The Summary of The Seventh India-Israel Forum

13-14 December 2014 | New Delhi, India

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Confederation of Indian Industry

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7th INDIA ISRAEL FORUM
EXECUTIVE SUMMARY

The India-Israel Forum has been playing a catalytic role in deepening and expanding the relations between the two countries. In the last seven years, the Forum has set the tone for several new partnerships between the government agencies, corporates and academia. Assembling in New Delhi from 13-14 December 2014, the delegates from the two countries came together for the seventh meeting of the Forum. Over the course of two days, the delegates discussed a wide range of topics for a greater bilateral cooperation and to establish new partnerships between the academic, policy and business communities.

Since the sixth India-Israel Forum in Tel Aviv, there have been several important changes in India domestically. The new government has assumed power under the leadership of Prime Minister Narendra Modi and is actively working towards strengthening the economy, re-examining the utilization of energy resources and boosting infrastructure. With a vast array of action items, the Indian government has infused fresh energy in the markets and revived investor sentiment. The new Indian government has also indicated that it will upgrade relations with Israel.

Prime Minister Benjamin Netanyahu and Prime Minister Narendra Modi met each other in New York in September 2014 and India's Home Minister Mr Rajnath Singh has already visited Israel in November 2014.

Mr. Shimon Peres, Former President of Israel visited India in November 2014 and his meeting with Prime Minister Narendra Modi is indicative of the special focus on the bilateral relationship that both countries give to each other. This meeting highlighted that India values Israel's contribution in developing advanced technologies. Israel has combined innovation, creativity and courage that had brought solutions in various fields in India.

Israel's economy somewhat slowed down last year but the hi-tech sector continued to prosper. There has been a healthy inflow of foreign investments through funds and mergers and acquisition activity is at a higher level. Trade and investment flows from Asia are also on the rise as the Israeli economy is increasingly tilting towards the East. Israel is due to go back to the polls in May 2015.

Against this backdrop, the delegates agreed that there are numerous opportunities for greater collaboration and bilateral engagement on sectors like - Healthcare, Counter-terrorism, Agriculture, Banking, Infrastructure, Science & Technology and Innovation practices to name a few.

In a globalizing economy, innovation is perceived as a new engine of economic and industrial growth. It was with this thought that for the first time, an 'India-Israel Colloquium on Innovation' was organized in Mumbai. The purpose of this colloquium was to broaden the India-Israel relationship as the two countries have a well-established partnership in defence, it is technology and innovation that have recently become focus areas of this relationship. The colloquium was jointly organized by Ananta Aspen Centre, Collar Institute of Tel Aviv University, Confederation of Indian Industry (CII) and Spencer Stuart.

Israel as a prolific hub of innovation has created a vibrant innovation ecosystem that offers much learning for India. It is also a valuable source of technological collaboration for Indian companies across multiple sectors; and can be especially important in areas discussed. India is a transforming economy offering huge potential in technological innovation across IT, Healthcare, Academia, Agriculture, Telecom etc.

The Innovation colloquium offered a unique platform for top level Israeli and Indian delegation to interact and discuss areas of cooperation and partnership as Israel is trying to diversify its export base from the US and Europe. The event was co-chaired by Mr. Israel Makov, Chairman of Sun Pharma and Mr. S. Ramadorai, Chairman of the National Skill Development Corporation and featured thought leaders from India like Mr. Jamshyd Godrej, Co-chair of India-Israel Forum, Mr. David Akov, Consul General of Israel, Mumbai , Mr. Manoj Kohli of Bharti Enterprise, Mr. Harsh Vardhan of Bain & Company India. Mr. Yogesh Mahansaria, Founder and Chief Executive Officer of Alliance Tire Group, Ms. Anjali Bansal, Managing Partner, Spencer Stuart.

Continuing from the 6th India-Israel Forum, this year, two colloquiums were convened prior to the main forum on 'Food Security' and 'Cyber Security'. The colloquiums outlined the complementary strengths of India and Israel which provide for an opportunity to partner for benefits to both nations' economies and security. Such a partnership in 'food security' and 'cyber-security' would provide a robust basis for a partnership based on economics and security.

The discussion over the two days covered 'Domestic Politics and implications for bilateral relations', 'Innovation Collaboration', 'National Security Paradigm: Converging Security Interests' as well as Prime Minister Narendra Modi's new initiative on 'Make in India' and how this initiative can be beneficial for enhancing investment and trade flows. 'Education' is a major area of focus between the two countries, and 'Cooperation in Skill Development and Education' was deeply deliberated upon by the delegates.

The 7th India-Israel Forum has become pivotal to India-Israel relations, infusing the delegates and stake holders with an assortment of fresh ideas for greater level of mutually beneficial cooperation. The Forum has become an important cog in the wheel as the two countries aim to develop economically secure, educative and innovative societies through greater bilateral relations.

Key Recommendations

Cyber security

- India and Israel should explore collaborations to enhance digital footprint through Smart Cities.
- From the cyber security point of view, much of the security aspect is focused on laptops and PCs, but not so much on phones. Israel can help India with security solutions for phones, which can be a great business opportunity.
- Create a joint meeting between Indian cyber industry and Israeli cyber industry.
- Israeli government is looking at establishing new Centres of Excellence in India. One such centre could be on cyber security.
- Sign an MoU between the two governments cyber cooperation. Cyber is wider than defence.
- There is a dedicated fund for research, including on cyber. Managers of this fund should allocate funds for cyber research.
- Israel is a leader in cyber space, and can de-construct this area for Indian students. The cyber threat will be in India very soon. Learning to de-construct is very important to India.

Food Security

- Collaborations are required across the supply chain, but the key question is as to who is going to fund these models. These projects have to come in through Government to Government-to-Government collaboration.
- Israel has been a development laboratory of sharing "know-how" and experiences with the world. Israel is working with National Horticulture Mission of India and the Indian Ministry of Agriculture through Centres of Excellence. In April, the CoE model will enter the 3rd phase. Now there is a need to identify partners to upgrade this model which is received well by the Government as well as farmers.
- On milk, Israel is negotiating with the Haryana Government for another COE.
- India and Israel can be preferred partners in 4 key areas:

- Urban agriculture – large potential infrastructural facilities can be developed near cities for entrepreneurs to use and cater to urban demand. Also lot of land is available with defence and railways which can be used to show case best practices and the output can be fed back to these departments.
- Postharvest management – 15 states have taken steps towards agri marketing reforms and this is a good beginning in terms of ensuring quality for perishable produce
- Diversification to high value agriculture – particularly in green revolution states as land is consolidating and number of farmers is reducing
- Technology for Rain fed agriculture – new CoE will come up in Bihar to develop best practices for rain fed agriculture

- The funding from government is limited and these models can be scaled up by private intervention. Government will provide whatever policy support required.
- Need to get a third party assessment done for the CoE's to consolidate experiences of the last 5 years.
- Need customized models for food security that employ institutional and social engineering. These models can emerge through:
  a) Academic to government interactions
  b) Government- to-Government collaborations
  c) Government-to-Private and Private-to-Private exchanges
- Value chain approach to avoid food wastage is needed. This requires mega investments and innovations, from engineering to technology. Explore the option of getting pull carts that have refrigerated section at the bottom powered by solar panels to prevent wastage?
- Collaborations are needed to make seeds resistant to climate change impacts, like droughts.
- Centre of Excellence for packaging industry could be considered. There is a need to find ways to increase the shelf life, not only for domestic markets, but also for external markets.
- ICT in agriculture has a crucial role to play apart from tracking consignment - it is about condition management. Technology centered around thermal management like refrigeration has evolved for perishables through packaging and can be introduced into India.
- Israel has developed a technology to monitor a cow's three vital parameters: health, fertility and nutrition intake through a simple tag. This offers great benefit for Indian farmers.
- Postharvest loss is a key problem in Indian agriculture, along with food contamination. Israeli technology that fights bacterial contamination through packaging can be introduced in India.
- Areas of collaboration:
  a) Investment opportunity as 100% FDI is allowed in cold chain
  b) New technology that consumes less energy
  c) Improving yields of fruits and vegetables through genetic engineering

Education

- Vision: India is a young nation, at a time when many countries are aging. India can be the talent capital of the world and the HR hub of the world. Need to train Indian youth and faculty.
- Israel should set up Centre for Excellence for Skills in every state of India. India need skills training in different areas, including national security. India needs trainers and knowledge, and no money. Private sector can come in as well.

