Globalization and
Japan's Science and Technology Strategy

19 – 20 November 2007

Tokyo

Session 3

Tuesday, 20 November 2007

**Who is capable of leading our journey toward
resolving global issues through innovation?**

Yoko Ishikura

Hitotsubashi University

"Who is capable of leading our journey toward resolving global issues through innovation?"

Session 3: Innovation Policy and Global Issues

"Globalization and Japan's Science and Technology Strategy"

Institute for International Policy Studies

November 19-20, 2007

Yoko Ishikura, Professor, ICS, Hitotsubashi University

December 17, 2007

<u>Introduction</u>

It is some time now since innovation became a buzzword throughout the world.   In the academic community, the number of papers on innovation has increased dramatically since the latter half of the 1990s[1]. It is almost impossible to find business articles or annual reports not containing the term "innovation", as many firms now realize that innovation is the only means to sustain their competitive advantage. A continuous race is underway for "new" products, services, and markets. Innovation has also become a key agenda for public policymakers throughout the world, often in the form of national innovation policy initiatives, regardless of the stage of a country's economic development.[2]

These efforts for innovation have achieved some results, and yet there are two fundamental issues to be addressed more explicitly today.

The first issue is the gap between the scope of these national initiatives and that of the global issues we face today, as well as the need for a more integrated and comprehensive approach at the global level.   The second issue, though closely related, is the collaboration between public and private sectors and the increased role the private sector could play in efforts to resolve these issues.

In this paper, I argue that because private sector companies are the ones that create value through innovation and are in the best position to seek profitability, growth and a sustainable society at the same time, the private sector should be taking a more active role in our quest for innovation than in the past. By capitalizing on their experiences of daily global competition, private sector companies could and should be complementing the public sector. They should collaborate in a more proactive manner through joint

---

[1] "Oxford Handbook of Innovation" Ed. Fagerberg, Jan, Mowery David C. and Nelson, Richard, Oxford University Press pp.2

[2] "Overseas Science & Technology Trend Report"(in Japanese) Center for Research and Development Strategy, Japan Science & Technology Agency, 2006 and 2007

efforts to resolve global issues. The public sector, on the other hand, is quite limited, by definition, to address issues beyond national boundaries and is not capable on its own of achieving the goal of economic growth and a sustainable society.

Issues we face today - mostly global in scale and scope

In the face of globalization, in which economies have become inter-related and inter-dependent, thus competition transcends various national, industrial and organizational boundaries, many of the issues we face are global in scope and scale. (Exhibit 1)

The search for alternative energy sources to the fossil fuels we have depended upon so heavily has been underway for quite some time.[3] The need for alternative energy sources including nuclear energy has become even more urgent, with the demand for energy expected to rise sharply in the next decade. The general consensus today is that there is no single source of energy capable of meeting the rapidly growing demand. It is also generally agreed that this issue will not be resolved within one country, as the rising demand for energy comes mainly from emerging economies such as China and India, where many products and services are produced for export to markets such as the U.S.[4]

Environmental issues such as global warming do not recognize national borders, and thus need to be resolved as such. The fact that former U.S. Vice President Al Gore and the IPCC (Intergovernmental Panel on Climate Change) were awarded the Nobel Peace Prize in 2007 for their contributions in raising global awareness of the status and causes of global warming, calling for immediate action on a global scale indicates the global nature of the problem very clearly.[5]

Demand for resources such as food and water is more prevalent in regions such as Asia, Latin America and Africa, where civil and tribal wars take place over the fight for resources.[6] Advanced economies cannot escape from the resource constraint problem, as the battle in emerging economies affects the global price of commodities such as food.

Healthcare is also a global issue, as there are still some regions, including in Africa and Asia, where basic hygiene and health have not been secured. In a global era with people moving around constantly, there is the possibility of epidemics such as avian flu

---

[3] For examples, see discussion at Science & Technology in Society (STS) Forum at
http://www.stsforum.org/
[4] See the latest report by IEA   http://www.worldenergyoutlook.org/
http://www.iea.org/Textbase/press/pressdetail.asp?PRESS_REL_ID=239
[5] For announcements on the Nobel Peace Price 2007 and related information see
http://nobelprize.org/nobel_prizes/peace/laureates/2007
[6] See discussion on STS Forum, 2007 (op.cit.)

traveling extremely quickly throughout the world once they break out. [7]

<u>National innovation ecosystem initiatives - broad-based, but within national boundaries</u>

