

Third Global innovation Roundtable (GIR) 2013

18th and 19th November, 2013, New Delhi, India

The National Innovation Council (NInC), chaired by Mr. Sam Pitroda, Adviser to the Prime Minister of India on Public Information Infrastructure and Innovations (PIII), Government of India organised the Third Global Innovation Roundtable (GIR), 2013 on 18th – 19th November 2013 as a policy dialogue to outline a new paradigm of inclusive innovation. The event had participation from Ministers, Mayors, Chairman and Members of the National Innovation Council of India, senior diplomats, representatives from international organisations (namely, World bank, OECD, UNDP and the EU delegation to India, USAID, DFID and International Finance Corporation, India), Secretaries from Government of India and State Governments, leading policy-makers, venture-capitalists, academicians, researchers, professionals, technocrats, NGOs and eminent global innovation experts viz. Nesta and Big Society capital. In all representatives of 20 countries and international, regional and national organisations participated in the two-day mega event. The aim of the GIR is to create a global platform for sharing experiences, best practices and enabling collaborations around the theme of inclusive innovation for addressing the challenges of access, equity, excellence and inclusion.

2. The event was organised in collaboration with the Ministry of External Affairs, Government of India. It was spread out into various sessions held over a period of two days as highlighted below:

Day 1

First Session: Inaugural Plenary and Country Overview

Minister-level representatives, senior diplomats and civil servants, and academicians from the invited countries introduced their country's perspective on innovation programmes / initiatives which are focused on promoting an inclusive model of innovation. They touched upon multifarious aspects of innovation for improving the quality of life of the common man.

Second Session: Institutional Framework for Inclusive Innovation

The session was focussed on discussing the institutional and policy frameworks that foster innovation, especially inclusive innovation. The speakers gave examples of institutional frameworks in their country for strengthening innovation as well as for embedding it within Government systems to impact governance.

Third Session: Local Ecosystems for Inclusive Innovation

The session showcased local ecosystems for inclusive innovation. The aim was to demonstrate the impact of local strategies and cluster-based models of collaboration for fostering innovation and stimulating entrepreneurship and livelihood generation. The collaboration dynamics could be in industry clusters, university clusters, or even virtual clusters.

Fourth Session: Innovation for Social Impact

The focus of the session was on the innovations done by various Governments, international organisations and NGOs that address the development challenges faced by those at the Bottom of the Economic Pyramid (BoEP). These included innovations in organisational set-ups, service delivery channels, value-chains and business models in areas such as health, education, agriculture, urban development, and energy among others.

Day 2

First Session: Scaling Inclusive Innovation—Challenges and Perspectives

The theme of the session was scaling inclusive innovation. The speakers spoke about the challenges faced in scaling innovative practices in various sectors. The focus was on business models, mentoring and incubation.

Second Session: Learning from Global Good Practices

The session was centred around global good practices and the successful initiatives undertaken by various countries/organisations to promote inclusive and sustainable growth models.

Third Session: Innovation in Education

The session showcased some of the innovative initiatives being undertaken in different countries in the field of education. The aim was to understand the models of innovation in education aimed at improving quality, learning outcomes, enhancing access, improving service delivery, leveraging IT and stimulating creativity and lateral thinking, while developing replicable models.

Fourth Session: New Media and ICT Platforms for Innovation

The session theme was towards new and emerging media and ICT platforms in fostering innovation through democratization of information, creating instant avenues

for collaboration and ubiquitous platforms for communication & feedback. The Session also brought out how innovations in these spaces are radicalizing governance and social sectors like health and education.

Fifth Session: Country Collaborations on Innovation

This Session centred around the implementable collaboration opportunities that could be undertaken bilaterally or through a collective platform among the participating countries.

- 3. Mr. Sam Pitroda, Adviser to the Prime Minister on Public Information Infrastructure and Innovations, and Chairman, National Innovation Council, India** welcomed **Mr. Salman Khurshid, Hon'ble Minister, Minister for External Affairs, India, and Chief Guest in the Plenary Session of the Global Innovation Roundtable (GIR)**, and welcomed all the distinguished delegates and participants in the GIR-2013.

He observed that the objective of the event was to share global experiences, and create collaborative partnerships around inclusive innovation, an area where India's National Innovation Council had focused its work for the past few years. The term 'Innovation' has transcended the traditional confines of the domain of science and technology, and capital-intensive R&D, and extends to encompass areas of planning, policy, processes and people. Inclusive innovation is targeted at the Bottom of the Economic Pyramid (BoEP) and is characterised by accessibility, affordability, replicability and sustainability. The Government of India declared 2010-2020 as the Decade of Innovation, and the National Innovation Council has been working on creating a roadmap to realise the same, with a focus on inclusive growth.

The Adviser also highlighted the key initiatives which the Council has undertaken to create an innovation eco system in the country, with an eye on inclusion. These include seeding innovation in MSME industry clusters, creating an India Inclusive Innovation Fund to finance social enterprises engaged in innovation for the benefit of BoEP communities, efforts in the education sector, decentralising innovation thinking through creation of State and Sectoral Innovation Councils, creating incentives and awards for innovation and more.

Mr. Sam Pitroda hoped that this Roundtable would emerge as a platform for suggestions for collaborations in the field of inclusive innovation. He then thanked the Ministry of External Affairs for their collaboration in the organisation of GIR 2013.

4. **Mr. Salman Khurshid, Hon'ble Minister, Minister for External Affairs, India, and Chief Guest in the plenary session of the Global Innovation Roundtable (GIR)** expressed his deep appreciation for the work done by Mr. Sam Pitroda in the field of telecommunication, and now the broadband network. He said that the depth and expanse of the term 'innovation' is indeed unfathomable. While it is wider than invention, it is also not mere rearranging of things. He recalled that India's great leader namely Mahatma Gandhi was the greatest innovator when he gave a call for emphasis on agricultural development, sanitation and empowerment of village '*Panchayats*'. Likewise Pandit Jawaharlal Nehru was a staunch advocate of innovation when he referred to factories, dams and big industries as '*Temples of Modern India*'.

Innovation refers to political and social attitudes. Innovation requires replacing or modifying existing structures to make room for the alternatives. The alternatives could be either by way of revolution or evolution. While the former refers to radical transformation, the latter refers to gradual paradigm shifts. He expressed hope that GIR will prove to be a laboratory of ideas, and deliberate on ways to implement these ideas and scale them up. He expressed the confidence that the GIR will contribute towards co-creation and co-innovation, and sharing of information without substantial cost and barriers.

The Opening Session was addressed by a large number of distinguished delegates who spoke on the subject of '*Innovations to address Challenges of Access, Equity and Excellence*'. The views of the speakers are summarised below:

- (i) **Ms Anne Lauvergeon, President French Innovation Commission** observed that the term 'innovation' has a vast scope, and consists of fabrication of a new product, recourse to new production processes, use of new materials, and new use of national resources. Innovation stimulates economic growth, employment and entrepreneurship, and improves the quality of life. Innovation is a means to an end. The true role of innovation lies in empowering people by building skills in them that reduce dependency on institutions.

The State has a distinctive role to play in the creation and strengthening of innovation eco-system. Approach to innovation is not just individual-centric; the State allocates budget for the State level Innovation Institutions. There is thus a balanced approach. The public authorities accord priority to innovation in high-tech areas like aerospace for instance.

Ms Lauvergeon informed that the French innovation Commission is an independent decision-making body, and takes decisions on a consensual basis. The Commission's mandate is to develop the Vision for the Next 50 Years in the identified seven strategic areas of priority namely, energy, production of vegetables and fruits, and desalination of sea water, among others. The Commission proposes to hold seven innovation contests. G-7 contests will be formally launched this year; it will be open to global participation so as to have the best, and not just good projects.

(ii) Dr Álvaro Toubes Prata, Secretary of Technological and Innovation Development (MCIT)

Dr Prata highlighted that sustainable development, reduction in poverty and inequalities are among the key challenges that Brazil faces. Despite the fact that considerable progress has been made in the direction of inclusive growth and development, large socio-economic inequalities persist. This is further accentuated by the inadequacy of the infrastructure. There is a need for vast improvement on the field of education; 75% of the students study in private schools, with only 25% going to the public education system.

He underlined that Brazil has several natural assets in terms of large area, good soil, abundant resources of minerals & petroleum, a high proportion of energy from renewable resources, relatively stable economy, good university system, and democracy. The country seeks to harness the strengths and overcome the weaknesses through sustained innovation-based policy and action plan.

Though the country has created a repository of CVs of scientists and researchers, and produces 14,000 doctorates every year, bringing science to economy is a formidable challenge. Priority is being accorded to setting up of Incubation and Science Parks. Deep sea exploration; agricultural research; increasing efficiency of financial services including banking; modernization of aircraft design are among the identified areas of priority.

Innovation is aimed at reduction in socio-economic inequities in Brazil. The country improved food production by 300% in the last 30 years. A major part of it is through yield-increase during the last 10 years under their program entitled 'EMBRAPA'. It has now been renamed as EMBRAPII (the last two IIs being for Industrial Innovation).