- Industrial Training Institutes of India need revamping. They are not producing the skilled people needed. These are turn around jobs. Opportunity to partner in some of these and Modernize them and make them role models for the other states.
- Need more and more faculty level training and exchanges. Opportunities for partnership.
- Joint collaborations also needed through Fellowships, Online courses and common classrooms
- Offer joint degrees (doctorate and postdoctorate) especially in arts, engineering and medicine.
- Specially designed academic programs should be made aimed at connecting industry and universities.
- Introduce "Innovation" as a subject in India.
- Way forward:
  a) Building new capacities
  b) Use emerging technologies
- Need cooperation at the top level in developing courses and curriculum.
- Ventures should be funded by private sector for greater success and impact.

Others

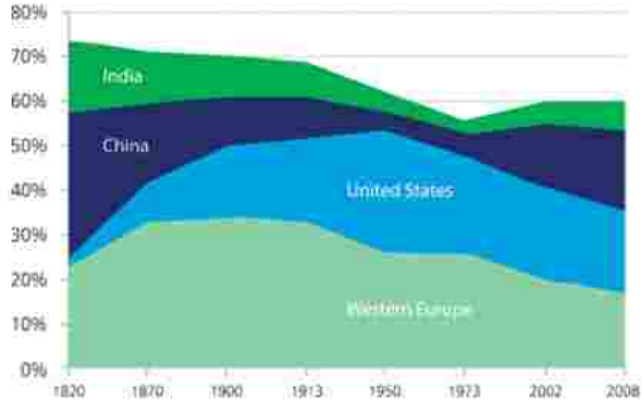
- Daily flights are important, to enable entrepreneurs to travel smoothly between India and Israel.
- Healthcare is a huge issue for India. But India can't use expensive solutions. The primary healthcare needs in India are now focused on IT and healthcare, cheaper medicine, health access for rural areas. This is an area of collaboration.
- India should start investing in Israeli companies, like China and the U.S. This will enable Israeli technology and innovations to come here.
- India can provide scale and market for joint collaborations, while Israel should provide the knowledge set. India needs to utilize the cutting-edge innovative thought process from Israel and suit it to Indian needs.
- Indian government does not invest heavily in incubators and accelerators. Indian students should be exposed to Israeli incubators.
- The Forum should recruit new participants every year.

7th INDIA ISRAEL FORUM
PROCEEDINGS

- Welcome Remarks by Co-Chairs: Jamshyd N Godrej, Stan Bergman, Tarun Das & Aharon Fogel
- Remarks by Ambassador Daniel Carmon & Sandeep Kumar
- Self-Introduction by delegates

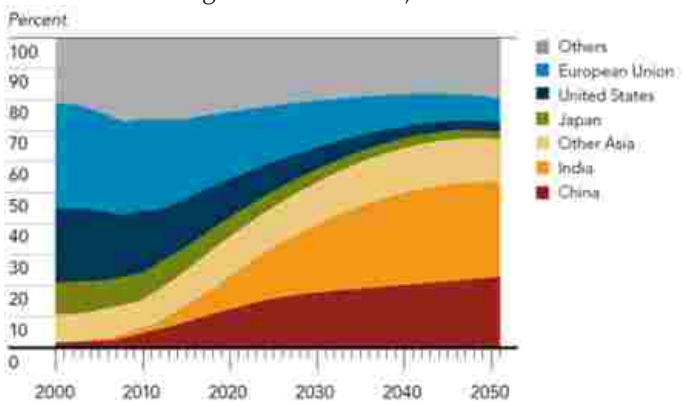
Welcoming the participants to the seventh meeting of the India-Israel Forum, The Co-Chairs noted the special relationship between the two countries and as to how the Forum has played a key role in making this relationship special. Israel is a "startup" nation, having the world's highest concentration of high-tech startups per capita. According to The Economist, almost 1,000 new firms are launched every year in Israel. The country also has one of the world's most concentrated corporate sectors: 24 major conglomerates control nearly a quarter of the country's 596 listed companies and more than two-thirds of the total market capitalization of those firms. It was with this reason that a colloquium on 'Innovation' was organized in Mumbai that added a different dimension focused on Innovation and Entrepreneurship in contrast to the Track two nature of this Forum. The format was different and it was open to a much larger audience. Going by the positive feedback, Mr Godrej recommended looking at Mumbai as an additional feature of the Forum going forward.

Percentage of World GDP, 1820 – 2008



Relations between India and Israel have advanced very nicely. Prime Minister of India Mr. Narendra Modi is keen to take the relationship forward. Education over the years has become a key area of convergence between the two nations and going forward can be a major focus of joint efforts. India's economy is on the rise and is likely to become the largest economy as the economic history is changing once more. This makes India a

Percentage of World GDP, 2000 – 2050



Source: National Intelligence Council, Global Trends 2030: Alternative Worlds, December 2012. www.dni.gov/nic/globaltrends

strategic priority for Israel and her innovative economy. Statistics by the National Intelligence Council presented to the delegates demonstrate India's growing prominence in controlling global GDP and the greater share of GDP will trigger profound shift in patterns of consumption.

The delegates also noted the contribution of former President of Israel, Mr. Shimon Peres towards India-Israel relations as a constant figure and an informal patron of the Forum.

It was also emphasized that the relations between the two countries is lying on a solid foundation. Development diplomacy, water diplomacy, cyber diplomacy etc. are essential areas and the vision should be to take the relationship forward beyond the pillars of Agriculture and Defence.

The Ministry of External Affairs in India has been reaching out to think tanks, media, Universities, academics, etc. to help frame a comprehensive policy framework. The trade between the two countries is at about 5 billion USD. Defence sector is growing, services and innovation cooperation is increasing. It is important to increase people-to-people ties between the two countries.

At the political level, there is recognition that despite whatever public statements are made (on the Gaza conflict for e.g.); there is understanding that there is resilience and maturity in the relationship that work will continue at the backend. It is important to discuss a possible ways to cooperate in intelligence sharing and terrorism and how we coordinate voting patterns at UN level.

Session One: Domestic Politics and implications for bilateral relations

Session Chairs:	David Kolitz & Tarun Das
Presenters:	Sever Plocker G Parthasarathy Yuli Tamir

David Kolitz

Indian political scenario has changed since the new government has taken over under the leadership of Prime Minister Narendra Modi from May 2014. There is a new impetus and vigor to push on economic and policy matters. This is the first ever Government of India, which is Centre Right that has a full majority and does not rely on coalition partner. The private sector has a central role in policy making in future development.

In the years ahead there will be greater focus on innovation, private sector, and entrepreneurship. Business acumen is in the DNA of this political leadership and targeting higher economic growth is back on the radar. PM Modi has very big ideas for India, and very high aspirations. He has captured the imagination of people at every level and wants greater relations with the world, especially Israel, Japan and the U.S.

The entire operation of getting the President of the U.S. in India for the Republic Day was entirely Modi's PM's personal initiative and he is also engaging the President of China, despite the perception of threat.

From the Israeli point of view, India opens up great opportunities. In the last ten years, people around the world have started to feel the shift in economic hegemony. Although Israel has traditionally been looking at the West as an ally, now, it is looking eastwards.

For Israel, finding ways to channel innovations, skills and talents is very important. That is the future of Israel and, whichever government is in power in Israel, India and Israel relations will continue to be strong.

