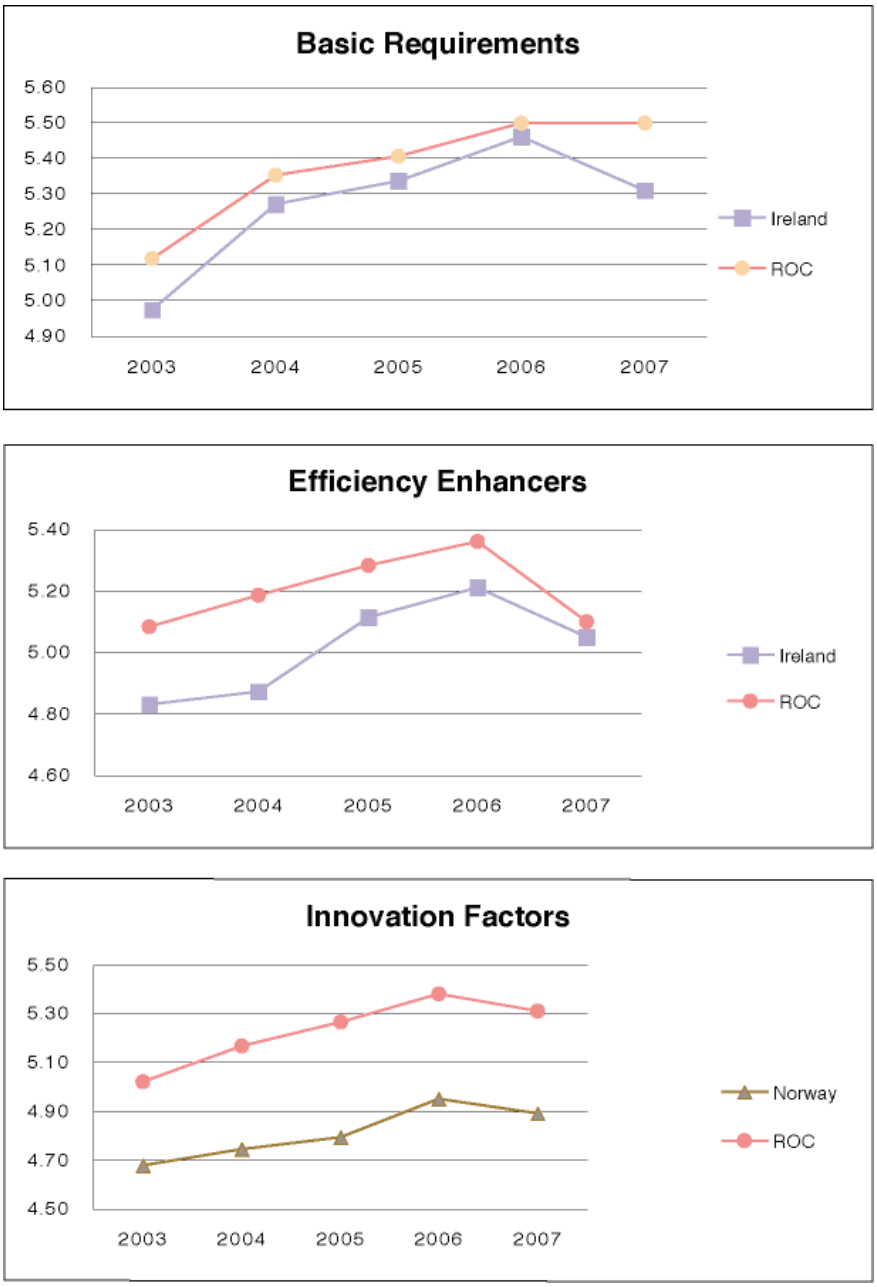

Figure 13: Example of Factor-By-Factor Role Model Countries (Republic of China)

