

# **Technology Incubation**

## **Sharing International Experiences**

Rooyesh IT Incubator, ACECR, Iran

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### **TECHNOLOGY INCUBATION: Sharing International Experiences**

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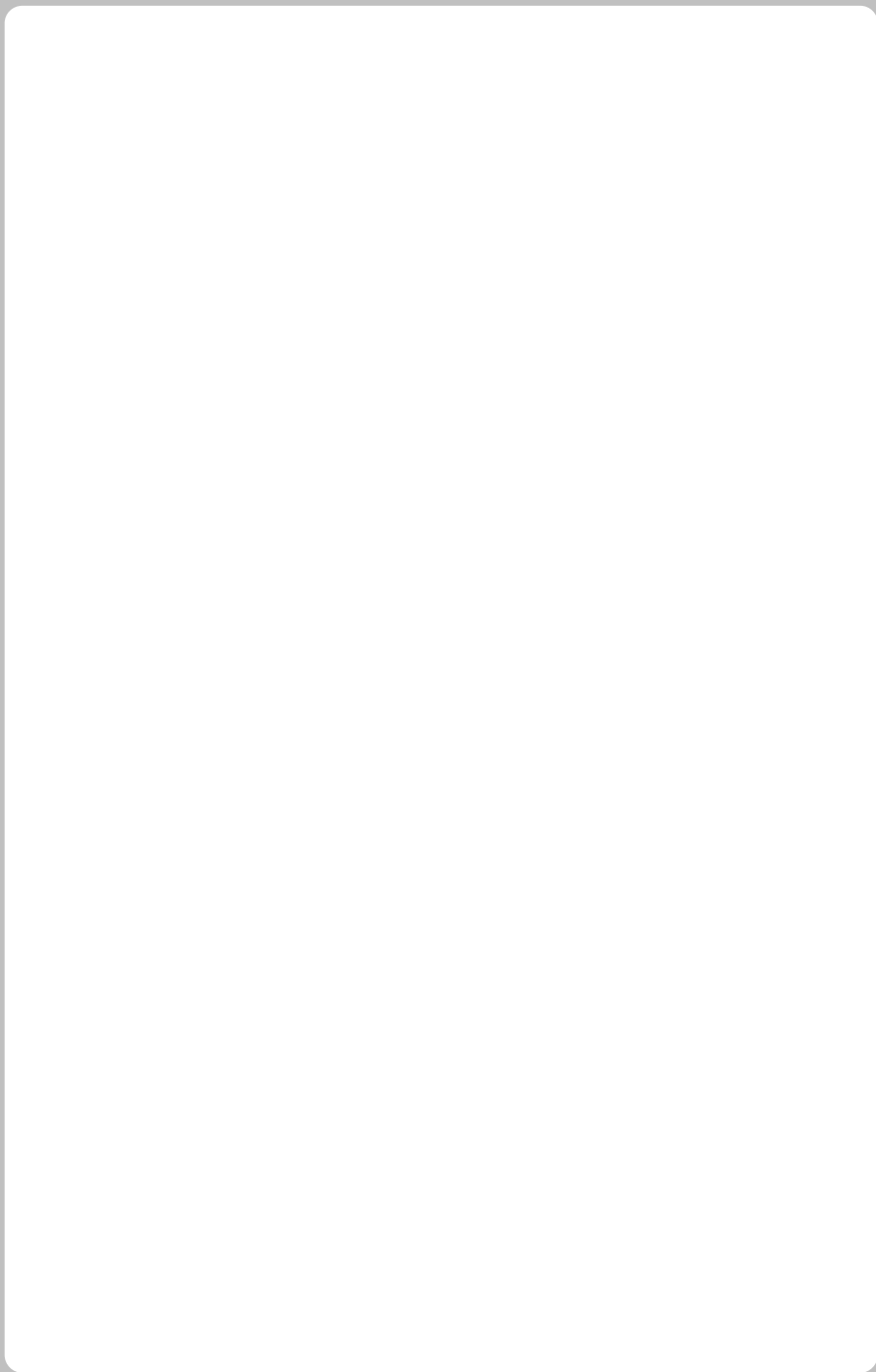
## Foreword

The need for today's communication of ideas in the field of incubation and STPs is undisputable. That's why workshops and seminars play a crucial role in gathering the experts in one place so that both the beginner and the experienced can be exposed to a variety of expertise and experience which can be a turning point for the beginner ones if they gain the ideas & lessons for their countries as some constructive souvenir in order to make use of them skillfully.