From India's perspective of the region, India has approximately six million Indians living in the West Asian region (mainly in the gulf-states) and 70 % of the energy resources come from this region. On the other hand, the middle class in India admires Israel for its achievements:

innovation, defence, etc. Domestic politics and constraints should have no compulsions on India-Israel partnership as both countries consider this relationship as special.

Reforms in India are being proposed in the defence sector and it is suggested that foreign investment in defence should be more than 75%.

India is considered as the greatest functioning democracy in the whole world. Looking ahead, India is on the right way to becoming an economic powerhouse of Asia, due to its democracy. Only democracy can provide long term inclusive and sustainable prosperity to its people, while autocracies only offer the illusion.

Cheaper oil is very important for long-term future of India and Israel.

Domestically, it was noted that India has very complicated regulations that does not allow new entrants/entrepreneurs to enter business. This issue is needed to be addressed by the new government.

It is important to consider Middle East and subcontinent as separate regions. The threat of terrorism, especially from ISIS is affecting both the countries. Hence, there are a lot more shared interests. India is going through a phase of fundamentalism in religion in India, which creates schisms in society and affects relations with other countries. Many people may not agree, but this is equally important. Secondly, on the Gaza conflict, it stands to affect ties with Middle East. These are realities: not just because of the Muslim factor, but because most of India's oil imports come from Middle East. If both countries have strong industry, economic and people-to-people relations, politics will not affect the relations.

On the procedure vs processes debate in ease to do business, Modi PM is committed to making things easier. By nature, Indians are peaceful people, believing in pluralism.

Session Two: Report Back Sessions of the Parallel Meetings on "Food Security" Cyber Security & Big Data Analytics"

Session Chairs:	**Joseph Klafter & Suchita Bhandari**
Presenters:	**Isaac Ben Israel and Kiran Karnik**
	Danny Chamovitz and Ashok Gulati

The India-Israel Colloquiums on 'Food Security' and 'Cyber Security & Big Data Analytics' were convened to discuss and ideate greater collaborations on these specific sectors.

The Indian government has an ambitious scheme for digital connectivity that would go into the core of the Indian economy.

Another collaborative avenue to enhance digital footprint is through Smart Cities. This is unique, especially from the cyber security point of view. Much of the security is focused on laptops and PCs, but not so much on phones. Israel can help India with security solutions for phones, which can be a great business opportunity. IT sector shouldn't be ignored in India as a well educated and large workforce is there in this sector. Most Indians, who study computer science, are used to building products for customers, not breaking them. Israel is a leader in cyber space, and can de-construct this area for Indian students.

Some key points emerged from the colloquium on 'Cyber Security'. These are:

- Create a fund focused on education and skills. Get experts together for a week or two weeks, who will interact with students in high schools and universities on Cyber-security.
- Efforts to be made to engage larger audience on Cyber-security.
- Create a joint meeting between Indian cyber industry and Israeli cyber industry.
- The two governments should sign an MoU on cyber cooperation and Cyber-security should be considered much wider than defence.

On 'Food Security' it was noted that, India has come a long way from the 1960's food crisis, to being a food exporter today. Food security does not only have economic implications but also social implications. It was suggested that customized models are needed that employ institutional and social engineering but identifying the specific needs is vital before customizing models.

The models identified during the discussions are:

- Academic-to-government model
- Government-to-government collaborations
- Government-to-Private and Private-to-Private interactions

India needs a concrete value chain approach to avoid wastage. This requires major investments and innovations, from engineering to technology; innovate pull-up carts that have refrigerated section at the bottom, powered by solar panels to prevent wastage.

Long term commitments are needed to make seeds resistant to climate change impacts, like droughts.

Centre of Excellence is needed for packaging industry because there is a need to find ways to increase the shelf life, not only for domestic markets, but also for external markets. Focus has to be put on R &D.

Session Three:	**Innovation Collaboration**
Session Chairs:	**Giora Yaron & KRS Jamwal**
Presenters:	**Shlomo Nimrodi** **Hadar Ron** **Sandeep Singhal** **Aaron Mankovski** **Sabyasachi Dasmohapatra** **Yuval Cohen**

Aaron Mankovski

To the world, innovation is synonymous with defence, economy and job creation. In India over the years, a lot of young entrepreneurs, barely in 20s and 30s, have been making a lot of money. Examples of these are Flipkart, Snapdeal etc. but the past Indian governments have not invested heavily in incubators and accelerators that create an environment for more such entrepreneurs to come into the market.

Indian-Israeli collaboration should also entail getting to know each other through G2G, B2B & A2A collaborations and students exchange programs. Indian students should be exposed to Israeli incubators. There is a huge population of untrained forces that can be innovated. Daily flights are important, to enable such entrepreneurs to travel smoothly between India and Israel. Tel Aviv University in particular has collaborated with many local conglomerates to provide funding .

A vast cost of healthcare across the world is unsustainable. Healthcare is a huge issue, but for India using expensive solutions like supplied to the U.S. is not advisable because of the issue

of affordability. It is being experienced now that India and China are focused on IT and healthcare, cheaper medicine and health access for rural areas. This is a area of protective collaboration between India and Israel.

One of the problems identified was as to how could India and Israel bring companies together? Israel has 4000 startups, and for them mergers seem like a viable option. China and U.S. are investing directly in Israeli companies, and collaborating. It was recommended that India should start investing in Israeli companies as that would enable Israeli technology and innovations to come in India. Out of 80% investments made in Israel, 25-30% is foreign money which later translates into large companies.

India is perceived as the global test market and so Indian companies should start looking at where they want to go. Indian companies such as Reliance are today bringing in the 4th generation mobile network, but technology also needs to fit according to the needs of the people.

Many Israeli companies have a fear of investing in Indian companies due to two reasons: (a) India is a price sensitive market, making it impossible for Israeli companies to sell their products; and (b) corruption.

India and Israel signed a bilateral agreement in May 2005 to form the India – Israel Initiative for Industrial R&D (i4RD) with the primary goal of supporting joint industrial R&D projects, aimed at the development of products or processes leading to commercialization in the global market. This cooperation agreement was signed between the Ministry of Science and Technology, Department of Science and Technology, Government of India and the Ministry of Economy (formerly known as the Ministry of Industry, Trade and Labor) of the State of Israel. One of the advantages of collaboration is access to experts in Israel. As for the thought of joint development, India provides scale, while Israel provides the brains. It was noted that joining

Israel Makov

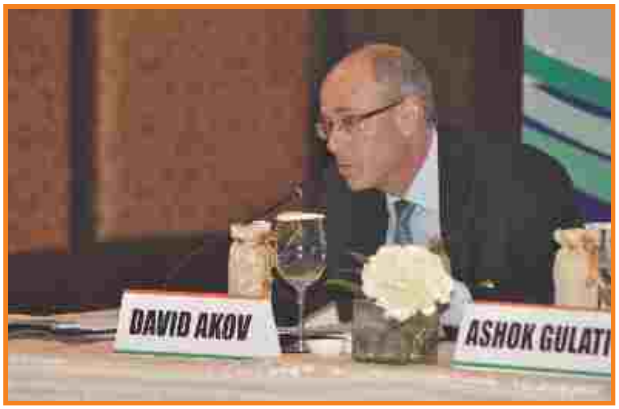
the cutting edge thought process from Israel that suits Indian needs, would be the best way of collaboration.

However, Innovation cannot stand alone. It must be complemented with wealth creation and growth. Entrepreneurs must understand that the consumer should realize the importance of the innovation.

Not all Israeli innovations fit the Indian market as India needs low-cost innovations. Israel should realize that this is a market with 1.2 billion people, which offers tremendous opportunity.