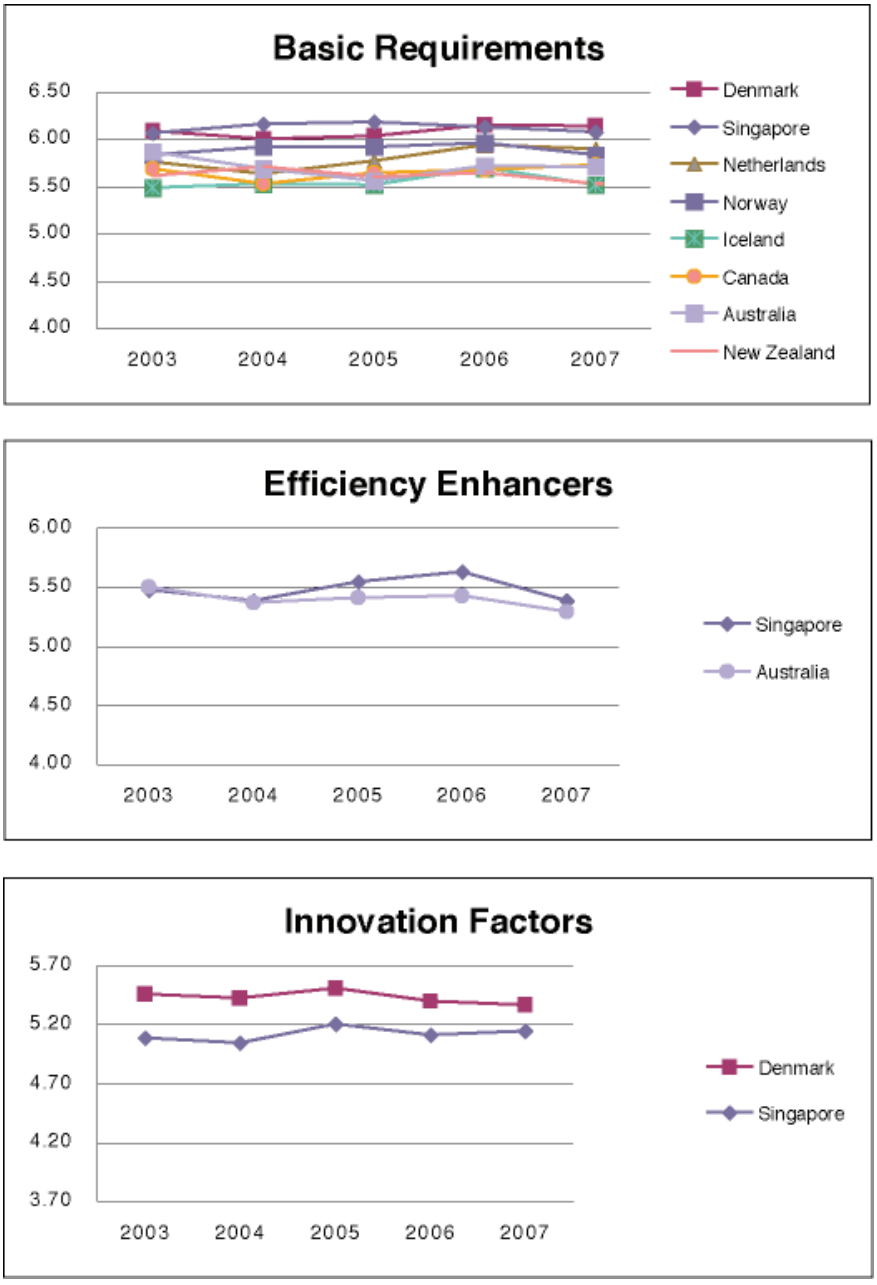

Figure 14: Example of Factor-By-Factor Role Model Countries (Singapore)