(iii) Mr Bernard Philip, Deputy High Commissioner of Australia to India:

Mr Philip stressed that the Australian Government accords the highest priority to the expansion and strengthening of the national broadband network for the benefit of the rural population of the country in the remote parts of the country. This will ensure access to the benefits of telehealth and e-learning for a sizable mass of population.

The Government has also taken a number of steps for improving Industry-Research linkages, and building national networks of such collaborations, particularly in the areas of food and manufacturing. While industry needs a guiding force, research has to be guided by the industry's needs. The Australian Government is proactively creating the innovation eco-system by financial support for Industry Innovation Precincts. The Government is also very supportive of inclusive and social innovation. One key feature of the social innovation is building a family-to-family network through a chain of helpers. Social Innovation is viewed as the development of new strategies and approaches to meet social needs that extend and strengthen civil society. The focus on social aspect of innovation is also to be seen in the importance attached to improving the access of the small businesses to government contracts; reduction in business costs by cutting red tape; investment in skills development; and better links between businesses and research. The imperative of innovation having to be affordable is recognized so as to ensure an enduring social impact across sections.

(iv) Mr. Mark Rozario, Chief Executive Officer, Agensi Inovasi Malaysia:

Mr. Rozario stated that Malaysia has a National Agency for Innovation as a statutory body which was formed under an Act of Parliament two and a half years back. The Prime Minister chairs the Agency. The members are from the Government, Captains of Industry, academicians. The Dy. Prime Minister and six Ministers are also members. The top bureaucrat of the country i.e. the Chief Secretary is also a Member. It is expected to meet four times in a year. The Agency is envisaged to be in existence for a period of ten years; in the long run, it is proposed to be driven by the private sector. The State gives funds for overcoming roadblocks in the way of innovation agenda.

The priority areas are R&D; creation of platform for commercialization of intellectual property rights; facilitating industry-academia collaboration; biomass energy and plastics; education and nurturing of high order thinking skills. The Agency has a multi-pronged approach, and is currently pursuing 20 initiatives.

Innovation is viewed as a critical instrument for having impact on jobs-creation and wealth-formation, and is perceived as having a decisive role in making Malaysia a fully developed country by 2020. An innovative approach was adopted by the Malaysia Agensi Inovasi in the direction of inclusive innovation wherein they identified persons below a specific income (RM 1500) and setting it as a benchmark. They then identified persons earning an average income (RM 2700) and asked them to share how they are able to generate income greater than RM 1500. The 50 best ideas were selected by a panel based on their scalability, sustainability & replicability. These 50 individuals were then asked to mentor the lower income band for replicating the ideas. Publicity was given through sharing of success stories in media. This model has increased the income generation for the lower band and induced self-reliance.

Intellectual property is receiving increasing premium; 14 agencies located in 08 departments provide grant for R&D and its commercialisation. The Government has created a platform to this end. Emphasis is also laid on nurturing the industry-academia connect; this has a direct impact on jobs and wealth creation. Biomass energy and biomass plastics are among the strategic sectors of the economy.

(v) Mr. Riku Makela, Head, Tekes New Delhi, and Director, Finnnode India

Mr Makela highlighted that the Finnish Government plays the role of a co-ordinator, platform-creator and priorities-setter in the pursuit of the innovation agenda. Innovation enhances competitiveness for the export-oriented economy of Finland. The Finnish Govt. strongly believes that the public sector can create the desired eco-system and climate for innovation. It has a Strategic Centre for S&T and Innovation. At the same time the private companies have to be at the cutting edge of leading innovation and play a crucial role in jobs-creation.

Finland encourages breakthrough innovation, and favours PPP models for promotion of innovation through R&D in the priority sectors of biomass-based energy, health, environment, mechanical engineering. India figures among the strategic partners of Finland.

(vi) Mr. Oliver Väärtnõu, Strategy Director, Government of Estonia

Mr. Väärtnõu said that Estonia was participating in the GIR for the first time, and was the smallest country among the participating countries in the GIR. Innovation is

the overarching strategy. It is the driving force in the fields of science and technology and industry. The country vouches for a close linkage between investment in R&D and GDP growth. When the GDP dropped by a considerable percentage in 2009, the Govt. increased the Gross Domestic Expenditure on R&D (GERD), and it yielded the desired outcome. The Govt. was funding only Euro 37 Million only in the year 2000 which has now increased to Euro 379 Million in 2013.

The recent years have seen substantial investment in R&D both by Government and private sector. There is a strong realization that there is dire need to work towards conversion of results of S&T R&D into economic benefits. The niche areas for innovation have been ICT, e-Governance, healthcare, including telemedicine and clean energy.

(vii) Dr. Dalia Gamal, Innovation Support Department Manager at Technology, Innovation, and Entrepreneurship Centre, Govt. of Egypt

Dr. Gamal underlined that Egypt was participating in the GIR for the first time and was the only Arabic country present in the Roundtable. Innovation was no longer an option but was a compulsion for their country of 85 million population. The country views innovation in industrial enterprises as a must for sustainable development, and as a key to equity and attainment of global competitiveness. They are mainstreaming ICT, knowledge economy, infrastructure network and data networks as part of development. With this focus, and 115% mobile penetration, they are one of the most preferred outsourcing destinations. Egypt has set up a Technology, Innovation and Entrepreneurship Centre called TICE recently. It promotes culture of business leadership and encourages start-ups. This Centre also promotes PPP modes by way of industry-academia partnerships, and also works for the protection of the IPRs.

The Government's endeavours to create innovation eco-system consist of rendering the ICT network robust; capacity-building for innovation in Universities and schools to build fundamentals for entrepreneurship; setting up of Technology incubators and technology accelerators; support for commercialisation of innovation-based technologies; protection of IPRs; and celebration of innovation through awards and prizes. The Innovation policy of the country lays premium on technology acceleration and on setting up of Technology Incubators for providing support not only for the period between prototype development and commercialization, but also for the carrying the production to commercial scale.

(viii) Mr. Michel Hivert, Managing Director, MATIMOP, Govt. of ISRAEL

Mr. Hivert stated that in Israel the Government plays an active role in providing conditions for continuous growth of innovation, and supports it in PPP mode with the private sector. Business as usual is no longer an option. Innovation is the engine of growth of economy and a catalyst for creation of jobs and employment. It has supported several start-ups. Israel believes in adoption of a bottom-up approach.

A great deal of emphasis is laid on the establishment of Technology Incubation Centres. There are 24 TICs at present), and one biotechnology incubator. Six Universities have Nanoscience Centres. There is an inter-ministerial Research Committee that approves projects in basic and applied research for grant on the basis of the laid down criteria namely, the type of technology, kind of industry, the economics of the project, and the profile i.e the capability of the applicant. A company is obligated to pay royalties when a Government-assisted R&D project results in a commercially successful project.

Currently there is an annual budget of US \$300 million for R&D. Venture capital is a strong driver for innovation in industry and entrepreneurship. 75% of the venture capital flows in from USA, Europe and Asia. Between the period 1997 to 2013, Israel is second only to Silicon Valley in terms of investment of venture capital. Israel is also constantly witnessing on-the-rise M&A activity.

(ix) Mr. Mark Sinclair, Regional Director, UK Science & Innovation Network (India, Middle East & Africa)

Mr. Sinclair stated that the UK has a number of innovation clusters in the country and ranks second on the global innovation index. The investment in innovation is paying off as new ideas generated all over the world are being harnessed and platforms for collaboration emerging and getting strengthened. There is a major thrust on innovation in industrial sector. In the industrial sector, the reach of innovation has to be all-pervasive, and encompass the areas of business skills, manufacturing, branding, marketing and distribution. A number of technologies have been identified for the priority sectors. Angel investors play a critical role in this regard.

Ensuring the bridging of the industry-academia gap is crucial. UK has set up Catapult Centers towards this end namely, bridging the academia-industry gaps. The

target is to attract investment of pounds 1.4 billion from the public and private sources in the next 05 years. Knowledge Transfer Partnerships have also been developed for sharing knowledge between organisation & industries.

Investment by the foreign-owned companies registered an increase of 33% as in 2011. The Regional U.K. Science & innovation Network started its presence in India in 2008, and has entered into a joint funding program with GITA on 13.11.2013. It has key focus on clean technology, energy systems & affordable healthcare.

(x) Mr. Harald Sandberg, Ambassador of Sweden to India

Mr. Sandberg stressed that Sweden, which ranks 1st in the Global innovation Index, spends 3.6% of its GDP on research, and accords the highest priority to education and research. 70% of the total outlay for research is spent by the industry. There is an increasing focus on collaborations in R&D and innovation in the private sector.

The ambassador said that the Government should act as a catalyst for the creation of a macro-level innovation eco-system. It is important that critical thinking is encouraged and supported in the education system; cooperation and creativity are nurtured; and a climate is created for overcoming the fear of failure.

There is a decreasing role of development grant; focus is more now on collaboration in the fields of R&D and innovation. Swedish companies are investing on a large scale in India, and thus helping in creating jobs. Sweden is supporting a Vocational training School in Hyderabad to enable the youth to get jobs in the medium-sized cities and towns of India.