  Recent years have seen many national innovation ecosystem initiatives in a number of countries. Often-cited examples include the National Innovation Initiative of the U.S. (well known for its "Innovate America" report)[8], the EU's Aho report[9], and Innovation 25, a recent attempt by Japan.[10] Emerging economies such as China and India have also launched national innovation policy initiatives at an accelerating pace, catching up very quickly with initiatives in advanced economies.[11] These initiatives are characterized as having a "broad-based, ecosystem" approach, different from the traditional approach, which focuses mainly on science and technology. Aware of the need to build an innovation-friendly environment, they cover various aspects of the social system, such as human capital, education, investment and infrastructure. Japan's Innovation 25 and similar national initiatives by Singapore, South Korea and China are all broad-based in their approach, and thus comprehensively seek reform and innovation in the social system that goes beyond simple science and technology or R&D investment. (Exhibit 2)

  These initiatives have had mixed results in promoting innovation through creating and enhancing an innovation-friendly environment. Some policies, for example, have been implemented with financial budget support and with actual changes in regulations and tax policies promoting the smooth flow of risk capital, while others remain as "slogans" rather than "actions" implemented by all involved parties.

  What is more significant, however, is that the majority of these initiatives focus on building "national" innovation ecosystems, rather than explicitly addressing global issues. (Exhibit 3)

  Initiatives such as "Five for the Future", very recently launched by the Council on Competitiveness in the U.S., recognize the need for a comprehensive and integrated approach at the global level.[12] This approach is different from the former National

---

[7] For an example of this, see http://www.who.int/en/

[8] "Innovate America" (2004) "Competitiveness Index: Where America Stands" (2006) Council on Competitiveness, Washington D.C. http://www.compete.org

[9] "Creating an Innovative Europe -Report of the Independent Expert Group on R&D and Innovation appointed following the Hampton Court Summit", Aho, E., Cormu, J. Georghiou L. Subra A (2006) Rapporteur: Luke Georghiou, January 2006

[10] For an executive summary of the Innovation 25 Interim report in English, see http://www.kantei.go.jp/foreign/innovation/interimbody e.html

  For the long term strategic guideline "Innovation 25", see the summary of Kiyoshi Kurokawa's key note speech at Global Innovation Ecosystem Conference 2007
http://www.gies2007.com/en/symposium/summary/kurokawa.html

[11] Global Innovation Ecosystem 2006: http://crds.jst.go.jp/GIES/archive/summary.htm

[12] "Five for the Future" 2007 Council on Competitiveness, Washington DC

Innovation Initiative. The EU's Framework is expected to play a similar role beyond the region under immediate EU control.[13] However, these initiatives are just starting and clear action has yet to be taken to address the global nature of the issues.

<u>Private sector companies - filling the gap?</u>

In order to fill this gap between national innovation ecosystem initiatives and the global nature of the issues we face today, I propose a more active role on the part of private sector companies.

It is quite natural that the public sector leads initiatives in the early stage of the economic development of a nation, building basic infrastructure such as transportation, utilities and telecommunications, and putting basic education and healthcare systems in place. The aforementioned initiatives to build a national innovation ecosystem follow these basic efforts, as governments realize the need to continuously innovate to attain economic growth and prosperity. A national innovation ecosystem calls for collaboration between the public and private sectors, and the term "ecosystem" itself signifies the evolutionary interaction of various players - specifically, the government, companies of various sizes, universities, and service providers.(Exhibit 4) In actual fact, a number of efforts have been made to promote collaboration between the public sector, universities and business community. [14]

What I want to propose is an even more active role on the part of private sector companies in resolving global issues.

The rationale is as follows: (Exhibit 5)

1) The global arena is the reality for private sector companies.

Private sector companies face the reality of global competition every day and they make every effort to survive by tapping resources and reaching for markets throughout the world.[15]

With the exception of companies whose operations are constrained to one nation or region, such as utilities companies, many companies today operate in the global arena. With the progress of ICT (Information and Communication Technology), these companies are becoming increasingly able to seek and hire people with the required skills, regardless of nationality, age, background or physical location, to collaborate on

---

[13] For Innovation Policy and other initiatives updates, see
http://cordis.europa.eu/innovation/en/home.html
[14] See "National Innovation Ecosystem Initiative for Science-based Innovation 2006" (Japanese),
Center for Research and Development Strategy, Japan Science and Technology Agency, for example.
[15] For examples, see "What Matters" McKinsey & Company, 2007

projects. The possibility of tapping global talent is more significant, as the economy seems to be in the process of shifting from a knowledge-based to concept-based economy. In the concept-based economy, human capital and other intangible assets have become more critical and will be even more so for a sustainable competitive advantage, rather than tangible assets such as physical plants and equipment.

With constant access to the Internet and the emergence of companies such as Google and e-Bay, companies are able to reach consumers and penetrate markets in physically distant locations.[16]

At the same time, the competition companies face today is no longer limited to their rivals in the "industry" in certain geographic markets. Competition may emerge from anywhere in the world, such as the emerging economies of India and China, or from different industries as the definition of 'industry' becomes blurred.