Session Four:	**Cooperation in Skill Development and Education**
Session Chairs:	**Yuli Tamir & Chandrajit Banerjee**
Presenters:	**Yesha Sivan** **Dilip Chenoy** **Joseph Klafter** **Tarun Das**

The delegates noted that Education and Skill development are not just important to India and Israel but also to the world as a whole. It is about being flexible and admitting that we don't know much about the future, thus skill development is all about thinking differently.



India is a young nation, at a time when many countries are aging. India can be the talent capital of the world and the HR hub of the world. In working towards skill development, India will face a huge immigration of its workforce from agriculture to secondary or tertiary sector, which brings in a gap on skilling. 8-9% of India's workforce is engaged in the organized sector or formal sector and the rest in unorganized sector.

Shlomo Nimrodi

The previous government tried to bring in changes by trying to institutionalize skill development and forming the Ministry of Skill Development. However, so many different ministries got involved that it led to nothing. India has not done much in the vocational studies sector but with India-Israel collaboration models can be formulated or existing ones can be used. For all this to happen, the government must open up the education sector, conduct student-faculty exchange and provide entrepreneurship courses.

Many delegations from China, Singapore and United States have been collaborating with Tel Aviv University on education. India should also send students to Israel and have them connect and spend time to get higher education and innovation spirit.

Tsinghua University and Tel Aviv have been collaborating for a long time to cultivate the students to next generation researchers. This model works, and can also be implemented in India.

From a political standpoint there are almost 120 million people who will be first time voters in the next elections in India. These are not kept in education training; it will bring a different outcome. So the challenge here is not just to look at the long term 2020 perspective but also the immediate 4-5 years. There are four big challenges: a) Create capacity - currently there are around 10 million people to train as opposed to 3.8 million in 2008 b) Standards - employers believe that people coming out of skills development and higher education are not employable c) Finance - how to make it sustainable; and d) Aspiration.

The National Skill Development Council (NSDC) is one of the few Public Private Partnership (PPP) initiatives that is working well in India. There are three pillars of work: create, fund and enable. The first job is to fund scalability and sustainability. NSDC does not give grants; it supports institutions to set up scalable, sustainable skill development initiatives by creating that cutting edge ecosystem. In the past 4 years, 3.3 million people have been given employment through NSDC. NSDC has also created different sectoral groups and standards affiliate training institutions that help in the certification and assessment of candidates.

NASSCOM is now helping in certifying these candidates and surprisingly has been able to help create 893 jobs, making 25% of the graduates employable. What NSDC has been able to compress in a few years' time has taken other countries decades, recruits have turned researchers. NSDC has also been able to help in projects like MILAP, which is a cloud sourcing finance system to give loans to students. The way forward for NSDC and skill development in India is by setting up new capacities and using new, cutting edge technology.

The number one trend from schools, more specifically the classrooms must be changed to LLL or Life Long Learning, which in itself is a huge challenge. The challenge is not just to educate the workforce with something new, it is to understand that the workforce itself is completely new. The first step towards this would be to connect directly with the industries and find out what they need.

Linda, for example is an online training institute that individually costs very less to join and if India-Israel were to jointly buy global membership, the cost would be far less. Secondly, using new technology is highly imperative since classrooms are now a thing of the past. Online channels like You Tube can be used to reach out to different people as today, people are getting really good at consuming information.

India needs Centres of excellence for skills and Israel can help India build these centres but it should only provide technical assistance and not money. Tel Aviv could help train our teachers in India; teach them the know-how and collaborate with various universities to help build a better future. But these centres should be privately owned. The second area of cooperation could be learning from the mistakes and help build industrial training institutes.

Session Five:	**Make in India: Enhancing investment and trade flows**
Session Chairs:	**Aharon Fogel & Salil Singhal**
Presenters:	**Israel Makov** **Sanjay Chhabra** **Sever Plocker** **Chandrajit Banerjee** **Itzchak Gat** **Nikhil Sawhney** **K R S Jamwal**

The Indian people are currently very excited and have high expectations from the new government led by Mr Modi. One of the biggest achievements of the new government is in formulating the National Manufacturing Policy which aims at making the manufacturing sector 25% of the GDP, as against the current 14-16%. The government has also discussed creating 100 million jobs for the people and has also emphasized on high domestic value addition with technological depth, sustainable and competitive manufacturing. The sectors being looked at are telecom, electronic hardware, capital goods, defense and aerospace.

There has been a great emphasis on getting more Foreign Direct Investment (FDI). This could be done by collaborating with various countries, and in this case Israel. But the challenges being faced must also not be ignored. India is a diverse country, and to invest in companies,

foreign businessmen must ideally work with good partners, since doing business is very difficult and much patience is needed. However, India is changing now, with the civil society and the politicians going through a period of mindset change, especially with the socialist ideology being taken over by free enterprise.

Considering where the Indian economy is planning on being by the year 2020/2050, the Israeli economy and the Israeli investors would no doubt like to take the stride with India. Growth in Israel will have a lot to do with the Indian economy. But the change in technology is far from being enough to achieve the goals planned out by its leaders, especially in the Israeli economy. Economic cooperation needs international ties, but considering the current banking system – both in Israel and India – there are not enough credit lines and hedge solutions for long term goals.

India is slowly turning from an agriculture based economy to a services based economy, missing manufacturing. The government had launched the Make in India Initiative which is based on some pillars such as building Industrial Corridors; fast-tracking these industrial corridors by giving pre-cleared plots of land to the manufacturing sector. Also, FDI focus on the manufacturing sector has made possible bridging these corridors to ports.

Nikhil Sawhney

Ease of doing business is another such pillar. The government had approached Confederation of Indian Industry to work on the World Bank report that positioned India very low in the ease of doing business list.

Another pillar is to bring in as much FDI as possible into the manufacturing sector. Earlier there were restrictions and limits on defense and railways. But with the 100 new smart cities planned, this will also be overcome soon. Lastly, another pillar is about other issues like labor reforms, R&D and skills development.

Opportunities are huge for Israel in India and similarly opportunities are huge for India in Israel when it comes to innovation. Earlier, people weren't willing to understand the problems and the solutions that Israel could provide. But through seminars and conferences, India was able to educate and teach those who wished to understand the problem. The biggest achievement out of this was the fact that such conferences were able to create jobs for the people.

Investing in Israel has become much easier than in India because the ecosystem is so different. From the point of view of the Israelis, the keen focus has always been on products.

One solution to bettering the economic situation in India is by adopting the right fiscal macroeconomic policies. India's step towards FTA with Israel is a test case but it is the right step.

The flow of information between the two countries must be constant. The biggest issue that businessmen face is the brunt of the bureaucracy, which comes in different forms. India has previously worked with big global companies and is now using the new technology that came in by working with these companies.

The new government has come out with a new policy that if the bureaucrats do not reply to the questions asked by the companies related to investments, it can be taken as granted that the government has approved the letter of investment among other things.

Sever Plocker

From Israel's point of view, the delegates noted that issues about the opportunities in the defense industry in Israel are unique in India; the potential revenue in Israel from its defense sector is around $3.1 billion. Israel would like to invest in the defense sector in India but it cannot be done with the government owning and controlling the entire industry and thus cooperation is not so flexible. Israel would also like to go into joint ventures but as seen previously, Israel is not able to generate much profit in India. Further, the knowledge base in India is so limited that Israeli companies have had to constantly invest in teaching and tutoring people here in various sectors.

Session Six:	**National Security Paradigm: Converging Security Interests**
Session Chairs:	**Aaron Mankovski & Jamshyd Godrej**
Presenters:	**Isaac Ben Israel** **S K Lambah** **Itzchak Gat** **Pramit Pal Chaudhuri** **Nir Peleg**

National security has variety of aspects to it. It has changed a lot from the last decade. National security has become digital. Israel's national security paradigm was very much determined by founding fathers in 1948. The asymmetric numbers are important in terms of national security for Israel considering the region. Science & Technology over the years has become crucial for Israel's national security.