Many of the products delivered by Swedish companies are also directly spurring innovation and inclusive growth. Swedish innovations in telecommunications field, have paved the ground for the explosive growth of mobile connectivity, clearly visible in India, with its 900 million mobile phone users. Not only, has this enabled communication across all parts of the country, but allowed a great number of new innovations based on mobile telephony. One example being the sharing of market prices of agricultural products, which has empowered farmers, by letting them know the current market prices and thereby being able to request a fair pay for their products, by-passing the middle men.

(xi) Prof. Tham Ming Po, Dept. of Engineering and Technology Management, National University of Singapore

Prof. Po highlighted that Singapore with a population of 5.4 million, has very limited human resources, and virtually no natural resources. Its main drivers are tourism and manufacturing. There is a very strong connect between the industry and academia. The research is industry-led; the Ph.D students are paid salaries by the industry, and are later given employment by the SMEs concerned. This results in a win-win situation. It increases the quality and productivity of the industrial sector by ensuring the infusion of high technology in SMEs, and provides the jobs to the technical force. The Government encourages industry-based research. The year 1991 is the watershed year in Singapore as the country started moving up the value chain from that time onwards. Till then technology came through the MNCs. The S&T research organisation was set up in 1991.

The Singapore Govt. has formed a statutory board known as Agency For Science Technology & Research (A*STAR) for fostering world-class scientific research and talent, and a vibrant knowledge-based and innovation-driven nation. It had initially started with \$2 Billion for research institutes & projects and currently is funding over \$16 Billion. The organisation has also set up a number of research institutes which are working in collaboration with industries.. These research institutes are providing scholarships & awards to young & aspiring scientists. Though these scholarships & awards, Singapore is aiming to be a research hub by nurturing PhDs to serve in both public & private sector industry. The students also get to work across small medium enterprises for gaining expertise & PhDs. A*STAR also funds early incubators and start-ups for setting up businesses.

(xii) Prof. Dr. U. Rosenthal, Advisory Council for S&T, Netherlands

Prof. Rosenthal said that the R&D Policy of Netherlands encourages undertaking of R&D in the private sector, and commercialization of public knowledge for public good. The public sector R&D is now far more responsive to the needs of the industry.

Netherlands has identified nine sectors as areas of priority. These include Food, Water, Horticulture, Energy, Life Sciences and Health, high-technology systems and materials, Chemistry and creative industry. A Framework Program for Research and Innovation entitled Horizon 2020 has been drawn up. A notable momentum has been provided to the concept of Great Challenges in the identified nine areas during the last three years. India is designated as a priority partner.

(xiii) Mr. Jaime Medina, Under Secretary for Scientific Investigation of the National Secretariat of Higher Education, S&T and Innovation, Ecuador

Mr Medina shared that Ecuador has a separate Secretariat devoted to Education, Science & Technology and Innovation. Energy conservation, environment restoration, biotechnology and agriculture figure among the priority areas for research and innovation. He dwelt on the details of the concept of the city YACHAY-Metropolitan City. It will have 04 distinct districts with focus on combining the industry with society & for entertainment and cultural processes. The city will have a free economy based on multifunctional areas. These districts will have (i) District of Agriculture and Biotechnology (ii) District of Entertainment (iii) Industrial District and (iv) District of Knowledge. The city will have a separate mobility & transport systems with focus on walking & cycling activities.

He also apprised on the Special Zone for Economic Development (ZEDE) which would have incentives & benefits for companies in Technology and Industrial areas. Most of the incentives are towards reduced taxes. One of the innovative practice which will be followed for setting up new business will be to give additional 100% deduction in Income Tax for the first 5 years of the expenses incurred on salaries and social benefits due to generating new employment in priority areas.

(xiv) Mr. William C. Danvers, Deputy Secretary-General, OECD

Mr Danvers stressed that the Conference on innovation could not be better timed. Skill-development should be a major component under innovation-driven agenda as it is the key to reducing social inequality. Inclusive innovation accords top priority to education, skill-development and enhanced employability. Refinement of policy-making should be an on-going exercise so that innovation may be nurtured on a continuous basis.

Practices that aim at creation of jobs, promotion of entrepreneurship, and attributes of openness and cooperation in collaborations and partnerships occupy a high place among the global good practices. Globally 50% of jobs are being created in young firms and businesses; in Brazil, 70% of the jobs are being created by the new enterprises, as the older ones get phased out. The OECD has developed an Innovation policy platform in collaboration with the World Bank.

(xv) Mr. Denis Dambois, Head of the Research and Innovation Section, EU Delegation to India

Mr Dambois stated that EU regards innovation-driven initiatives in creation and strengthening of physical and R&D infrastructure e.g. labs, Patent Offices, and IPR regimes; and putting in place networks to allow for the pipelines for the flow of knowledge needed as critical. The EU is bringing out the Horizon 2020 for driving the innovation agenda. It will be the largest and most important program of the EU from next year. He underlined the importance of reusing the existing knowledge and existing projects through data mining to enhance the efficiency and productivity in various sectors. The EU contributed to creation of innovation eco-system by organizing a Conference on Innovation Clusters.

5. The salient points made by the various distinguished panelists in the subsequent sessions have been grouped under eleven categories as mentioned below:

[I] Interpretation of the term 'Innovation', and its Role

[II] Definition of the term 'Inclusive Innovation' and Social impact of Innovation

[III] Innovations in Education

[IV] Innovations in Health Sector

[V] Pattern of Innovation Spending on R&D

[VI] Innovation in Industry and promotion of Entrepreneurship

[VII] New Media and ICT Platforms for Innovation

[VIII] Scaling Inclusive Innovation—Challenges and Perspectives

[IX] Learnings from Global Good Practices

[X] Institutional Frameworks for innovation; Innovation Eco-systems, including Local Innovation Eco-systems, Priorities, and Approach

[XI] Country Collaborations

The learnings that emerged from the two day Global Innovation Roundtable (GIR)-2013 are summarised under the broad categories below:

[I] Interpretation of the term 'Innovation', and its Role

- (i) The term 'Innovation' has transcended the traditional confines of the domain of science and technology, and capital-intensive R&D, and extends to encompass areas of planning, policy, processes and people. It is not just creation or manufacture of a new product based on new technology. Successful implementation of any new idea with regard to a product, process, service, system or mechanism qualifies to be regarded as innovation.

**(Mr. Sam Pitroda, Chairman,
National Innovation Council,
India, a view endorsed by the participants)**

- (ii) Innovation requires replacing or modifying existing structures to make room for the alternatives. The alternatives could be either by way of revolution or evolution. While the former refers to radical transformation, the latter to gradual paradigm shifts. Societies generally favour evolution, or at best rapid evolution as against revolution as the former keeps the basic values intact and happens gently. An ongoing openness to rapid evolution is necessary to avert the prospect of revolution.

**(Mr. Salman Khurshid,
Hon'ble Minister, MEA, India)**

- (iii) Good economic climate is needed for innovation to take deep roots.

**(Ms Anne Lauvergeon,
President 2030 French
Innovation Commission)**

- (iv) Innovation is the engine of growth of economy and a catalyst for creation of jobs and employment. It has supported several start-ups.

**(Mr. Michel Hivert, MD,
MATIMOP, Israel)**

- (v) Innovation along with knowledge holds the key to economic growth. They are like three intertwined concentric circles.

**(Mr. Mark Sinclair, Regional Director,
UK Science and Innovation Network
in India, Middle East and Africa)**

(vi) Innovation is a means to an end. We need to pull innovation towards its missions and goals. The true role of innovation lies in empowering the people by building skills in them that reduce dependency on institutions. We must build evidence on what works and help act on it. One can draw insights from diverse sources; contexts may be different but learning from the collective wisdom can be huge.

**(Ms. Kirsten Bound,
Lead Policy Advisor on
Innovation Systems, Nesta)**

(vii) Innovation is executing new ideas to create value.

**(Dr. M. Ayappan, Chairman,
Life Spring Hospitals)**

[II] Definition of the term 'Inclusive Innovation' and Social impact of Innovation

(i) Inclusive innovation has to be pervasive and permeate the Bottom of the Economic Pyramid (BOEP). It may take time for that to happen but that has to be the relentless goal. Inclusive innovation has to be affordable, replicable, sustainable and scalable. The challenges to innovation consist of change in the mindsets, attitudes, both political and social, and processes to enable the benefits to reach large sections of society.

**(Mr. Sam Pitroda, Chairman,
National Innovation Council,
India)**

(ii) With the new Companies Act providing for 2% for the Corporate Social responsibility (CSR), an amount of Rs. 20,000 to Rs. 25,000 crores will be available for the projects with social impact. There is a difference between doing well and doing good. Social innovation is all about doing well by doing good.

**(Dr. Ramesh Mashelkar,
Member National Innovation Council,
India, and Chairman, National
Innovation Foundation)**

(iii) The purpose of innovation is to stimulate economic growth, employment and entrepreneurship, and to improve the quality of life for the people at large.