This "global" scope is the reality for private sector companies as they face this issue on a daily basis. Companies have now accumulated the know-how to tap resources from throughout the world and market their products and services beyond national boundaries.[17]

2) Management of complex value chain activity networks throughout the world

As characterized by the term "globally-integrated enterprises", global giants such as IBM now locate their value chain activities at optimal locations throughout the world and manage them as a complex network.[18] They are not limited to activities in certain geographical areas, unlike the public sector. In addition to physical supply chain networks where materials and parts are sourced, processed, assembled and transported to numerous locations throughout the world, knowledge and know-how networks are being set up and utilized on a trial and error basis by companies. The virtual global network has become more important now that a certain type of knowledge (often called "explicit" knowledge) is rapidly becoming a commodity.[19] Knowledge and know-how are exchanged, shared, and re-created throughout the global network, for example, in the financial services, consulting and other knowledge-intensive sectors.[20]

In addition to the global giants, small IT entrepreneurs, such as those from India, are also targeting the world market from the outset, and thus setting up complex value

---

[16] About discussion on Forces at work and their implications for business strategy, see for example, "Business Strategy in the Web2.0 era"(in Japanese), Ishikura, Y, Think, Winter, 2007

[17] See some discussion at World Economic Forum, Annual Meeting of New Champions 2007, for example, http://www.weforum.org

[18] "The Globally Integrated Enterprise" Palmissano, Samuel, Foreign Affairs, May/June, 2006

[19] See "Act Globally, Think Locally" Ishikura Y, Harvard Business Review, Feb.2007.

[20] For example, see the WEF Annual Meeting of New Champions, 2007 (op.cit)

chain activities beyond their domestic markets, which are far too small for their products and services.[21]

Private sector companies, through their efforts to manage such a complex and ever-changing network of operations, have accumulated know-how in addressing global issues such as immigration, differences in physical distribution, consumer behavior and culture etc. This kind of intangible asset base can only be accumulated through actual experiences (i.e. learning by doing) and through a great deal of trial and error. It has enormous value, as it cannot be acquired from textbooks.[22]

3) Value is only created by the private sector

Value creation, and not value distribution, is at the heart of our journey towards economic prosperity and a sustainable society. Value needs to be created before it is distributed and it is private sector companies, and not governments or universities, which translate new knowledge into the products or services which benefit consumers. As is clear from the excellent example of Singapore in the late 1970s and 80s, the more recent example of China, and the development of the Eastern bloc countries, in contrast to the struggles in Africa, economic development should precede or take place in parallel with the democratization of countries. If economic policies are not integrated with the social and political agenda and the standard of living does not rise, social unrest or political instability usually result. Value should be created first and private companies are the main players in creating value over the long run, even in developing economies.[23]

For advanced economies such as the U.S., Western European countries and Japan, wealth needs to be continuously created by innovation and entrepreneurship to maintain the dynamism of the nation and upgrade the economy.

Existing companies in the private sector, in their pursuit of profitability and growth, and new entrepreneurs, whether high tech or not, play the main role in wealth creation.[24]

4) Corporate social responsibility beyond national boundaries

Recent years have seen many more private sector companies take on issues once

---

[21] For example, see the panel discussion summary at Global Innovation Ecosystem 2007, http://www.gies2007.com/en/symposium/summary/panel/html

[22] "Knowledge Creating Company," Nonaka, I and Takeuchi, H 1995, Oxford University Press

[23] See case studies and other research at Institute of Strategy and Competitiveness, Harvard Business School, http://www.isc.hbs.edu

[24] For small companies impact on U.S. competitiveness, see "Where America Stands: Entrepreneurship" Council on Competitiveness, 2007

thought of as public.[25] This includes various efforts to develop human capital – for example, science and technology education at primary and secondary schools, immigration policies, and the retraining of displaced workers in manufacturing. In addition to efforts to build and upgrade the regions that private sector companies locate to, more companies have begun "philanthropic" activities beyond national boundaries.[26]

Various activities by the private sector in the U.S., for example, concerning energy efficiency and environmental issues, provide us with one such example. Unlike the Bush administration, which has not been known for its strong commitment to the issue of global warming, private companies such as IBM, BP, Wal-Mart, and P&G have led recent efforts to re-build and re-design value chain activities with energy efficiency and environmental friendliness in mind. CSR investment funds have become quite popular and have become a part of investment portfolios. The ranking of companies in terms of their social responsibility and contribution to a friendly environment for customers, employees and the community, and not only in terms of profitability, has become more prevalent today.[27]

Judging from the agenda and issues discussed at world-level conferences such as the World Economic Forum, it is clear that the trend toward a more socially-conscious corporate agenda will remain an important standard. More evidence and studies have become available which show that social responsibility and long-term profitability is not a trade-off.[28]

5) Social entrepreneurs

There are an increasing number of social entrepreneurs emerging. The Gates Foundation, headed by Bill and Melinda Gates, is the organization with the largest endowment in the world and is known for its business approach to social issues. Various activities of the Gates Foundation, such as its Global Health project, and the announcement by Bill Gates of the full commitment to the Foundation in 2008 have encouraged more people to take this combined approach.[29] Heightened interest in developing countries among the younger generation in the U.S., for example, indicates a clear awareness of the issues at large beyond national boundaries.