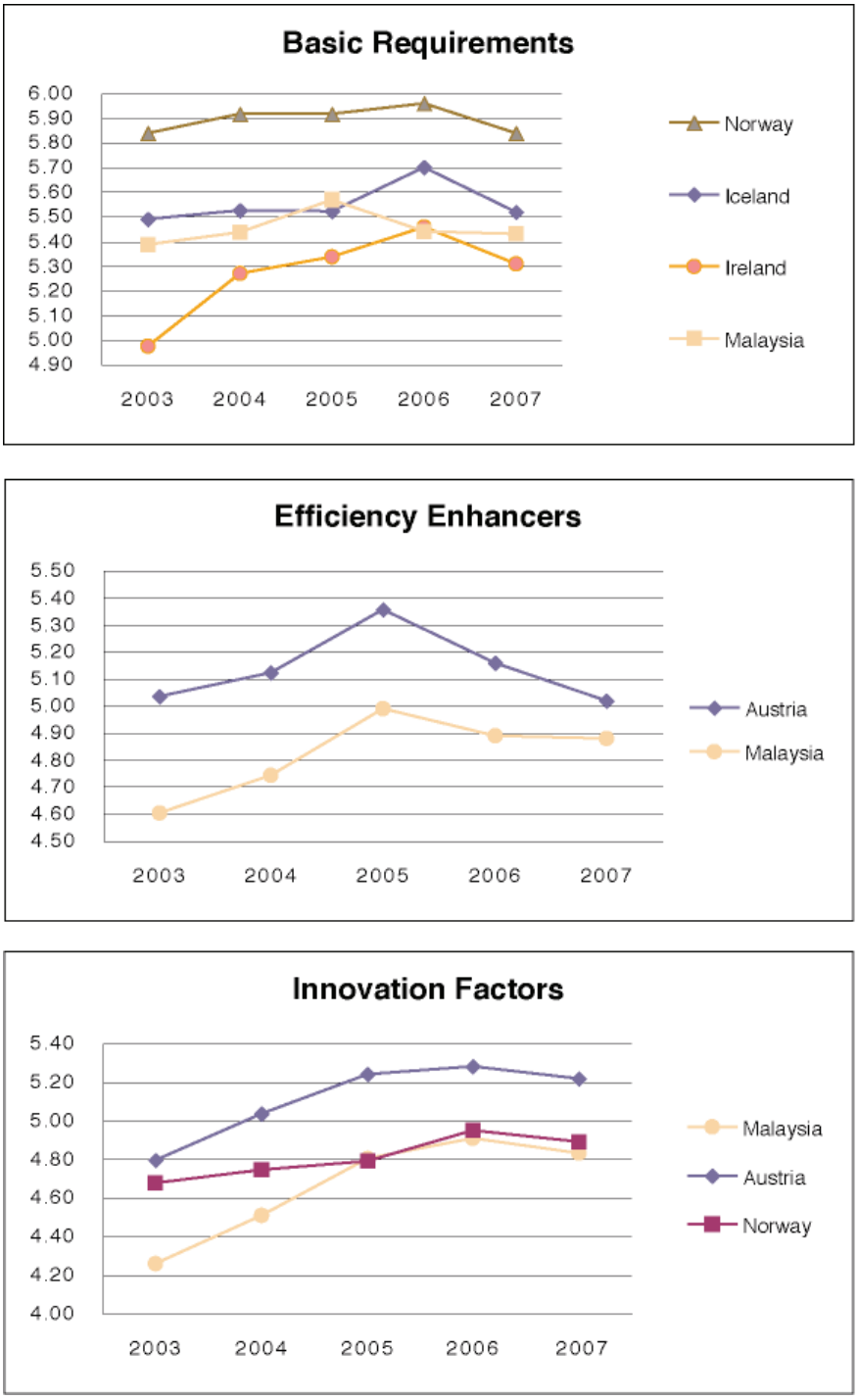

Figure 15: Example of Factor-By-Factor Role Model Countries (Malaysia)

Table 3: APO members and possible role models

	Basic Requirements	**Efficiency Enhancers**	**Innovation & Sophistication factors**
	Role model	Role model	Role model
Japan	Unique	Sweden	Sweden, Switzerland
Republic of China	Ireland	Ireland	Norway
Republic of Korea	Canada	Canada	Unique
Malaysia	Unique	Austria	Norway, Austria
Singapore	United Kingdom	Australia, Ireland	Denmark

Innovation will help member countries achieve higher productivity and competitiveness. In turn, increased productivity will lead to the sustainable growth and development, thus help to achieve a better quality of life. Innovation now prevailing in various emerging sectors including health, energy, environment, information and communication, finance in the form of both high technology applications, and/or service improvements, as shown in Figure 16.