**(Ms Anne Lauvergeon,
President French innovation Commission)**

(iv) Australia attaches importance to social innovation. In the year 2009, seed funding was received from the Government. Family- to- family networks are established to help the less fortunate ones. Australia attaches importance to social innovation. Besides the focus on social aspect of innovation is also to be seen in the importance attached to improving the access of the small businesses to government contracts; reduction in business costs by cutting red tape; investment in skills development; and better links between businesses and research. The imperative of innovation having to be affordable is recognized so as to ensure an enduring social impact across sections.

**(Mr. Bernard Philip, Deputy High
Commissioner of Australia to India)**

(v) Ecuador regards establishing a connect between research and scientific knowledge and social change as a matter of paramount importance.

**(Mr. Jaime Medina, Under Secretary for
Scientific Investigation of the National
Secretariat of Higher Education, S&T and Innovation)**

(vi) Skill development is the key to reducing social inequity as it immediately and directly helps in increase in the earning capacity. Inclusive innovation demands that top priority be accorded to innovation-driven approach in the field of education and skill development to enhance the employability of the youth. The policy for inclusive innovation should continue to be refined on an ongoing basis to optimize its benefits.

**(Mr. William C. Danvers,
Deputy Secretary-General, OECD)**

(vii) Thailand follows the policy of One Tabon One Product (tabon meaning district). The Government identifies the level of disparity of a given district in terms of health, education and income levels, and accordingly adopts the strategy for the mitigation of inequities.

**(Dr. Pichet Durongkaveroj,
Secretary-General, National Science &
Technology and Innovation Policy Office, Thailand)**

(viii) Among the most notable examples of inclusive innovations are the introduction of direct transfer of funds to the beneficiaries in 45 countries; the flexibility introduced by Ethiopia in giving the cash assistance or foodgrains as per the choice of the beneficiaries for enhanced food security; and reduction in the rate of incidence of malaria by 66% in Uganda. It is the responsibility of the Governments to categories of exclusion so that the benefits of innovation are well-targeted. The processes should keep getting innovatively tweaked so as to ensure that the benefits of welfare programs reach the people for whom they are meant.

**(Ms. Lise Grande, UN Resident
Coordinator and UNDP Resident Representative)**

(ix) The Inclusive India Innovation fund (IIIF) envisages a new business model; its thesis is modest financial returns with measurable social impact. In the U.K., 50% of the seed money came from the Government; in India the Govt. has paid up and committed 20% of the funds, with the rest coming in from the banks and financial institutes, and the DFID. The IIIF proposal is based on discussions held with the Dr. Cohen and Nesta, the U.K. Foundation. The countries present were requested to participate in the Fund. Globally the venture capital scenario is bright, and there are US \$ 03 trln available through the venture capital mode.

**(Dr. Saurabh Srivastava,
Member, National Innovation
Council, India)**

(x) A large fund was created through combing unclaimed assets at various banks. Collectively over £ 600 million were collected from large financial institutions to create Big Society Capital. This asset is being used for various social sectors such as Education, health, and social entrepreneurship. Innovation for social impact projects can be both for profit or for non-profit. Financial return could be pegged between 7-10% at the most. Around 3-5% of the total venture Capital may be for projects with social impact.

**(Dr. Ronald Cohen, Chair of
Big Society Capital, U.K.)**

(xi) An innovative approach was adopted by the Malaysia Agensi Inovasi wherein they identified persons below a specific income (RM 1500) and setting it as a benchmark. They then identified persons earning an average income (RM 2700) and asked them to share how they are able to generate more income greater than RM 1500. The 50 best ideas were selected by a panel which was scalable, sustainable & replicable. These 50 individuals were then asked to mentor the lower income band for replicating the ideas. Publicity was given through sharing of success stories in media. This model has increased the income generation for the lower band and induced self-reliance.

**(Mr. Mark Rozario, CEO,
Agensi Inovasi, Malaysia)**

(xii) Social innovations have come to the forefront very strongly in the past one decade. There are new models of actions in every area and sector such as finance, knowledge, and government. The Nesta innovation lab is working across four major areas of local services, health & ageing, social action and digital public services. Nesta has persuaded the British Govt. to set up 07 Centres to track the implementation of innovations in various sectors.

**(Mr. Geoff Mulgan,
Chief Executive, Nesta)**

(xiii) Disruptive technologies & innovations can change millions of lives, and that too in a short duration. The 10 identified technologies which have the power to wreak transformation in India and impact the social sector are: broadband, internet, cloud technology, digital payments, universal biometric identity, unconventional energy sources, advanced energy storage, automation of knowledge work, affordable devices and next generation genomics.

**(Noshir Kaka, Managing Director,
Mc Kinsey India)**

(xiv) The USAID has allocated US \$ 400,000 by way of grant for innovations in areas of health, education, clean energy, sanitation, environment and agriculture. USAID supports leveraging of the Indian creativity, expertise, and resources to identify and scale innovative solutions being developed and tested in India. These can address development challenges that will benefit the base of the pyramid across India and the world.

**(Ms. Kathryn Stevens,
Acting Mission Director, USAID)**

(xv) Various examples of frugal innovations were detailed e.g. wind power pumps, self-cleaning molecular material, extraction of graphene for which patent filed by the tribes of Rajasthan and Gujarat states of the country, mechanism for detection of Vitamin D deficiency in 15 minutes instead of 24 hours, tracking crucial parameters for assessing the health of pregnant women, and innovation of a three-wheeled wheel-chair. Various knowledge repositories have been created of social innovations through crowd-sourcing and creation of National Innovation Clubs in colleges and universities. Various portals namely, Techpedia.in, Sristi.org, and Honeybee Network aimed at cataloguing grassroots innovation and at bridging the institution-industry gaps have been maintained, both for the scale-up of innovations and for enhancement in the employability of the youth. The Techpedia.in portal has a pool of 167,000 engineering projects by 400 k students from 600 institutions. A number of innovations across various sectors can be accessed on these portals for replication in different geographical locations. Recently the national innovation foundation has got associated with innovative use of the roots, barks, leaves and twigs of the 2.6 mln fallen trees due to the cyclone in the State of Odisha.

**(Dr. Anil Gupta, Member, NInC,
and Executive Vice-Chairman,
National Innovation Foundation (NIF), India)**

(xvi) DFID now provides a mix of equity, grant and concessional loans. DFID has made a move towards equity and concessional loan for the private sector for the first time. The funds available under 'grant' component should be used for the creation of inclusive innovation eco-system. DFID functions at three levels namely, policy, private sector and household levels. Under the last one, the emphasis is on skills training for jobs-creation. DFID is working with the GOI, and the States of Bihar, Odisha and M.P. for infrastructure creation. Currently, they are working in three areas: affordable hospitals in semi-urban and rural areas as in the eastern region; running of a dairy for the poor families in association with an NGO 'Shikhar'; and supply of solar power to off-grid areas of U.P., thereby saving 65,000 tons of carbon emissions in the five areas under this project.

(Meenakshi Nath, Deputy Head,

DFID India)

(xvii) There is a need to overcome the 'not-invented-here' syndrome by the countries. Percolation of innovations to the ground level is a challenge since there is a disconnect between the top and the bottom. It is essential to understand the cultural differences in a given country. Implementation of good ideas poses challenges quite often.

**(Mr. Onno Ruhl,
India Country Director, World Bank)**

[III] Innovation in Education

(i) The areas of improving the teachers' training by the National Council for teachers Training (NCTE), and the continuous updating of the syllabus and course content of the books by the NCERT and SCERTs will engage priority attention of the Government.

**(Mr. Shashi Tharoor,
Hon'ble Minister of State,
Human Resource Development)**

(ii) Education and partnership between industry and education are the key focus areas in Singapore. With frugal innovation come four basic requirements of affordability, replicability, sustainability, and maintainability. The students of the NUS worked on a project in the Walawakha hospital campus throughout the course, keeping the above concerns in view.

**(Prof. Tham Ming Po, Dept. of Engineering
and Technology Management,
National University of Singapore)**

(iii) Ecuador assigns priority to education and research sectors for innovation. Prometeo project aims to strengthen research and teaching capacities in Ecuador, and transfer of knowledge in specialized areas.

**(Mr. Jaime Medina, Under Secretary for Scientific
Investigation of the National Secretariat of
Higher Education, S&T and Innovation)**

(iv) Thailand education system focuses on creativity. The brighter students teach the less gifted ones, and also take part in the selection process of the teachers. While on one hand, emphasis is given to the teaching of IT and Computers, on

the other hand, community development works are encouraged to be taken up by the students. In case of students who cannot pay the tuition fee, they are asked to undertake community service. The education system lays premium on science-based teaching and the national vocational institutions motivate students to be innovative and entrepreneurial.

**(Dr. Pichet Durongkaverroj,
Secretary-General, National Science
& Technology and Innovation Policy Office, Thailand)**

(v) The Singapore University of Technology and Design has tied up with Massachusetts Institute of Technology for setting up an International Design Centre (IDC). The university does not function as a Department / college/ school normally does. It has been categorized under Products, Services, Software & Systems. Through this categorization there is a crossover with interface of science and social science.