Most social entrepreneurs are, in a way, a hybrid between the private and public

[25] "Strategy and Society: Linking Competitive Advantage and Corporate Social Responsibility" Porter, M.E, and Kramer Mark ,Harvard Business Review, December 2006
[26] See panel discussion at GIES2007, also New York Academy of Sciences, http://www.nyas.org
[27] "The McKinsey Global Survey of Business Executives" McKinsey Quarterly, January 2006, November 2007
[28] "CEOs on strategy and social issues" The McKinsey Quarterly, October 2007
[29] Gates Foundation, http://www.gatesfoundation.org/default.htm

sector. The aggressive use and application of business skills and concepts, in particular entrepreneurship and innovation, is expected to help resolve global issues in the future.

The Nobel Peace Prize of 2006 went to the Grameen Bank and its founder Muhammad Yunus for his microfinance to help impoverished women in Bangladesh to become self-sufficient and independent. This is another example of social entrepreneurship.

Implementation - existing or new organization?

How, then, could private sector companies become more proactive in this ambitious and challenging task of resolving global issues? It is clear that a single company, however large, cannot do this job alone. The private sector cannot accomplish this job on its own, either.

I would like to propose a new type of diverse and open organization, which is a hybrid of the real and virtual (more virtual than real in its activities), as an agent for change for this purpose. (Exhibits 6 and 7)

The reasons for this are as follows:

1) The organization needs to have a clear, distinctive mission and vision beyond those of any particular organization, whether company, government, or university, to resolve global issues. Thus it needs to be diverse, covering a variety of sectors.

Most of the existing organizations, including established business associations, semi-governmental organizations or university consortiums in Japan have a long history and tradition, which would limit their activities. The majority of these organizations tend to have an origin in one of the three sectors - business, government or academic. In that sense, they do not meet the requirement for diversity. Furthermore, they tend to be "perceived" as representing a certain sector or group, which would hinder their activities.

Existing organizations, in addition, have members who have worked hard to make the organizations into what they are today. It is natural that they have pride in building such institutions. It requires more energy and time to transform an existing organization with a long tradition, certain culture and administrative heritage than to create a new organization with a clear vision and mission for the future.

2) The organization needs to have a clear strategy of applying "innovation" to resolve global issues. As global issues requires complex problem solving (see Exhibit 8 for the typical problem solving process) in the unexplored area, the new organization

needs collaborative and competitive style where new ideas and concepts can be developed, tried and implemented, preferably in an open space.

3) The organization needs to make the best use of the most up-to-date technology, in particular, ICT which functions as an enabler for connecting individuals, groups and organizations beyond various borders.

The new organization should take every advantage of current and upcoming technology. ICT has progressed and will continue to progress at an unprecedented speed, enabling communication, whether audio or visual, regardless of global location. Existing organizations, on the other hand, are in most cases trapped by both technologies and mediums of communication which are less up-to-date and by working together through conferences or meetings, with written reports completed months later.

It is easier to design an organization with virtual forums and a virtual platform from scratch than to attempt to transform existing systems and upgrade them, as the latter approach tends to face many obstacles and challenges from inherited systems and processes. In a virtual platform and forum, people can share knowledge and know-how and interact freely beyond physical space.

In addition, it is often pointed out that the economic and social revolution and change triggered by the progress of ICT, is still only half complete, leaving many more new opportunities for the future.[30] The major features and requirements of more advanced ICT, both present and future, such as the personalization, decentralization, importance of intangible assets and co-existence of two elements once considered a trade-off (global and local, individual and organizational, competition and collaboration etc.) sometimes go against the traditional mentality of mass market, centralization, physical assets, and above all, existing power structures.[31]

It is far more efficient (speedy) and effective (fits the objective) to start a new organization in cooperation with people who are ready for the new requirements and mind-set. Virtual medium will go a long way toward resolving the problem of increasingly scarce time resources of the members and member organizations.

4) The organization needs to have readiness to collaborate with similar action-oriented, adaptive and evolving organizations in other countries.