Israel has put computer chips everywhere like aircraft, tank missiles etc. and is currently developing smart bullets that will track its own targets. Israel realized that one way of defending itself was to attack the computers of the enemies. This led to developing cyber technologies. National Cyber Bureau set up by Israel is now 3 years old. Privacy and security became an important issue in Israel. It was considered that business will be killed if Israel national security service had access to private information. To ease this, National cyber security authority was formed which was only a civilian entity with limited relation to government but not with intelligence or internal security service.

Cyber security is to be considered more than internet or information. It is important to realize next areas of investments like-agriculture, biotech and energy to name a few. All these could be vulnerable to cyber-attacks. Since in this respect, for Israel, developing Cyber technology became crucial since that will be like an umbrella technology for all these sectors.

Today, business, IT services, government services, production, finance are inter-connected. Security leads to more productivity of government and citizens. Investing in strategy, academia, human capital would be essential for India.

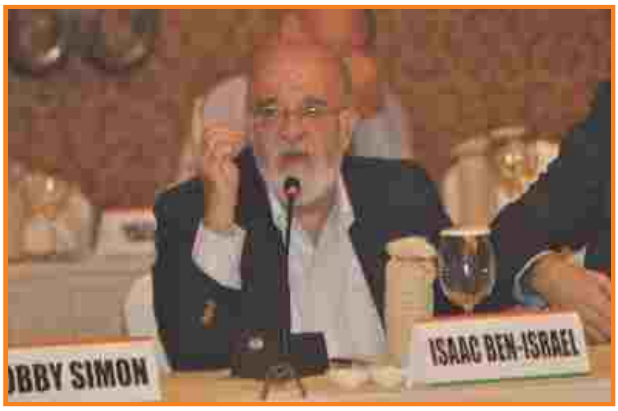
IT services are a big market in India and if India and Israel can build a bridge between IT services and security innovation that resides in Israel, this could bring new IT solutions .

India's national security paradigm is determined by what happens in the neighborhood - rise of China, extended neighborhood etc. Some of the problems identified for India's national security and areas of cooperation with Israel are:

1. Rise of Terrorism - attack on India's parliament, Mumbai attacks, attacks in Afghanistan. Both countries should see as to what can be done to counter terrorism.
2. Rise of non-state actors - they are promoted by governments in states. Some precious Israeli lives were also lost in 26/11 attacks. This highlights the need to paralyse activities of these non-state actors.
3. Maritime security - India's trade activities pass through Indian ocean and it is important to keep the oceans secured.
4. Non-proliferation - India has 2 nuclear armed neighbors and has a history of dispute with them.
5. Cyber Security- India has 3rd largest number of Internet users in the world. It is important for India to cooperate with Israel on cryptography, info security etc.
6. Energy security- vital for India as it is dependent on oil imports

India's neighborhood is epicenter of terrorism. Radicalization is also taking place on a large scale and problems of illegal migration and cross border terrorism are also major issues. In the last few years, there have been many changes - Afghanistan, Myanmar, Nepal, Maldives and Bangladesh have evolved in the right direction as far as India's interests are concerned. Overall the region, except Pakistan, is economically integrated. The current government's focus is also on the neighborhood.

Pramit Pal Chaudhuri



India faces a war of humility as well. E.g. if China decides to occupy 200 sq. kms of even useless land, the government of India will bear the brunt.

One of the concerns is that Bangladesh, Sri Lanka, Myanmar largely depend on weapons from China which make them close to Chinese army. India would like to reduce this dependency.

Another aspect is the new government's policies like building new smart cities. RuPay system is being considered for welfare schemes. This would have 300-400 million people connected to this system. But this system has never been tested in terms of security. This will be an

integrated financial system that will be much larger. There may be a new integrated railway system. E-governance is at core of the reforms planned and therefore, automatically the vulnerabilities will be conspicuous. If this RuPay system for example suddenly crashes then 300 million people don't get any welfare scheme benefits for a substantial amount of time. This will be a very politically sensitive issue.

One of the areas of collaboration between the India and Israel is Unmanned Aerial Vehicles (UAV). Israel is no. 2 in this area in the world. India desperately needs this technology as some terrains in India are not accessible even by airplanes. The UAV' already bought from Israel are not specific to India's needs.

Concluding Session	
Session Chairs:	**Stan Bergman & Jamshyd Godrej**

The delegates noted the value of the India-Israel Forum and as to how it helps build good relationships. As discussed over the two days, it is important to be patient and slowly build further relations. More ideas are needed to bring Indian academia to Israel. Both countries need to work on sending Israeli students to India so that they can also learn from big businesses in India.

The delegates noted the need to find mechanisms for the ideas discussed in the Forum and there must be regular follow ups. It was suggested to add participants from banking sector to the Forum as well as participants from Universities in India. It is important that the FTA between the two countries concludes soon. Skills cooperation is also a topic that would add value to the cooperation between the two countries. Investing in Skill development is part of the off-set policy in India.

The delegation coming for Agtech in Israel could visit Manna center of Tel Aviv University and the center could arrange meetings with start-ups, established businesses models in Israel.

SEVENTH INDIA-ISRAEL FORUM
13-14 DECEMBER, 2014
NEW DELHI

List of Participants

1. **Stan Bergman (Co-chair)**
   Chairman and CEO, Henry Schein

2. **Aharon Fogel (Co-chair)**
   Chairman, Zim Integrated Shipping Services Ltd

3. **Jamshyd N Godrej (Co-chair)**
   Chairman of the Board,
   Godrej & Boyce
   Manufacturing Co Ltd

4. **Tarun Das (Co-chair)**
   Founding Trustee, Ananta Aspen Centre & Former Chief Mentor, Confederation of Indian Industry

5. **David Akov**
   Consul General of Israel, Mumbai

6. **Chandrajit Banerjee**
   Director General, Confederation of Indian Industry

7. **Prof. Isaac Ben-Israel**
   Chairman, Israel Space Agency, Head, Yuval Neeman Workshop for Science, Technology and Security at Tel-Aviv University

8. **Suchita Bhandari**
   CEO, Bilt Tree Tech Ltd.

9. **Ambassador Daniel Carmon**
   Ambassador of Israel to India

10. **Prof. Danny Chamovitz**
    Dean of the George S. Wise Faculty of Life Sciences, Founder of the Manna Center Program for Food Safety & Security, TAU

11. **Pramit Pal Chaudhuri**
    Foreign Editor, Hindustan Times

12. **Dilip Chenoy**
    Managing Director & Chief Executive Officer, National Skill Development Corporation (NSDC)

13. **Sanjay Chhabra**
    Senior Partner, Archer & Angel

14. **Yuval Cohen**
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15. **Sabyasachi Dasmohapatra**
    CEO, Global Innovation & Technology Alliance (GITA)

16. **Itzchak Gat**
    Board Chairman, RAFAEL Advanced Defense Systems

17. **Dr. Ashok Gulati**
    Chair Professor for Agriculture, Indian Council for Research on International Economic Relations (ICRIER)

18. **K R S Jamwal**
Executive Director, Tata Industries

19. **Kiran Karnik**
Chairman, CII National Committee on Telecom and Broadband, Confederation of Indian Industry

20. **Prof. Joseph Klafter**
President, Tel Aviv University

21. **David Kolitz**
Chairman, Elul Group

22. **Sandeep Kumar**
Joint Secretary (WANA), Ministry of External Affairs

23. **Ambassador S K Lambah**
Former Special Envoy to the Prime Minister

24. **Israel Makov**
Chairman, Sun Pharma

25. **Aaron Mankovski**
Managing Partner, Pitango Venture Capital

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27. **G Parthasarathy**
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28. **Kiran Pasricha**
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30. **Sever Plocker**
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31. **Dr. Hadar Ron**
Managing Partner, Israel Health Care Ventures

32. **Sami Sagol**
Chairman, Keter Plastics

33. **Nikhil Sawhney**
Vice Chairman and Managing Director, Triveni Turbine Limited

34. **Tobby Simon**
President, The Synergia Foundation

35. **Salil Singhal**
Chairman of PI Industries Ltd.