**(Kristin L. Wood Professor,
SUTD-MIT International Design Centre (IDC)**

(vi) Despite the challenge posed by the fact of their being a huge linguistic diversity across the country, the government has introduced a number of innovation. The key ones among them being introduction of 'on-demand' exams by National School of Open Learning NSOL); policy of 'no detention' with the introduction of the Right to Education Act;, signing of MoU with the Election Commission of India for imparting of electoral education; decision for signing of MOUs for imparting financial & legal education among non-literates; promotion of PPP model for schools; preparation of Manual for comparative assessment of the quality of schools; and on-line monitoring of the mid-day meal scheme.

**(Mr. Rajarshi Bhattacharya,
Secretary, Department of School Education
& Literacy, Ministry of Human Resource Development, India)**

(vii) The Agastya Foundation is devoted to the cause of teaching subjects, particularly Science through innovative ways. It has set up the Science Centre near Kolar Gold Fields on 172 acres of land on Andhra-Karnataka border. It runs 75 mobile Science labs, as also i-labs for the teaching of computers. The Foundation works closely with Governments for without their support, the scale-

up of the projects is not feasible. They have implemented the NInC's programme on '*Tod-Fod-Jod*' i.e (Disassemble-reassemble-and Repurpose' the equipment's and machines) in Karnataka. It has successfully implemented projects in the States of Andhra Pradesh, Karnataka, and Tamil Nadu. The teaching of Science and Maths is promoted through models and mobile platforms. Teachers and brighter students are trained by them. The Foundation is working on a project entitled 'Gifted Children' under the guidance of Dr.R. Chidambaram, Principal Scientific Adviser to the Prime Minister of India. They are ready to work with other States in partnership with them.

**(Mr. Ramji Raghavan, Chairman,
Agastya International Foundation)**

(viii) Under the project on innovation in Canada named 'MITACS' , partnerships have been established in Mexico, Brazil and Australia. A collaboration with India is now looked forward to. There is also a possibility of partnership with Canada under the IC-Impacts project. This project undertakes breakthrough research in public health disease treatment and prevention; and in integrated water management. The Gyanome Project is a platform for teaching the fundamentals of school maths and science to children in India. It promotes 'Knowledge for All' and seeks to work in close association with school leaders and teachers. The Gyanome Project has three focus areas: namely, creation of basic content around books by NCERT in a template employing ideas and concepts; preparation of additional resources such as Geogebra, applets to support the content; and scientist-student offline and online interactions, including hangouts.

**(Dr. Sujatha Ramdorai, Member,
National Innovation Council,
and Visiting Prof. Vancouver
University, Canada)**

(ix) The National Science Museums are providing innovation spaces to engage the youth in innovative activities. Innovation spaces in five such museums, one in each zone of the country will be created by February, 2014. One in Kolkata has already been created. Hall of Fame, Resource Centre, Idea lab, and the Tech Lab are the chief components of the Innovation Spaces. These spaces also provide spaces for Tod-Fod-Jod (Disassemble-Reassemble-Repurpose), and Kabad Se Jugaad (Value from Scrap).

**(Mr. G.S. Rautela, DG,
National Science Museum
Centres, India)**

- (x) Capacity-building for innovation in schools and Universities is viewed as an area of crucial importance.

**(Dr. Dalia Gamal, Innovation Support
Department Manager, Technology,
Innovation and Entrepreneurship Centre, Egypt)**

[IV] Innovations in Health Sector

- (i) Thailand has achieved significant improvement in delivery of healthcare by appointing Health Volunteers in its 14,000 villages. It has rendered the healthcare system very effective.

**(Dr. Pichet Durongkaveroj,
Secretary-General, National Science &
Technology and Innovation Policy Office, Thailand)**

- (ii) Operation ASHA has introduced several innovations in the management of tuberculosis. For widespread action at the rural level the ASHA tied up with micro-entrepreneurs, and households at the local level where the centres are open upto 18 hrs a day. Thus the patients don't require to miss their daily work. ASHA provides specialized training to local community members and gives performance-based salaries. Different strategies have been adopted for the rural & urban areas, keeping in view the fact of dispersed and concentrated cases of TB patients in these two areas respectively. They have achieved good results in M.P. They are also working in Cambodia. They use biometric technology to prevent data fudging. They are ready to work in this area and other areas of healthcare with the States.

**(Dr. Shelly Batra, Co-Founder
and President, Operation ASHA)**

[V] Pattern of Innovation Spending on R&D

- (i) Estonia follows the strategy of innovation in the fields of Science and Technology, and R&D, both by the Government and the private sector. There is

an acknowledged need to work better in the conversion of the results of R&D into economic benefits.

**(Mr. Olover Vaartnou,
Strategy Director, Govt. of Estonia)**

- (ii) The Innovation policy of the country lays premium on technology acceleration and on setting up of Technology Incubators for providing support not only for the period between prototype development and commercialization, but also for the carrying the production to commercial scale.

**(Dr. Dalia Gamal, Innovation Support
Department Manager, Technology,
Innovation and Entrepreneurship Centre, Egypt)**

- (iii) A great deal of emphasis laid on the establishment of Technology Incubation Centre (there are 24 TICs at present), and one biotechnology incubator. Six Universities have Nanoscience Centres. There is an inter-ministerial Research Committee that approves projects in basic and applied research for grant on the basis of the laid down criteria. Currently there is an annual budget of \$ 300 mln for the R&D.

**(Mr. Michel Hivert, MD,
MATIMOP, Israel)**

- (iv) Sweden, which ranks 1st in the Global innovation Index, spends 3.6% of its GDP on research, and accord the highest priority to education and research. 70% of the total outlay for research is spent by the industry. There is an increasing focus on collaborations in R&D and innovation in the private sector.

**(H.E. Mr. Harald Sandberg,
Ambassador of Sweden to India)**

- (v) The year 1991 is the watershed year in Singapore as the country started moving up the value chain from that time onwards. Till then technology came through the MNCs. The S&T research organisation was set up. An allocation of \$ 02 bln was made for the R&D in the first Five year Plan. Now the Fifth Five year plan is on; the allocation has gone up substantially.

**(Prof. Tham Ming Po, Dept. of Engineering
and Technology Management,
National University of Singapore)**

(vi) The R&D Policy of Netherlands encourages undertaking of R&D in the private sector, and commercialization of public knowledge for public good. The public sector R&D is now far more responsive to the needs of the industry.

**(Prof. Dr. U. Rosenthal,
Advisory Council for S&T, Netherlands)**

(vii) It is important to reuse the existing knowledge and existing projects through data mining to enhance the efficiency and productivity in various sectors.

**(Mr. Denis Dambois, Head of the
Research and Innovation
Section, EU Delegation to India)**

[VI] Innovation in Industry and promotion of Entrepreneurship

(i) Under the innovation agenda, collaboration between industry and research and building national networks in food and manufacturing sectors ranks high. It is the needs of the industry that guide research.

**(Mr. Bernard Philip,
Dy. High Commissioner of Australia to India)**

(ii) Entrepreneurship and ICT are the two platforms for carrying forward the innovation agenda. Innovation in industry is a must for sustainable development. As a matter of fact, innovation is no longer an option but a compulsion.

**(Dr. Dalia Gamal, Innovation
Support Department Manager,
Technology, Innovation and Entrepreneurship Centre)**

(iii) Venture capital is a strong driver for innovation in industry and entrepreneurship 75% of the venture capital flows in from USA, Europe and Asia. Between the period 1997 to 2013, Israel is second only to Silicon Valley in terms of investment of venture capital. Grants are given for commercialization subject to the fulfilment of the laid down eligibility criteria.

**(Mr. Michel Hivert,
MD, MATIMOP, Israel)**

(iv) There is a major thrust on innovation in industrial sector. A number of technologies have been identified for the priority sectors. Focus is on developing business skills in manufacturing, branding, marketing and distribution. Angel investors play a critical role in this regard. It is crucial to ensure the industry-academia gap is bridged. The target is to attract investment of pounds 1.4 bn from the public and private sources in the next 05 years. The UK has a number of innovation clusters in the country and ranks second on the global innovation index. The investment in innovation is paying off as new ideas generated all over the world are being harnessed and platforms for collaboration emerging and getting strengthened. The investment by the foreign owned companies registered an increase of 33% as in 2011. [The Regional network started its presence in India in 2008 and has entered into a joint funding program with GITA on 13.11.2013.

**(Mr. Mark Sinclair, Regional Director,
UK Science and Innovation Network in India,
Middle East and Africa)**

(v) There is a very strong connect between the industry and academia. The research is industry-led; the Ph.D students are paid salaries by the industry, and are later given employment by the SMEs concerned. This results in a win-win situation. It increases the quality and productivity of the industrial sector by ensuring the infusion of high technology in SMEs, and provides the jobs to the technical force. The Government encourages industry-based research.

**(Prof. Tham Ming Po,
Dept. of Engineering and Technology
Management, National University of Singapore)**

[VII] New Media and ICT Platforms for Innovation

(i) There is an absolute need for carrying out changes in related spheres, which may be fiscal or non-fiscal to support the changes sweeping the world on the ICT and e-commerce fronts. The burgeoning forms of social media have also vastly influenced the language and diction of communication. The tool of formal and proper language has become emotive and volatile. The search engines will need to keep pace with the new hues of the language as it is radically evolving. The content of social media evolves over a period of time and is driven by the users i.e. the people.