As one of the major objectives of the new organization is the tackling of global issues,

---

[30] "Technological Revolutions and Financial Capital: The Dynamics of Bubbles and Golden Ages" Perez, Carlota, Edward Elgar Publications, 2002
[31] "Business Strategy in the Web2.0 era" Ishikura, Y. (2007) op.cit

it is imperative that the organization has a global perspectives AND infrastructure for global collaboration.

A global perspective is easier to accomplish as it is more of a mind-set and mentality based upon real experiences. It would be possible to ensure that the participating organizations and/or members have a global perspective rather than national or regional perspectives.

The difficulty lies in the infrastructure for global activities. In order for a diverse organization to have collaborative/competitive interaction, the communication medium needs to be based upon a de-facto (common) global standard. Thanks to the progress of ICT, web-casts and You-Tube have become an extremely easy medium to transmit visual images across national boundaries. Communication takes the form of audio and/or text, thus, translation remains as an impediment. Under circumstances in which it will still take some time before automatic translation into English, now the de-facto global standard language, becomes available and easily accessible, English will function as the de-facto standard, making it imperative for the members of the new organization to communicate in English.

Another approach to take in designing a new organization is to learn from similar organizations established overseas. Learning from the history and activities of such organizations throughout the world will also open up realistic and practical avenues for collaboration on a global scale.

One such example is the Council on Competitiveness (COC) in Washington DC.[32] The Council was founded in 1986 at the initiative of John Young, then Chairman and CEO of Hewlett Packard. A predecessor to the COC was the President's Commission on Industrial Competitiveness, which was established by President Reagan in 1983. The report of this Commission "Global Competition: The New Reality", also known as the "Young Report", became the game plan for both public policymakers and the private sector in the U.S. and has resulted in many activities beyond its publications or reports. It has served as a platform for concrete action.

An additional key characteristic of the COC that we need to focus on is the fact that it is a private sector, non-partisan advocacy group of CEOs composed of all sectors of the economy, presidents from the nation's top universities, and labor leaders. The diverse nature of the COC, along with it orientation towards action, could provide a model for the new organization.[33]

---

[32] http://www.compete.org
[33] There was an attempt at collaborating with the COC in Japan, at the U.S.-Japan Innovation

Though the COC originally began with a primary focus on U.S. (thus national) competitiveness, and not on global issues, the COC has made a certain shift in the issues they address, as shown in the most recent initiative "Five for the Future." Despite its 20 year-history, it has renewed and transformed itself to address most current and urgent issues. The reason for this, in my opinion, is because the organization is private-sector driven, and the private sector cannot survive unless it adapts to a changing world.

I believe there are some other organizations, private sector-driven and yet diverse, including universities, public policymakers and other relevant parties, already existing and/or emerging in other parts of the world, which we need to study. We could learn from these examples and approach them for collaboration in resolving global issues.

5) Full-time competent professional staff and dedicated support staff
　Another desirable feature of the new organization, without which it will not produce tangible results, is competent staff capable of working in a "globally-networked" environment preferably on full-time basis. It would be ideal to have a leader for each project who has had some experience of project management.　Speed in getting the plan implemented, follow up and an open/public format with transparent processes disclosed on the Internet will be key to this process.

　Without professional staff, no matter how many well-known companies signed up for the cause, the organization would not function and would become yet another layer consisting of the members of a top management group with no time to come even to the meetings and few staff sent from the member companies.

　What we need are professional members of staff who have not only considerable knowledge in certain disciplines and/or functions, but also possess a wealth of personal experience of actual project management and problem-solving. Thus, company people with extensive knowledge about how their own company tends to function, but little experience of identifying issues in a much broader space, preparing and actually carrying out project plans, and getting the solution implemented would not qualify.

　Without competent staff, the organization would not work and would remain yet another Council on Innovation and Competitiveness with few tangible results.

　Another critical ingredient for the new organization is support staff. Support staff who

---

Summit which was held in September, 2005 in Nagoya." Summit Report, Strategies for Global Prosperity: A US-Japan Innovation Summit" COC, January 2006. However, collaborative efforts do not appear to have continued.

are young (in their 20s and/or even student interns) and interested in working for global hybrid (private-public) organizations would be a great help. They could be recruited on a project-by-project basis and trained with problem-solving skills. Communication capability in English, the global de facto standard today, will be a minimum requirement for the support staff.

<u>Conclusion</u>

Globally integrated enterprises are expected to play a significant role in identifying the issues which threaten the planet today. Issues such as energy efficiency, environmental protection, and global health are NOT going away, unless we take action to help resolve them soon and decisively. As these issues are very complicated, involving many nations, sectors and disciplines, it will not be easy to identify their causes or develop a portfolio of solutions.