36. **Sandeep Singhal**
Co-founder of Nexus Venture Partners

37. **Prof. V.S. Subrahmanian**
Professor – Dept. of Computer Science, University of Maryland

38. **Yuli Tamir**
President, Shenkar College of Engineering and Design

39. **Dr. Giora Yaron**
Chairman, Executive Council, TAU

40. **Eliezer (Eli) Yones**
Former CEO, MIzrachi-Tfachot Ban

'India-Israel Colloquium on Food Security'

India's agrarian sector requires a paradigm shift to instigate inclusive growth and economic development. India is struggling to expand export and food processing capacities despite the large production levels. One of the main reasons for this is the lack of public or private investment in the country's infrastructure, logistics and advanced computer technologies. Food security is an area of concern for both India and Israel and co-operation based on proper adaptation and assimilation of Israeli agro-technologies could be the key to counter such a critical issue.

'The India-Israel Colloquium on Food Security' convened at the outset of 7th India-Israel Forum. It brought together high-level business leaders, academics and government representatives from both countries to explore collaborations on challenges of Food Security.

The Colloquium was co-chaired by **Dr. Ashok Gulati**, Chair Professor for Agriculture, Indian Council for Research on International Economic Relations (ICRIER) and **Prof. Danny Chamovitz**, Dean of the George S. Wise Faculty of Life Sciences, Founder of the Manna Center Program for Food Safety & Security, Tel Aviv University.

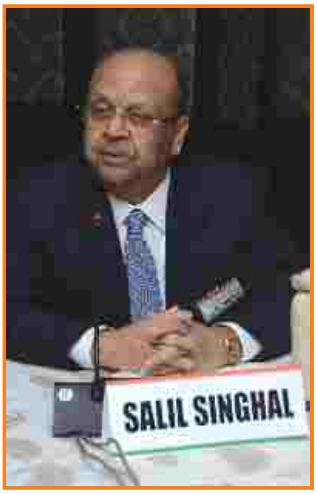
Following the 6th Forum, a white paper on food security was drafted. The White Paper focused on (1) the economic viability of small farmers, including the need for frugal innovation and improved supply networks (2) improvements in yields and nutritious crops through improvements of fruit and vegetable seed and dairy, and (3) continued joint cooperation between Israel and India.

Session 1: Background and Introduction of the topic

Predictions indicate that India is going to be the most populous country in the world by 2028. At the same time, income and urbanization is increasing resulting in increase of demand for commodities. This is major problem but it also has to be looked at as a huge business opportunity.

Some of the key challenges identified during the 2014 discussions were:

- Raising productivity and keeping Indian agriculture globally competitive.
- Ensuring inclusive growth – 85% farmers in India operate on less than 2 hectares (ha) and mainstreaming them remains an issue. Since average holding size is 1-1.5 ha, models of Brazil / US Canada will not work for India. It was felt it is more relevant to look at China and Indonesia, which have smaller land holdings but higher productivity. Experiences from these countries will be valid for food security issues in African sub-continent as well as the constraints faced by India which are very similar.
- Ensuring that innovations and interventions are scalable to have a significant environmental and social impact.
- Ensuring that agriculture is sustainable on the environmental and financial levels.

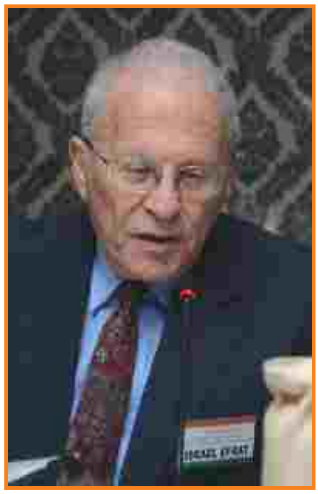


The discussions also focused on the lessons from Israel. These were:

- Water management & mechanization: Apart from raising land productivity, a focus was placed on water management and cost effective mechanization. Drip irrigation and management is a critical area where lessons are needed to be learned from Israel.
- Seeds: Technology is required to fortify staples in order to provide better nutrition to the Indian population. India has Zinc rich wheat / Iron rich pearl millet etc. These technologies must be scaled up and delivered to farmers.
- High value commodities: Producing perishable goods may also result in losses, and a huge opportunity for collaboration lies across the entire value chain system. Milk is another major commodity but only 20% of milk produced in India is handled by organized sector in India, and this is an opportunity, particularly in eastern India where productivity and efficiency is low.
- Institutional innovations: Indian smallholder farmers have higher productivity if access to power and water is proper and adequate but a key challenge is market access. India needs innovative technologies for ensuring quality of produce, such as solar based push carts to improve market access and monitoring quality of produce. E-tailing is another area which has potential for growth in future.
- Processing: There is great opportunity for value addition such as improved processing, dehydration, and cold storage, which can reduce wastages in items like tomato, onion, milk, meat, mango and banana. Emphasis should be given to make Indian agriculture demand-driven by taking into account expenditure elasticity and see where business opportunities and demands lie.

Israel has already developed several Centers of Excellence in India and efforts are needed to scale these with a business model to have a greater impact.

A huge component of the cost of milk is diesel. Since Israel has technology on cold chain and use heat-led pasteurization, the technology can be looked at in Indian context to reduce cost of milk. Village level cooperatives pasteurizing the produce and delivering to the market will be a great idea. Models like custom hiring are required for fractioning the challenge of affordability.



Israel Efrat

Several additional issues were brought up in the open discussion in relation to Indian small-scale farmers. One is the need for improved seed varieties that are adapted to specific needs such as fresh markets, not just processing. Many fruit and vegetable varieties sold in India require more inputs, posing higher costs to farmers.

Another issue is the transfer of technologies and the challenge of working with small-scale farmers. Companies must work with similar bodies that can valuate and invest. Major questions in wanting to incorporate small-scale farmers are as to (a) how to aggregate them and (b) how to encourage R&D to focus on social technologies in the same way that it focuses on technology development. It is important to remember that there is an enormous business potential, which can be scaled up via partnerships with government, off-takers and local NGOs.

Session 2: Government-to-Government Collaboration

The processing industry is today facing the challenge of unavailability of proper varieties of fruit and vegetables and this is to be addressed by developing specific varieties.

It was emphasized that collaborations are required across the supply chain but the key question to address is as to who is going to fund these models. These projects have to come in through Government to Government collaboration between the two countries.

Israel is a development laboratory that shares its knowledge and know-how. Israel has a very special development relation with India, particularly in the area of agriculture, and is working closely with NHM (National Health Mission) /Ministry of Agriculture through the Centers of Excellence (CoEs). In April 2014, the CoEs will enter the third phase that will scale these projects with more states, venues, crops and technologies. It is important to note that the CoEs are not only about technology. They are about bringing in technology, institutions, people and processes together to demonstrate and experiment.

Both countries need to identify relevant partners to upgrade this model, which has so far been received well by the Government as well as farmers. The Israeli Embassy is exploring the option of a Center of Excellence on Milk with the Haryana government.

It was noted that the strategy of collaboration and implementation with the government will only work if the food and fertilizer subsidy regime in India changes, or else no change will take place. The funding from government is limited and these models can be scaled up by private intervention. Government should provide the policy support required.

On Government-to-Government Collaboration, some key areas were identified for preferred partnerships. These are:

- Urban Agriculture – large potential infrastructural facilities can be developed near or within cities for entrepreneurs to use and cater to urban demand. Also, a great deal of land is available with defense and railways which can be used to showcase best practices and the output can be fed back to these departments.
- Post-harvest Management – 15 states have taken steps towards agro-marketing reforms and this is a good start in terms of ensuring quality for perishable produce.
- Diversification to high value agriculture – particularly in Green Revolution states, as land is consolidating and the number of farmers is reducing.
- Technology for rain fed agriculture – new Center of Excellence (CoE) will come up in Bihar to develop best practices for rain fed agriculture.