**(Mr. Shekhar Kapur Member,
National Innovation Council,
India, and Film Director & Producer)**

(ii) Open Data Platform between USA and India has been a successful collaboration. A large number of the Ministries and Departments have uploaded information on various aspects of policies and programs in public domain, and continue to do so on an ongoing basis. The National Knowledge Network (NKN) is targeted to link 1500 educational and medical institutions; of these 1026 are already interconnected. The last mile connectivity has been achieved in a number of villages. The example of Kanpura in Ajmer District of Rajasthan was cited. It had been visited by the US President Barack Obama and was appreciated by him. As in Australia, spread of fibre connectivity across 250,000 villages of India over the next two years in a phased manner is poised to change the rural landscape. The cable network is also proposed to be used for the reach of internet to the rural areas. The Government is also increasingly considering the use of social media for awareness-creation about its programs and for getting the feedback on the same.

**(Dr. B.K. Gairola, Member-Secretary,
National Innovation Council,
and Mission Director,
National e-Governance Plan)**

(iii) Entrepreneurship and ICT are the two platforms for carrying forward the innovation agenda.

**(Dr. Dalia Gamal, Innovation Support
Department Manager, Technology,
Innovation and Entrepreneurship Centre)**

(iv) Google strongly believes in Crowd Sourcing, Crowd Curating and Crowd Dissemination. National optic fibre network is critical to internet penetration. However the challenge lies in the fact that just 0.1% of the languages written on the internet are Indian languages. The number of persons typing in Indian language is rather limited. This tends to severely restrict the internet penetration. Since internet is a powerful medium of education, most search engines are now working on visuals. Google is building community collaboration on common issues. Google and other MNCs have tied up to create Schema.org for taking unstructured information from the web to structured information.

**(Mr. Lalitesh Katragadda,
Country Head, Google India)**

(v) Gram Vaani is a voice-based social media platform for the disenfranchised population. The present extent of population covered by the internet is 150 million. A coverage of 300 mln is projected by the year 2017. A considerable number therefore need to be covered by the voice-based social media like radio. Gram Vaani has a wide presence in the State of Jharkhand. It has initiated a social platform for the people wherein through medium of radio, listeners call at the radio station to get information, convey local information, address grievance and feedback on Govt. schemes. Vocal messages are converted into discussion for a on a host of socio-economic issues ranging from MGNREGA to gender equity, malpractice of dowry and early marriages. It has thus become a medium for knowledge and inspiration for the villagers. It is ready to work in other States also.

**(Mr. Aaditeshwar Seth, Co-founder & CEO,
Gram Vaani, India)**

(vi) The National Knowledge Network initiative was inaugurated by the then President on 9th April, 2009. Its motto is to enable, encourage, empower and enrich the people. It has connected Educational Institutions, Security Agencies, National Labs, National Internet Exchange Points, Medical colleges, National & State Data Networks, and has connections to global networks (GEANT/TEIN4). Of the 1026 institutions connected under the network, 100 are in the State of Karnataka. The goal is to reach all the 660 districts of the country. Finally the project will have 31 points of presence (POPs); 89 Backbone Linkages; and 1500 Edge Links.

**(R.S. Mani, Project Director,
NKN, NIC)**

[VIII] Scaling Inclusive Innovation—Challenges and Perspectives

(i) The experience about the Pilot projects is not too happy. Very rarely has the innovation been incubated through pilots. Pilots, though successful, seldom get scaled up. It should be preferable to treat the Pilot as the first phase of the full-scale project and provide for the funds for the full blown project at the outset, and derive learnings and lessons as one goes along.

(Ms. Lise Grande, UN Resident

Coordinator and UNDP Resident Representative)

(ii) The Govt. has to take an active part in the development story of the country by providing a business-friendly atmosphere, and making high investment in infrastructure and education. It must have an Enterprise Development Strategy in place. Ireland has followed a bottom-up approach for sustainable development of enterprises; it provides access to seed capital, microfinance, sets up incubators and secures mentoring. The best way to scale up inclusive innovation is through creation of jobs. Focus has been on development of hot skills. The health system has also tested many new business ideas. Development of industrial products is an important part of strategy for employment creation. The new strategy is to democratize the business start-ups, and Govt. must facilitate this process.

**(Mr. Richard Bruton TD,
Minister for Jobs, Enterprise and
Innovation, Ireland)**

(iii) The Opportunities Lab, which has a presence in a University in Singapore as also IIT, madras and CMC, Vellore, does not believe in providing solutions to the problems but in helping the communities to find answers to their problems. It believes that every community has capacity for game-changing solutions. The OL imparts and trains in technological knowledge, design and creativity.

**(Dr. Ricardo Sosa, Engineering Product
Development, Founding Member,
Opportunities Lab, Singapore)**

(iv) Netherlands has found the building of networks the best way to achieve scale-ups through networking. The small energy-suppliers form networks for exchange of the surpluses. The private sector has a tremendous role to play but the vital infrastructure has to be provided by the Govt.

Upscaling of innovation has to be low-cost to be inclusive, and may even require financial assistance. The NGOs also have a major role in so far as they can emerge as the local partners. R&D organisations are also important partners in the scale-up exercise. Energy (smart grids), water, desalination of water, sanitation, conversion of waste water into water for industrial use are among the

19 priority areas. The Netherlands Council for S&T has been having sound collaborative ties with the DST/CSIR in India for the last 30 years; the State Govt. of Gujarat has also been in touch with them for a tie-up.

(Prof. Dr. U. Rosenthal, Advisory Council for S&T, Netherlands)

- (v) Inclusive business is the special interest area for the Corporation. It committed \$ 20 bln for the developing world last year for this purpose. It has invested \$ 10 bln in 85 countries in last 05 years. The Corporation has also set up incubator at IIM, Ahmedabad, and has been supportive of off-grid electricity to rural areas.

As a company graduates, its financing needs undergo change. Financial assistance for the start-ups is rather crucial. The role of a Fund like the one proposed by way of India Inclusive Innovation Fund for assistance to grassroots innovations is critical. Business enterprises can convert to social purposes. The scale-up efforts require patience, financial support, and also the freedom to close up the companies, if so needed. The regulatory regimes in this direction should be more helpful.

(Mr. Anil Sinha, Regional Head, Advisory Services, International Finance Corporation, India)

- (vi) Canada aims to be the least expensive place for the R&D globally. It has Scientific technology Development Fund to support commercialization of the innovations.

The scale-up is sought to be achieved through clusters. The Govt. has to create the eco-system to help entrepreneurs flourish e.g. soft landing visa. The Govt. of Canada has taken the lead in creation of innovation hubs. As a matter of fact, a suite of policies and ideas are needed to provide innovation.

(Mr. Raj Narula, President and co-founder, TaraSpan)

- (vii) Inclusive innovation is particularly important for developing countries like India where of the over 1.2 bln population, 800 mln are poor and 200 mln belong to the middle class category. Scale-up is slow to begin with but then can build up exponentially. It requires a lot of patience and perseverance. .A certain frame of

time is needed for the scale-up exercise. The CSIR's vision is to create wealth out of publicly-funded S&T for the good of people.

He gave the example of Open Source Drug Discovery (OSDD), which after a slow initial start, has 7685 people from 130 countries on its portal, and has thousands of students working on projects for synthesis of molecules. It was inspired by the IT project like Linux and Web-Tech, and the Bio-tech project viz Human Genome Sequencing. The OSDD provides a global platform where the best minds can collaborate to solve complex problems associated with discerning novel therapies for neglected tropical diseases. Its main focus is on diseases like T.B., Malaria, and Leishmaniasis. From 13 projects in March 2009, the number has moved upto 261 in September, 2013. The OSDD is now in an auto-pilot mode. Nesta, U.K. has ranked it high among the category of frugal innovations.

Dr. Brahmachari referred to the CSIR-800 initiative whose objective is to increase the earnings of the low-waged industrial workers by Rs. 15/ per day. The examples of solo-rickshaw (solar-energy driven rickshaws) to ele-rickshaw (battery-driven rickshaws), and their scale-up were cited. Mobilisation of non-exclusive clusters, mitigation/elimination of licensing barriers and efficient IP regimes help in scaling up. He gave example of the constitution of the CSIR Technology Pvt. Ltd., a section 25 company (i.e. a non-profit company) in which SBI has taken a 10% stake. It will change the scenario for financing of entrepreneurs. Techvils is another initiative which empowers communities with S&T interventions. CSIR-800 is also working on e-Health care in Haryana, U.P. and Andhra Pradesh; as also in agri-technologies in the areas of crops like mint, khus and lavender. The future action plan envisages nurturing 15 start-ups in the next 04 years; and materialization of 50 techno-commercial deals per year over the next 04 years.

**(Dr. Samir Brahmachari, DG,
CSIR, and Member, National Innovation Council)**

(viii) The scale-up has been achieved by the Life Spring Maternity Hospitals on the basis of the economy of scale. They have 12 hospitals, and deal with 150 deliveries in a day. The economy of scale is achieved by sharing of infrastructure and resources. Their tariffs end up being reasonable e.g. Rs. 5000 (US \$ 80) for normal delivery, and Rs. 12,000/ (US \$ 200) for the Caesarean section. It is equivalent to the monthly wages of the daily wagger as compared to the tariff level equivalent to 4 to 5 months of their wages charged by most other private

hospitals. They have conducted 23,000 deliveries till date, and provide the services with quality, dignity and affordability.