But for this very reason, I propose that private sector companies, in particular globally-integrated enterprises, whether large or small and regardless of national origin, should and could make contributions in this field. Organizations and people will not be aware of the reality of operating in the global arena until they face both the potential and risk of global reach, global collaboration and competition for themselves. It is time for the companies who have already felt this reality and have learnt valuable lessons through trial and failure to take a more proactive role.

Bibliography

Aho, E., Cormu, J. Georghiou L. Subra A(2006) "Creating an Innovative Europe Report of the Independent Expert Group on R & D and Innovation" appointed, following the Hampton Court Summit, Rapporteur: Luke Georghiou, January 2006
http://ec.europa.eu/invest-in-research/action/2006_ahogroup_en.htm

Ed. Fagerberg, Jan, Mowery David C. and Nelson, Richard, "Oxford Handbook of Innovation" Oxford University Press pp.2

Ishikura, Y "Act Globally, Think Locally" Breakthrough Ideas for 2007, Harvard Business Review, February 2007

Ishikura, Y "Business Strategy in the Web2.0 Era" (Japanese), Think, Winter, 2007

Palmissano, Samuel "The Globally Integrated Enterprise" Foreign Affairs, May/June, 2006

Perez, Carlota, "Technological Revolutions and Financial Capital: The Dynamics of Bubbles and Golden Ages" 2002, Edward Elgar Publications

Porter, Michael E. and Reinhardt Forest L "Grist: A Strategic Approach to Climate" Harvard Business Review, September/October 2007

Porter, M.E, and Kramer Mark "Strategy and Society: Linking Competitive Advantage and Corporate Social Responsibility" Harvard Business Review, December 2006

Porter, M. E "Clusters and the New Economics of Competition" Harvard Business Review, November/December 1998

"What Matters 2007" McKinsey & Company, 2007

"Voices of Transformation 2" McKinsey & Company, 2006

"The McKinsey Global Survey of Business Executives; Business and Society" The McKinsey Quarterly, January 2006

"McKinsey Global Survey, November 2007, retrieved on November 14, 2007
http://www.mckinseyquarterly.com/article_abstract.aspx?ar=2077&l2=21&l3=114&srid=17

"CEOs on strategy and social issues" The McKinsey Quarterly, October 2007

"Investing in sustainability: An Interview with Al Gore and David Blood" The McKinsey Quarterly, May 2007

"Innovate America" (2004) "Competitiveness Index: Where America Stands"(2006) Council on Competitiveness, Washington D.C. http://www.compete.org

"Five for the Future" 2007 Council on Competitiveness, Washington DC,

"Summit Report: Strategies for Global Prosperity: A U.S.-Japan Innovation Summit" Council on Competitiveness, January 2006

"An Innovation Mantra" Science, April 13, 2007

 Institute of Strategy and Competitiveness at Harvard Business School lists many cluster initiatives throughout the world. See http://www.isc.hbs.edu

"Japan Vision 2050" Science Council of Japan, http://www.scj.go.jp/en.index.html

"Global Competitiveness Report 2007-2008" November, 2007, World Economic Forum, Switzerland

"What should be done to realize Science-based Innovation now?" (2007, Japanese) Center for Research and Development Strategy, Japan Science and Technology Agency

"Overseas Science & Technology Trend Report" (Japanese) Center for Research and Development Strategy, Japan Science and Technology Agency, 2006 and 2007

"National Innovation Ecosystem Initiative for Science-based Innovation 2006" (Japanese), Center for Research and Development Strategy, Japan Science and Technology Agency,

http://www.kantei.go.jp/foreign/innovation/interimbody_e.html
http://www.gies2007.com/en/symposium/summary/kurokawa.html
http://www.gies2007.com/en/symposium/summary/panel.html

http://www.nyas.orga/programs/borders.asp

http://crds.jst.go.jp/GIES/archive/summary.htm for summaries of GIES 2006

http://www.stsforum.org/

http://nobelprize.org/nobel_prizes/peace/laureates/2007

http://www.who.int/en/
http://www.gatesfoundation.org

http://cordis.europa.eu/innovation/en/home.html
http://cordis.europa.eu/innovation/en/policy/cip.htm

http://www.iea.org/
http://www.worldenergyoutlook.org/
http://www.iea.org/Textbase/press/pressdetail.asp?PRESS_REL_ID=239

Exhibit-1

Issues we face today

-Energy (Portfolio of energy sources to meet the growing demand)

-Environment – global warming etc.