One of the key recommendations noted during the discussions was to get a third party assessment done for the Centers of Excellence (CoEs) to consolidate experiences of the last five years for future learning.

On the Supply Chain logistics side, it was noted that under-investment in post-harvest and breeding etc. has led to dis-incentivizing of farmers and this situation needs to be changed. Technology centered on thermal management like refrigeration has evolved for perishable goods through packaging and this can be introduced in India.

Israel has developed technology by which a tag is placed on the cow to monitor three parameters: health, fertility and nutrition. This has been a great benefit to the farmers.
Post-harvest loss was identified as a key problem in India along with food contamination. Technology has been developed to fight bacterial contamination through packaging that can be introduced in India.

It was also noted that India does not have a Food map. Processing of horticulture produce in India is below 3%. Three problems experienced were identified:

- Significant gaps in pre-harvest technology.
- On post-harvest investment, there are gaps in infrastructure.
- Infrastructure needs energy that is missing.

There is an investment opportunity for Israel as 100% foreign direct investment (FDI) is allowed in Cold Chain. New technology is needed which consumes less energy. India can

learn from Israel about branding for exports as Israel is majorly exporting to Europe which has very high standards.

It was recommended that Center of Excellence may be set up for Packaging.

Session 3: Improving yields through water efficiency and drought resistant seeds

Direct seeded rice (DSR) can save huge amount of water. The benefits of science-based seed technology advantages must be highlighted but media and NGOs are generating misinformation and fear amongst the public. The seed replacement rate is only 30-40%.

Agriculture Research Organization (ARO) exports technology around the world. One of its challenges is that it is competing with countries that have very cheap labor. The ARO model, which includes breeding programs and unique varieties, needs to be brought to India.

There is tremendous potential to increase yield and productivity but challenges persist: adaptation to environmental stress, defining roles for both private sector and public sector and their joint cooperation/coordination. Namely, the public-sector creates conditions that trigger market forces and the private sector educates government and civil society on effective policy. Their coordination, thus, is crucial for serious impact. Academic research focusing on innovation in the human dimension alongside agronomic is essential as a way of producing reliable evidence for policymaking. When the private sector has the right motivation and incentive to move in, the result is highly positive as in the case of drip irrigation in Gujarat. A framework is needed to incorporate economic and human dimensions into research and innovation.

Farmers like those in the state of Maharashtra are very much dependent on rains. The drip irrigation to develop in remote areas will require huge partnerships. The Centers of Excellence are all in North India where the per capita income is very high.

It was also discussed that genetics under appropriate conditions can play a major role. The timing of a drought is an important determining factor of a good yield - drought at the beginning or at the end of the harvest is a crucial element. Drought resistant seed genotypes, and a model that allows farmers to have access to them should be focused on.

Session 4: Supply chain logistics: from the field to the plate

The supply chain plays a crucial role in the production and distribution of food. The main force behind a strong supply chain is economics, whether through government incentives or the free market. Companies always have revenues, compressing costs, and waste in the forefront of their business. Using ICT technologies to collect more data is crucial to make smart business decisions.

For example, in the business of milk, 'if you can't measure it, you can't manage it'. This applies to collecting data on the health, fertility of the cow, and its nutrition. The use of data allows the company to have a higher return on investment by analysing the impact of elements such as temperature of the cow and feed quality can impact the quantity and quality of the milk.

Some of the post-harvest technologies for fruits and vegetables include temperature management, special packaging, control of relative humidity, and physical treatments. All of these can assist in improving the quality of food and its travel time and shelf-life. A Center of Excellence for food packaging should be established to deal with practical solutions for Indian farmers. A focus should be placed on renewable packaging from sustainable materials.

Session 5: A Way Forward

Concluding the colloquium the delegates from both India and Israel shared new ideas for greater collaboration. These were:

- Economic interest should be the driving force for the companies investing in the Agriculture sector. The companies must identify where the money is and start investing and collaborating. Government support is very important, especially at the introductory stage and pilots, and the forum should use its influence to approach government on this issue.
- Appropriate technology: Frugal technology and developing suitable models is important. It is also important to define as to what the appropriate technologies are, as to how to implement them and what will the impact be.

- There are many types of available technologies. Both Indian and Israeli companies have to be patient when developing a proper structure – from soil management to pre- and post-harvest solutions. Companies cannot expect to cash-in on technologies right away, it is a longer-term process in India.
- Companies working in India have to have a long-term vision of a 20-25 year horizon, and not 5-10 years. Indian markets are huge and companies must learn to navigate through them.
- On the issue of government-to-government collaboration, the success stories should be highlighted. If some technology is already in use and is ready and equipped, then there is a need for evaluation. Also, scaling has to be upgraded from government-to-government to government-to-business.
- As solar energy costs have come down dramatically in the past few years, solar tube-wells can be used as innovative products for cold storage in areas where power cuts are frequent. This should be presented to the government, in a manner that highlights that if subsidies are given, government investment will be repaid within several years and will create an enormous positive impact.

Key Recommendations

- Collaborations are required across the supply chain, but the key question is as to who is going to fund these models. These projects have to come in through Government-to-Government collaboration.
- Israel has been a development laboratory of sharing "know-how" and experiences with the world. Israel is working with National Horticulture Mission and the Ministry of Agriculture through Centers of Excellence (CoEs). In April, the CoE model will enter the third phase. Now there is a need to identify partners to upgrade this model which is received well by both the Government and farmers.
- On milk, Israel is negotiating with the Haryana Government for another CoE.
- India and Israel can be preferred partners in 4 key areas:
    a) Urban Agriculture – large potential infrastructural facilities can be developed near or within cities for entrepreneurs to use and cater to urban demand. Also, a great deal of land is available with defense and railways which can be used to show case best practices and the output can be fed back to these departments.
    b) Post-harvest Management – 15 states have taken steps towards agro-marketing reforms and this is a good start in terms of ensuring quality for perishable produce.
    c) Diversification to high value agriculture – particularly in Green Revolution states, as land is consolidating and the number of farmers is reducing.
    d) Technology for rain fed agriculture – new Center of Excellence (CoE) will come up in Bihar to develop best practices for rain fed agriculture.

- The funding from government is limited and these models can be scaled up by private intervention. Government will provide whatever policy support is required.
- Need to get a third party assessment done for the CoEs to consolidate experiences of the last five years.
- Need customized models for food security that employ institutional and social engineering. These models can emerge through:
  a) Academic-to-government interactions
  b) Government-to-government collaborations
  c) Government-to-Private, and Private-to-Private exchanges
- Value chain approach to avoid food wastage is needed. This requires mega investments and innovations, from engineering to technology. Suggest exploration of the option of pull carts that have refrigerated section at the bottom powered by solar panels to prevent wastage.
- Collaborations are needed to make seeds resistant to climate change impacts, like droughts.
- Center of Excellence for packaging industry could be considered. Because there is a need to find ways to increase the shelf life, not only for domestic markets, but also for external markets.
- ICT in agriculture has a crucial role to play - apart from tracking consignment, it is about condition management. Technology that is focused on thermal management such as refrigeration has evolved for perishables through packaging and can be introduced in to India.
- Israel has developed a technology to monitor a cow's three vital parameters: health, fertility and nutrition intake through a simple tag. This offers great benefit for Indian farmers.
- Postharvest loss and food contamination are key problems in Indian agriculture. Israeli technology that fights bacterial contamination through packaging can be introduced in India.
- Areas of collaboration:
  a) Investment opportunity as 100% FDI is allowed in cold chain
  b) New technology that consumes less energy
  c) Improving yields of fruits and vegetables through genetic engineering

'India-Israel Colloquium on Cyber Security & Big Data Analytics'

The India-Israel Colloquium on 'Cyber Security & Big Data Analytics' was convened in continuation of the ongoing dialogue on this subject. This was the third such exchange since the previous Forum.