**(Dr. M. Ayappan, Chairman,
Life Spring Hospitals)**

[IX] Learnings from Global Good Practices

(i) Innovation is aimed at reduction in socio-economic inequities in **Brazil**. The country improved food production by 300% in the last 30 years. A major part of it is through yield-increase during the last 10 years under their program entitled 'EMBRAPA'. It has now been renamed as EMBRAPAII (the last two IIs being for Industrial Innovation). Brazil does not normally believe in pilot projects but in this case, a pilot project was started in the year 2011, with a budgetary outlay of US \$ one bln for support to the Institutes for Technological Research and Institute for Manufacturing Research among others for the next 04 years. It is an ambitious project and embraces various areas, and has evoked a great deal of enthusiasm in the country.

**(Dr. Alvaro Toubes Prata,
Secretary of Technological and
Innovation Development (MCIT), Brazil)**

(ii) Italy believes in the Anthill Principle i.e all ants profit from the hill because it works equally well for everybody. It has a firm conviction that equality benefits all, and that what is good for the old and the disadvantaged is good for all. 'Do more with less' is the guiding principle. Among the innovation-driven initiatives, co-working and rapid prototyping rank high. Energy efficiency and social care are among the emerging areas. A number of innovative concepts are being introduced to improve the quality of urban life e.g. 0 km markets, among others. Mention was made about the collaboration between Udine and the B.M. Birla Science Centre in Hyderabad on education, research and industry.

**(Prof. Dr. Furio Honsell,
Mayor of Udine, Italy)**

(iii) Practices that aim at creation of jobs, promotion of entrepreneurship, and attributes of openness and cooperation in collaborations and partnerships occupy a high place among the global good practices. Globally 50% of jobs are being

created in young firms and businesses; in Brazil, 70%percent of the jobs are being created by the new enterprises, as they get phased out in the older ones.

The OECD has developed an Innovation policy platform in collaboration with the World Bank.

**(Mr. William C. Danvers,
Deputy Secretary-General, OECD)**

- (iv) Tetra-Pack, a 60 years old Swedish company, having operations in 67 countries, lays accent on affordability and sustainability as part of its core strategies. The Company believes that without innovation it will die (not remain competitive). There is search for innovation at different stages of value chain including packaging, recycling of cans as also in communication.

**(Mr. Jaideep Gokhale, Environment
and Communications Director,
Tetra Pack, South Asia Markets)**

- (v) Switzerland ranks No. 1 in the global innovation index for the last 03 years, and has been among the top rankers, along with Netherlands and Japan, for the last 07 years. The country strongly believes that research and innovation are pre-requisites for economic growth and wealth creation. 10.8% of federal spending is on education and research. R&D expenditure constitutes 3% of the GDP, and 2/3rd of it is from the private sector. As a result, Switzerland has a well-trained work-force and sound R&D institutions, a well-evolved SME sector and academic institutions of high standard. 07 Swiss universities are among the top 200 Universities of the world;80% of Swiss students study in top Universities of the world. There are 26 universities of Applied Sciences; admission to these is rather competitive. Every youth has to have a secondary training. Two of the Switzerland's oldest and most prestigious Institutes are the Federal Institute of Technology, Laussane, (set up in 1853) and the Federal institute of Technology, Zurich (set up in 1854).

**(Dr. Indraneel Ghose, Senior Thematic
Adviser for Education, research and
Innovation, Embassy of Switzerland in India)**

- (vi) In response to the suggestion made by Mr. Geoff Mulgan, CEO of Nesta, U.K., and Chairman of the Session on 'Learnings from Global Good practices', the

panelists also flagged the learnings from failures. Among the key ones listed were the lack of coordination, and the failure to talk to each other; marketing myopics; neglect of education, and of science and technology; and the undermining of the criticality of the manufacturing sector in the economy of the country (as in the U.K.).

The search engine of Google will do well to add to its terrific knowledge and database but evidence-backed learnings are hard to come by. Google may consider entering into this field.

**(Mr. Geoff Mulgan, Chief Executive,
Nesta, U.K.)**

[X] Institutional Frameworks for Innovation; Innovation Eco-systems, including Local Innovation Eco-systems, Priorities, and Approach

- (i) The **French innovation Commission** is an independent decision-making body, and is expected to take decisions on a consensual basis. Approach to innovation is not just individual-centric; the State allocates budget for the State level Innovation Institutions. There is a balanced approach. The public authorities accord priority to innovation in high-tech areas. The Commission's mandate is to develop Vision for the next 50 years in the identified seven strategic areas of priority namely, energy, and desalination of sea water, among others. The Commission proposes to hold seven innovation contests. G-7 contests will be formally launched this year; it will be open to global participation so as to have the best, and not just good projects.

**(Ms Anne Lauvergeon, President French
innovation Commission)**

- (ii) **Brazil** has a Ministry designated as the Ministry for Science and Technology and Innovation. The priorities areas consist of reduction in social and economic inequalities, improvement in children's education in public institutions (75% students go to private institutions); and bridging the gap between science and economy. Priority also accorded to setting up of Incubation and Science Parks; deep sea exploration; agricultural research; increasing efficiency of financial services including banking; modernization of aircraft design.

**(Dr. Alvaro Toubes Prata, National
Secretary, Technology Development
&Innovation)**

(iii) The Government of **Australia** invests in creation of innovation eco-system. The country accords priority to creation of infrastructure supporting innovation e.g. national broadband network; and building and strengthening industry-research linkages as in the sectors of manufacturing and food processing. An amount of \$ one billion allocated for Innovation-Industry Precincts. CSIRO's Global Precincts and National Research Flagships also contribute towards the innovation ecosystem. Among Australia's priority areas are bio-security, sustainable agriculture, minerals, energy, digital productivity and services, wealth from oceans, water and preventive healthcare.

**(Mr. Bernard Philip, Dy. High Commissioner
of Australia to India)**

(iv) Malaysia has a National Agency for Innovation as a statutory body formed under an Act of Parliament two and a half years back. The Prime Minister chairs the Agency. The members are from the Government, Captains of Industry, academicians. The Dy. Prime Minister and six Ministers are also members. The top bureaucrat of the country i.e. the Chief Secretary is also a Member. It is expected to meet four times in a year. The Agency is envisaged to be in existence for a period of ten years; in the long run, it is proposed to be driven by the private sector. The State gives funds for overcoming roadblocks in the way of innovation agenda.

The priority areas are R&D; creation of platform for commercialization of intellectual property rights; facilitating industry-academia collaboration; biomass energy and plastics; education and nurturing of high order thinking skills. The Agency has a multi-pronged approach, and is currently pursuing 20 initiatives.

Innovation is viewed as a critical instrument for having impact on jobs-creation and wealth-formation, and is perceived as having a decisive role in making Malaysia a fully developed country by 2020.

**(Mr. Mark Rozario, Chief Executive
Officer, Malaysian Innovation Agency)**

(v) The Govt. plays the role of a co-ordinator, platform-creator and priorities-setter in the pursuit of the innovation agenda. Innovation enhances competitiveness for the export-oriented economy of Finland. The Finnish Govt. strongly believes that the public sector can create the desired eco-system and climate for innovation. It

has a Strategic Centre for S&T and Innovation. At the same time the private companies have to be at the cutting edge of leading innovation and play a crucial role in jobs-creation.

Finland encourages breakthrough innovation, and favours PPP models for promotion of innovation through R&D in the priority sectors of biomass-based energy, health, environment, mechanical engineering.

**(Mr. Riku Makela, Head, Tekes,
New Delhi, and Director, FInnode, India)**

(vi) The niche areas for innovation are ICT and healthcare.

**(Mr. Olover Vaartnou, Strategy
Director, Govt. of Estonia)**

(vii) Egypt has set up a Technology, Innovation and Entrepreneurship Centre called TICE recently. It promotes culture of business leadership and encourages start-ups. This Centre also works for PPP modes by way of industry-academia partnerships, and also for the protection of the IPRs.

**(Dr. Dalia Gamal, Innovation Support
Department Manager, Technology,
Innovation and Entrepreneurship Centre)**

(viii) The Government plays an active role in providing conditions for continuous growth of innovation, and supports it in PPP mode with the private sector.

**(Mr. Michel Hivert, MD,
MATIMOP, Israel)**

(ix) The real challenge is to create an eco-system that supports innovation.

**(Mr. Mark Sinclair, Regional Director,
UK Science and Innovation Network
in India, Middle East and Africa)**

(x) The Government should act as a catalyst for creation of a macro-level innovation eco-system. It is important that critical thinking is encouraged and supported in the education system; cooperation and creativity are nurtured; and a climate is created for overcoming the fear of failure.

(H.E. Mr. Harald Sandberg, Ambassador)

of Sweden to India)

(xi) Netherlands has identified nine sectors as areas of priority. These include Food, Water, Horticulture, Energy, Life Sciences and Health, high-technology systems and materials, Chemistry and creative industry. A framework for research and innovation entitled Horizon 2020 has been drawn up.