-Demand for resources – Food, Water, cause for tribal wars

-Healthcare – Basic health in developing countries, epidemics

All Global in Scale and Scope

Exhibit-2

Forces at Work

Issues

JAPAN
- Declining population and rapid ageing

ASIA
-Rapidly Growing, but with pressing Issues

WORLD
- Further development of a knowledge-based network society
- Accelerating progress of globalization
- Explosive population growth
- Climate change and environmental degradation

- Increasingly threatened sustainability of humankind

New and unexplored era

- Widening gap between rich–poor divide

Innovation

Science | Technology

Social System

15

Issues

Explosive Population Growth

| Energy | Environment | Resources | Healthcare |

➡ Global

⬍ GAP

Initiatives

Innovation Ecosystem

➡ National or Regional

U.S. (Innovate America, Competitiveness Index) E.U (Innovative Europe) Japan (Innovation 25) Singapore, South Korea China etc.

Input

Interaction Fields "BA"

Output

Profit and Welfare/QOL Sustainability

Vision Policy/Strategy

University/Enterprise Research

Proof of Concept

Human Networks
Networks of Technologies
Networks of Funds
Regional Clusters
Industry-Academia Collaborations
IP/Standard
Regulation/Deregulation

Prototypes

Innovation-friendly Markets

Public Procurement

Funding

Human Resources/Education: nurture talents, brain circulation

Public Acceptance: consensus, consumer education, cultural issues

International Competition & Collaboration
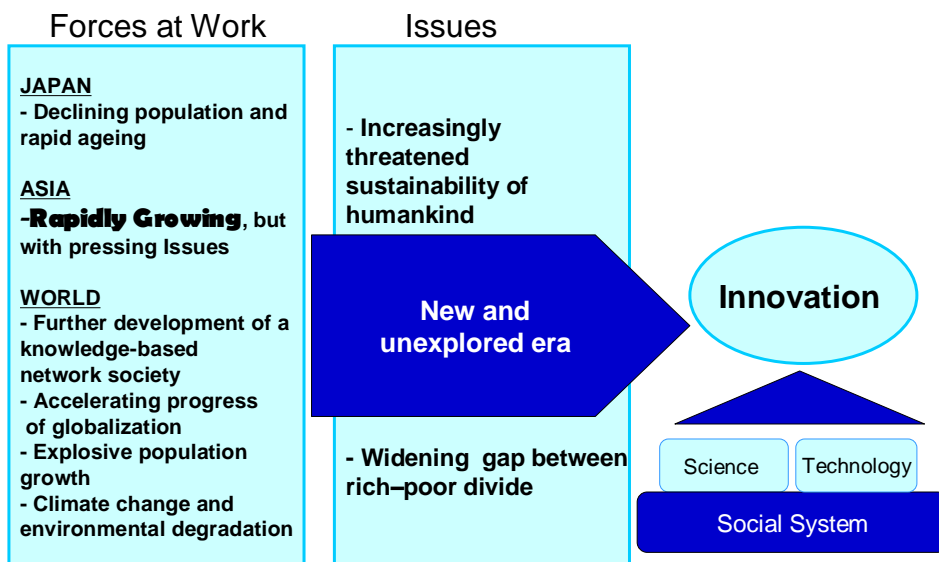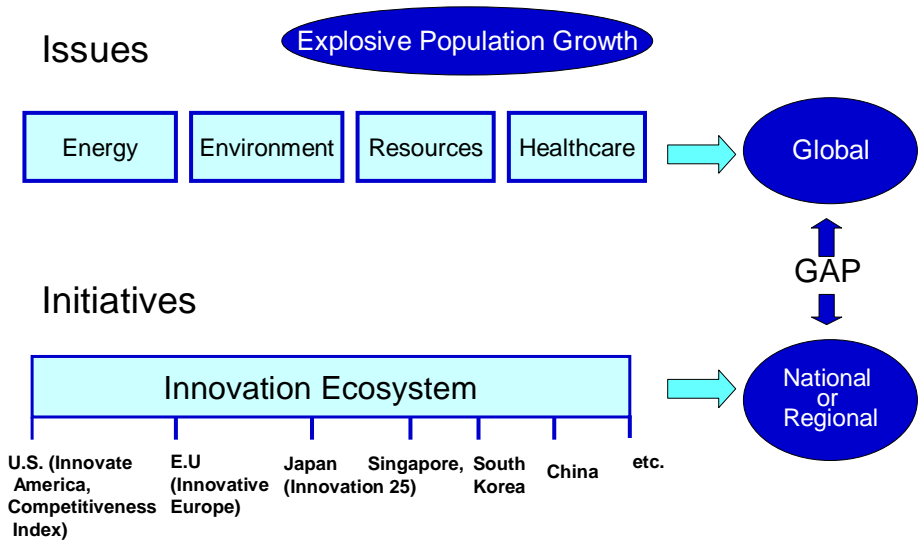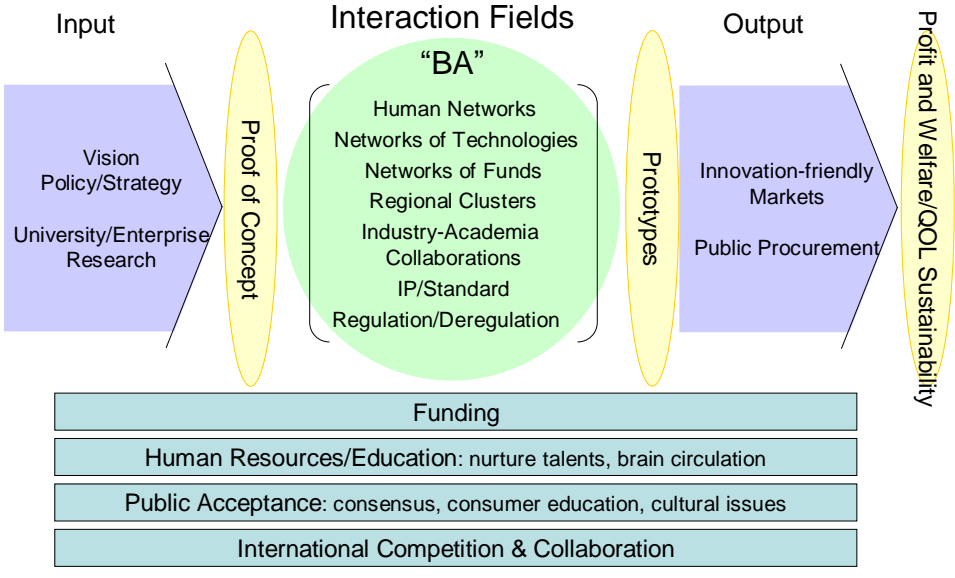
Exhibit-5