The colloquium was Co-chaired by **Prof. Isaac Ben-Israel,** Chairman, Israel Space Agency, Head, Yuval Neeman Workshop for Science, Technology and Security at Tel-Aviv University and **Mr. Kiran Karnik,** Chairman, CII National Committee on Telecom and Broadband, Confederation of Indian Industry (CII).

The delegates of the colloquium noted that more collaboration should take place between the universities and research organizations of both the countries on 'Cyber Security'. Universities in both countries should design appropriate courses taking the collaboration way forward.

Cyber security has become increasingly important to India as it falls under the broad security framework of the country. India is among the top five countries along with South Korea, South Africa, China and Malaysia/Russia facing highest number of cyber threats. Globally, 5 % attacks happen in India, which is mentioned in the Global Cyber Security – Vulnerability Report. Cyber-attacks are among the biggest threats in India that happen due to vulnerability in software or hardware. The cyber issue also poses a threat to the Indian IT Industry, which is such an important part of the Indian services and export sector.

There is a greater recognition in public as well as in the private sectors about cyber security. However, the scope of cyber security has to be increased by awareness creation in India.

In this respect, collaboration and cooperation with Israel on 'Cyber security' is important as both countries consider the relationship special. Government-to-government collaboration is needed as India and Israel are considered to face common threats and can develop common responses. More collaboration is needed to create infrastructure for research. One of the major bottlenecks to tackle the challenges is the funding.

Cyber Security is a $60 billion market, that includes products and services, all over the world. Tel Aviv University (TAU) was chosen by the government of Israel to conduct research on cyber security. Cyber Security Department of Tel Aviv University is conducting extensive research on cyber security and networks focusing on various issues. There are experts and professors focusing on various cyber security issues and conducting extensive research. All these research efforts are giving a holistic approach on cyber security in the country.

The delegates emphasized that there are multiple problems facing the cyber world, which are not always technical. There are legal and social aspects of problems associated with it. Taking into account these aspects, there should be an interdisciplinary approach to deal with the challenges.

Giora Yaron

Indian & Israeli Cyber Policy: Major Challenges and Priorities

Discussing the major challenges and priorities of the Cyber policy, the delegates noted that one of the main challenges is to transform appropriate policy into action. There are few hundred million attacks every day in both the countries. The attacks are from countries, organizations, terrorists groups, and sometimes by individuals. There is an urgent need to find solutions and both countries can have a global impact in the field of cyber security.

The participants noted that India has a huge potential in the field of cyber security as it is a major player in the IT sector. India is 3rd in terms of internet users as 300 million of the population use internet. Government of India has taken number of policy steps in cyber security like the Information Security Act, adopted in 2000. National Cyber Security Policy came out in 2013, which focuses on creation of an awareness framework. India has been recognized as an authorizing nation by ICRRA, which enables product testing facility in India.

Another challenge discussed was that of the capacity building. People should be informed about cyber challenges. Now many IT courses are modelled in cyber security framework in India. There is a need of Centres of Excellence for policy research in Cyber Security. It is necessary to create cyber security space to bring together different systems to a single authority. There is a need to investigate at periphery and develop excellent program on investment on building capacity.

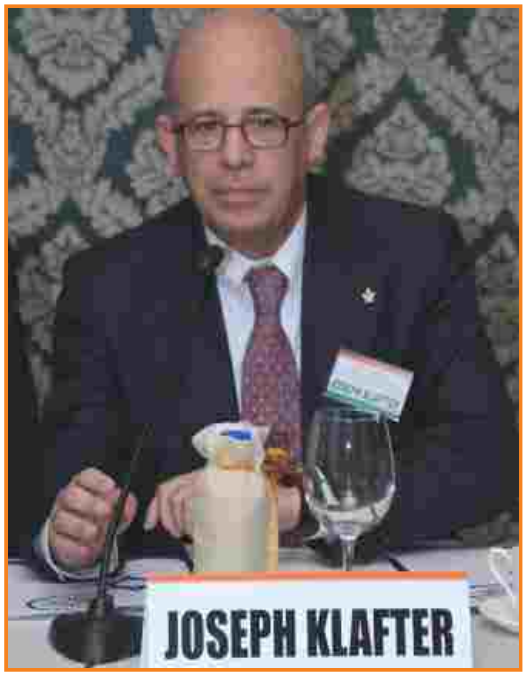
India is at an evolving stage of cyber security policy. It is a challenge to tackle the issue as freedom of expression is associated with cyber space. India has invested in e-governance but it is essential to actively partner with private sector to tackle the issue. The country still does not have a clear stand on cyber security policy. There is a need that the policy looks at creating

hardware capacity. India should give a clear picture of its policy on cyber security. Academics can help in data integrity.

De-centralization of Internet in India is also a problem. There is a need to develop a network to respond quickly to the cyber-attacks, create an intrusion system and also focus on enhancing R & D and capacity building.

Academic and Applied Research and Development

The delegates attending the colloquium also comprised Academics working on Cyber and related issues. They noted that basic research is driven by curiosity, not necessarily driven by the intent to create or invent, while applied research focused more on solutions.



From the Academic's perspective cyber-security as a subject needs to be taught at schools. There is a need to create a fund focused on cyber-security jointly, with support from the Indian and Israeli industry, which will run training workshops for teachers at school / university levels for at least three years. These "Train the Teachers Workshops" should be overseen by Israeli and Indian experts in cyber-security.

It is necessary to create a knowledge sharing platform on cyber security, cyber technology solutions between India and Israel. Israel could share the experience of Government-Industry-Academia success models as the tri-partite model is relatively new for India. Building solutions around mobile security is also important for India as 60% of populace is currently using smart phones.

It was emphasized that there is a need to strengthen the eco-system for cyber security and look at adaptive learning models to keep pace with the dynamic challenges and threats related to cyber security.

Private Sector Collaboration

The Private sector has a very important role to play in Cyber security collaborations between the two countries. Private sector needs to collaborate in two dimensions: first, to select best partners from big companies and integrate and choose the best brains from start-ups in Israel and second, is with education and policies.

Two issues are essential: One is awareness creation and second, sharing information. It is difficult to address challenges without awareness and sharing. Intelligence sharing is a big issue among the private organizations. There is a set of companies with no basic security disposition and there is another set of companies that are not aware about the use of up-dated cyber security framework. There is a need for departmental security initiatives in organizations.

It was emphasized that there are very few appropriate courses on cyber-security in Indian colleges and so there is a need to develop better courses.

There are three ways of collaboration between industry and academics. First, grants provided by private companies in universities; second, bridging gap between the industry and basic science; and third, better focus on creation of courses and research on cyber security.

The nature of the cyber threat has changed significantly and the problem is that yesterday's generation is trying to resolve the present problem. There has to be some kind of deterrence in the industry, which should be provided by legislation.

Participants agreed that it is better to identify problems before and find solutions in advance so there is a wider scope of collaborating with academia by the private industry. India is a big market for incubating advanced cyber-security technology. Both the countries are already collaborating in the defence sector and so cyber-security is another area to take the collaboration to another level. There is a need to connect to academia of India, conduct joint research and collaborate in new initiatives.

The participants recommended that there is a need to create a fund for research and education in cyber security and to create more Centres of Excellence in India. Exhibitions and workshops must be conducted regularly between India and Israel to showcase technology.

Concluding the colloquium the delegates discussed new ideas for greater collaboration on cyber-security. These were:

- Explore the establishment of a Joint incubator for cyber-security.
- Focus on codes, cyber forensics, data analysis and increase awareness of the Internet usage.
- Both countries should have joint PHD programmes with mentors on both sides

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