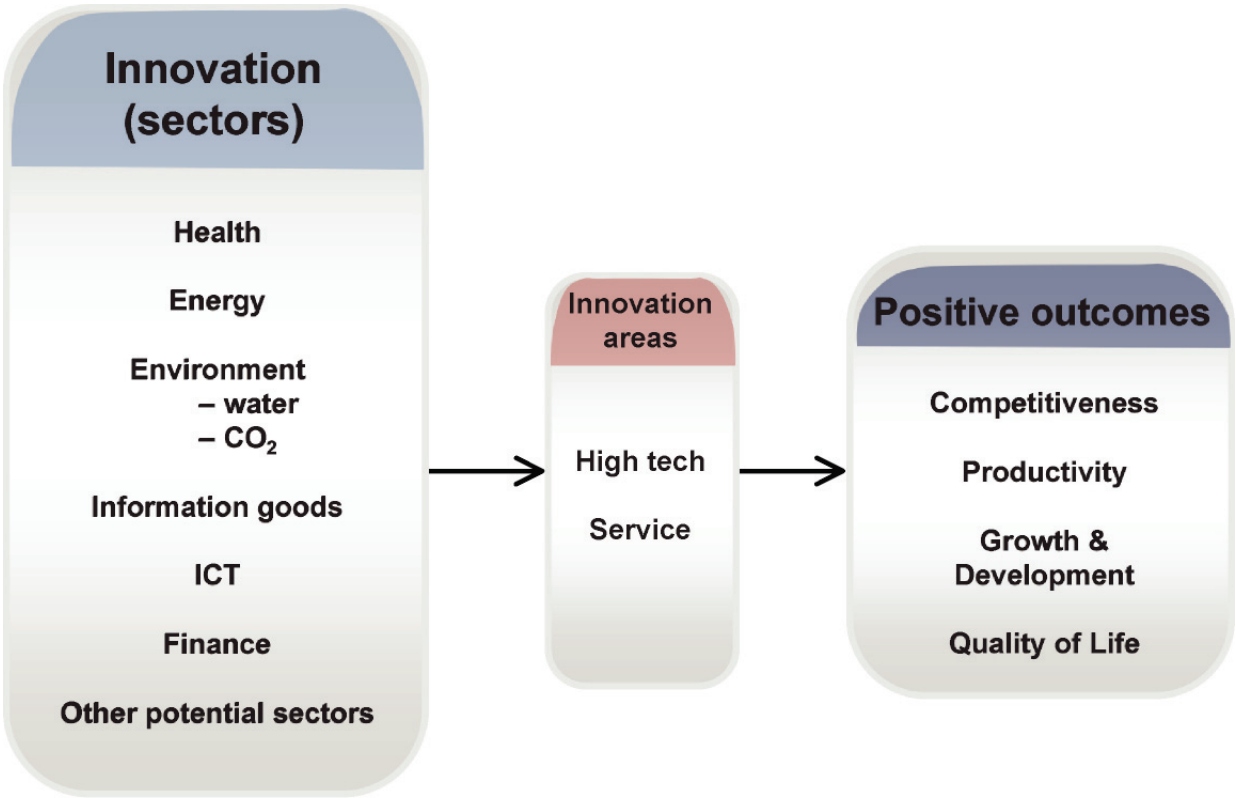

Figure 16: Innovation applications and outcomes

CONCLUSIONS

After extensive deliberations by the expert group over three meetings in Langkawi (Malaysia), Singapore and Kuala Lumpur, the following salient observations were derived:

1) The level of commitment to innovation among APO members should be tailored to the stage of economic development of individual members;
2) The outcomes sought and areas of focus may vary among the APO members;
3) The grouping of members will facilitate the sharing of best practices among cohorts;
4) The adoption of role models from higher groups would accelerate the learning process;
5) The European Union can serve as a good reference to benchmark the progress and achievements of APO members; and,
6) The data available in the GCI can serve as a good mechanism to measure and compare the competitiveness and innovation capacity of APO members and their international counterparts.

The expert group also formulated static and dynamic versions of the Innovation Framework that could be adopted as a reference framework by APO members.

RECOMMENDATIONS

The Expert Group on Innovation focused largely on the seven participating APO members. More APO members were involved in a follow-up forum in Kuala Lumpur. As suggested by the WEF, even countries that are at an earlier stage of economic development should attempt to allocate some resources to build up their innovation capabilities. More innovation programs should be organized by APO for members to gain greater awareness and share best practices. While the GCR provides a good assessment of competitiveness and innovation, later studies may wish to consider the use of other measures such as the Oslo Manual.

Innovation is recognized internationally to be an important driver for economic and social progress and well-being. The United States and European Union have drawn up the comprehensive blueprints and programs to forge ahead. It is imperative for APO members to keep up. Observational study missions to these countries would be beneficial for APO members to appraise their comparative positions and understand the challenges and best practices.

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