Why Private Companies?

-Global area is the reality
   Resources, markets from global and local

- Management of complex VC activities throughout the world
   Globally-Integrated Enterprise

-Value /Wealth Creator> Value/Wealth Distributor

-Corporate Social Responsibility beyond national boundaries

- Social Entrepreneurs
   Gates Foundation, Grameen Bank

Exhibit-6

Global Issues

| Energy | Environment | Resources | Healthcare |

Innovation Ecosystem Initiatives

China
Singapore
Finland
UK
U.S.
JAPAN
Social System
Global Hybrid Organization
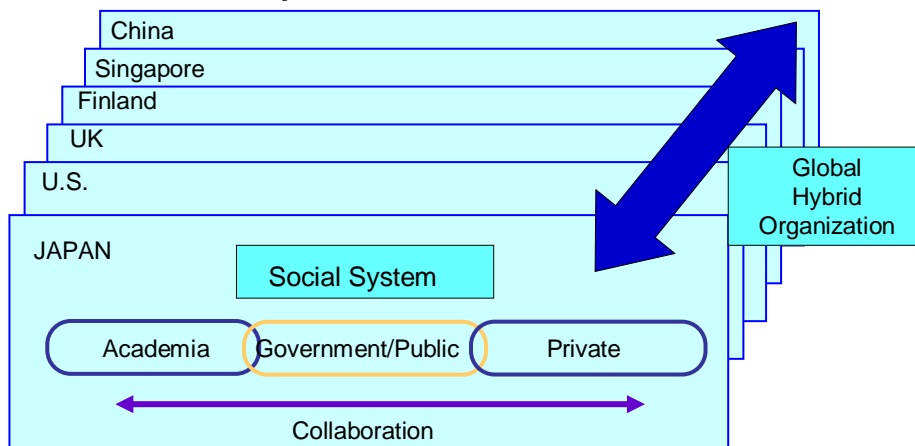Academia   Government/Public   Private
Collaboration

Exhibit-7

Requirement for Global Hybrid Organization

-Global; Clearly beyond national borders

- Private sector driven

-Diverse, representing not one sector

- Innovation as main driver

-Best use of current and updated ICT

-Collaborative and competitive with
 other organizations overseas

-Globally –networked Professional Staff

- Young and dedicated support staff
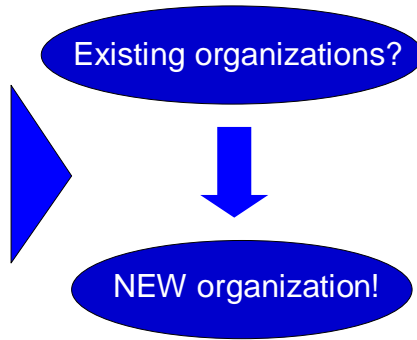
-Well versed in de facto global language

Existing organizations?

NEW organization!

Exhibit-8   Typical steps in Problem Solving Process

1.Identify the high priority topics

2.Prepare budget and get funds

3.Prepare project plan and recruit staff

4.Organize virtual and real events

5.Manage project teams

6.Prepare and Post report (web cast)

7.Design action plan

8.Monitor progress and fine tune action plans