**(Prof. Dr. U. Rosenthal, Advisory
Council for S&T, Netherlands)**

(xii) Ecuador has a separate Secretariat devoted to Education, Science & Technology and Innovation. Energy conservation, environment restoration, biotechnology and agriculture figure among the priority areas for research and innovation.

**(Mr. Jaime Medina, Under
Secretary for Scientific Investigation of the
National Secretariat of Higher Education,
S&T and Innovation, Ecuador)**

(xiii) EU regards innovation-driven initiatives in creation and strengthening of physical and R&D infrastructure e.g. labs, Patent Offices, and IPR regimes; and putting in place networks to allow for the pipelines for the flow of knowledge needed as critical. The EU is bringing out the Horizon 2020 for driving the innovation agenda. It will be the largest and most program of the EU from next year. The EU contributed to creation of innovation eco-system by organizing a Conference on Innovation Clusters.

**(Mr. Denis Dambois, Head of the
Research and Innovation Section,
EU Delegation to India)**

(xiv) The institutional framework cannot be a large-scale organisation . Its main objective is creation of innovation eco-system and ensuring scale-up on the successful innovation models.

**(Mr. Arun Maira, Member, National
Innovation Council, and
Member, Planning Commission)**

(xv) Thailand promotes innovation in the fields of S&T, and in economic, commercial and social sectors through the institutional framework provided by the National Science & Technology and Innovation Policy Office.

Thailand accords priority to health and education sectors under the innovation-driven initiatives.

**(Dr. Pichet Durongkaveroj,
Secretary-General, National Science
& Technology and Innovation Policy Office, Thailand)**

(xvi) The key mission of the Governments should be the creation of jobs. It is however a challenge to wake up the slumbering Ministries and Depts. Innovation is simply not embedded in the day to day working of the Governments. The answer lies in deregulation and promote and reinforce innovation through private sector or in the PPP mode.

**(Ms. Lise Grande, UN Resident
Coordinator and UNDP Resident Representative)**

(xvii) Setting up of new institutional frameworks costs lot of time and money. To the extent possible, the Framework should provide for partnerships. Emphasis be on forging innovation business models by collaborations. As for the innovations for rural areas, institutional frameworks should be affordable.

**(Mr. Riku Makela, Head,
Tekes; Director, Finnnode India)**

(xviii) In U.K. endowments are a major source of funding for innovations for public good. They also work in partnership with the private sector.

**(Ms Kirsten Bound, Lead policy
Adviser on innovation Systems, Nesta, U.K.)**

(xix) The question on the best institutional framework does not offer one precise answer. There can be multiple options for institutional framework. India is laying emphasis on creation of State Innovation Councils and City innovation Councils. It is important to create environment and structures that are supportive of innovation and encourage investments by the angel investors. Since the extant systems and institutions are archaic, a new mindset is imperative to create the right frameworks.

**(Mr. Kiran Karnik, Member,
National Innovation Council, India)**

(xx) The role of local eco-system for innovation of inclusive nature is critical. Israel funds bunch of ideas for upto proof of Concept stage. The issue is upto what stage the State or the VC supports. This merits well-considered analysis. At the same time, it needs to be understood that the needs of the clusters are different from those of the start-ups.

**(Ms Kiran Mazumdar Shaw, Member,
National Innovation Council, and CMD, Biocon)**

(xxi) The local eco-systems are being helped by the new and young firms as they are the ones creating new jobs. In Brazil, this percentage is as high as 70%. With the exception of the USA and Sweden, the pace of scale-up is slow. In Italy, the scale-up is at a stage of stagnation. There is a need to channel resources to innovative firms; the capital needs of such firms merit to be accorded priority. Adequate risk capital should be available as the start-ups have to be allowed to experiment with new and risky ideas. Barriers to entry and growth need to be eliminated or at least minimized. Two actions are a must: policy of bias against young firms needs to be replaced by a level-playing field; networks of connections to be built both at the local and national levels.

**(Mr. Dirk Pilat, Dy Director,
Dte of S&T and Industry, OECD)**

(xxii) The country has over 5000 MSME clusters. The NInC piloted 07 innovation clusters, and effected major improvements in the quality and productivity of the said Clusters. Details of the Moradabad cluster of the brassware industries, and Krishnagiri cluster of the mango pulp processing cluster were provided. The ties between the local Cluster Innovation Centre (CIC) and the labs concerned of the Council for Scientific and Industrial Research were established. NInC acted as the Knowledge partner and provided the initial stimulus. Creation of local ecosystems for inclusive innovation through formation of industrial innovation clusters has yielded the desired results.

It is crucial to have the industry-institution connect. The case of Surat's gem-cutting industry was cited where there are 3000 companies engaged in the

activity of gem-cutting but there is a complete disconnect between the said industry and institutional research.

**(Mr. Samir Mitra, Expert,
National Innovation Council, India)**

(xxiii) The hand-made carpets are a real hot item in IKEA. The innovation introduced saw the weavers being moved from their homes as work-base to the industrial work premises, with the assurance of timely payment of daily wages. This was accompanied by introduction of new handloom and new technology. These changes proved to be a win-win situation for all the stakeholders. It reduced the number of days taken to complete a handmade carpet from 04 days to 2.5 days; curtailment of the training period; resulted in greater participation by women workers; caused less back problems on account of being ergonomically better designed; and significantly increased the qualitative excellence of the product.

**(Mr. Kushal Chakravorty, Business
Development Manager, Carpets
& Rugs in Asia Pacific, IKEA)**

(xxiv) While the 80s were the period when the Govt. service was most sought after, and 90s saw the IT industry sweep the jobs scenario; 21st century is the period of entrepreneurship. The Start-up village was started last year and has made impressive strides since then. It has world class internet connectivity. The State has joined hands and is setting up campus for 250 start-ups. Leading public and private sector entities are setting up their shops and offices there. In developing countries such as India entrepreneurship needs to be fostered. Countries like China and USA have 1000 incubators each for the support to the start-ups. We should prepare a blueprint for as many incubators The State of Kerala is now allocating 1% of its budget for entrepreneurship. The 1.25 lakh sq. ft. covered area is now targeted to be raised to 3.75 lakh sq.ft.

**(Sijo Kuruvilla George, CEO,
Startup Village, Kerala, India)**

(xxv) The Cambridge Phenomenon has come a long way, and now has 1575 technology-based firms and 57,140 people working there. The technical consultancy companies play a major role in strengthening of the local eco-system. Cambridge has gained recognition as a highly innovative region. It has a concentration of electronics and biotechnology firms. Its environs are marked by

an open society and multi-disciplinary communities. Significantly, the University and the industry are organically linked. The Institution has developed both the hard and soft infrastructure. The Institute of Manufacturing works in close collaboration with the industry which is currently witnessing a renaissance in manufacturing sector in its complete value chain. Astra Zeneca is the latest entrant to the Cambridge Cluster.

**(Prof. Sir Michael Gregory,
Institute for Manufacturing,
Cambridge University)**

[XI] Country Collaborations

- (i) The main benefit of the GIR is the tremendous networking, opening up opportunities for project collaborations on products, processes, and services. The OECD made two project proposals for collaboration:
 - a. **Developing tools for Measuring and monitoring inclusive innovation:** OECD offered to collaborate on developing better measures for assessing innovation in India, and in particular for inclusive innovation, which could be extremely helpful in monitoring policies as they are implemented, to understand better which actions work and which don't. This would be an area where OECD could help in developing methodologies and supporting this process, although much of the work would need to be at national level. This could also help in comparing where India stands compared to other countries in the area of inclusive and social innovation.
 - b. **Sharing good practices and building the evidence base:** Both OECD and NESTA are currently focused on codifying good practices and sharing them with others. In OECD's case, this happens through regular meetings and events, but also through the Innovation Policy Platform, which is available on-line and is developed in cooperation with the World Bank. OECD would be happy to collaborate with NInC on this to feed international good practices more directly into the Indian policy debate, and to ensure that ideas from India feed into the international debate. While sharing these practices, focus may be on the Key Success factors (KSF), including the fact of bottom-up approach.

The participants endorsed the proposal.

**(Mr. Sam Pitroda, Chairman,
National innovation Council, India)**

(ii) MATIMOP, i.e. Israeli Industry Centre for R&D operates international co-operation on behalf of the Office of the Chief Scientist, and assists in locating partners for industrial R&D. It has collaborations with companies in North America, Europe, Latin America, Asia, including India. Experts from the implementing and funding entities of both the countries evaluate the projects in a joint committee. Communications, Life Sciences, Software, Electronics, and Electro-optics have maximum number of collaborative ties. In India they have partnerships with GITA, CSIR and Dept. of Science & Technology, and in Karnataka. Israel favours collaborations for inclusive innovations, which are characterised by grasping the applications by science, involve investment in applied knowledge, and believe in bottom-up approach.

**(Mr. Michel Hivert, Managing
Director, MATIMOP, Israel)**

6. The GIR concluded with a Vote of Thanks to all the participants.