**Rooyesh ICT incubator**, a representative from Iran, did its best to acquire the necessary information and key points out of the **InfoDev's *Second Global Forum on Business Incubation Hyderabad, India in 2008***. Meanwhile some interviews with several well-known incubation directors & specialists were made. The questions for the interviews were smartly designed in order to pinpoint the current strategic needs of Iran's STPs & incubators. They mostly contained some issues regarding the standards for science & technology parks and incubators, their objectives, each one's amount of effectiveness, policy makers' attitude toward them, and also different aspects of risk-taking culture in developing countries.

The people interviewed are among the think-tanks and the managers of their own societies in entrepreneurship and incubating field.

The variety of responses by the elite participants in the meeting made us interested in exploring more, and also brought us such insight that there is a lot more to do in terms of incubation & STPs. Besides we will try to utilize the tips and ideas gained from the workshops into practice. So upcoming workshops of the kind will be again good new chances to take part and benefit from.



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## **Dr. Mohsen Khalil, Lebanon**



### **Would you please introduce yourself?**

- My name is Mohsen Khalil. I am the Director for the Global Information and Communication Technologies department at the World Bank Group. The Department is a joint World Bank and IFC department that provides financial and technical assistance to both public and private sector clients. The scope of our work ranges from policy and regulatory advice for government clients to debt and equity investments to private companies in this sector. Our Department houses infoDev and its Business Incubator Program, which now benefits more than 130 business incubators in 70 developing countries. The Business Incubator Program was started in 2002 as an effort to facilitate the

growth of innovative ICT-enabled SMEs, and we have seen remarkable results - 75 percent of the graduates of these business incubators continue to operate after 3 years of graduating from the incubator. This is much higher than what you would usually see without a supporting environment. Our Department also takes an interest in IT Parks as an enabler for IT sector development. We are actively engaged in IT Park developments in fairly advanced countries such as Russia and Mexico, as well as in small developing countries such as Bhutan. In order to better assist our clients in this area, we recently completed a report on "International Best Practice for Establishment of Sustainable IT Parks."

This Report takes a deeper look at the core success factors for IT Parks, and will be available shortly.

**What are the criteria for determining the number of STPs and incubators in developing countries? In other words, is there any norm to specify the number of incubators or science parks such as the number of**

### **graduates, the number of unemployed people or the population of a country?**

The number of STPs and incubators needed in any given country depends on a range of factors. Population size is used as a proxy by some people – it is not surprising that China has more incubators than Estonia – but population size is not a useful measure on its own. To determine how many incubators are needed a range of factors need to be addressed. It is important to keep in mind that the factors which are relevant for analysis depends on the *type* of incubators you are planning to set up. For example, if you aim to set up a business incubator focused on high-tech business creation, it would be important to take a look at R&D rates and commercialization trends. But these would not be relevant factors to look at if your primary purpose is to create a business incubator that focuses on low-tech business opportunities in low-income communities, for example. There is ,thus, a need to assess the market potential for the various types of business incubation, and from there we can determine

how many business incubators to start at a given time.

The important point is to gauge the potential market for business incubation. What all business incubators have in common is their purpose to enable start-up enterprises to become competitive and grow. When assessing the market for business incubation one should, therefore always take a look at what percentage of the adult population is involved in entrepreneurship, the number of start-ups in relevant industries, the state of the business environment, the population's socio-economic trends, etc.

Incubators and IT parks can play a significant role in developing countries where hard and soft infrastructure is non-existent or very expensive. For example, it is now a common understanding around the world that information and communication technologies are enabling tools to foster innovation and entrepreneurship. However, many businesses in developing countries do not have ready access to

affordable broadband. In many instances, registering a company takes very long and is a very costly process. Legal services could be very costly, accounting services can be very costly, and if every individual, particularly the entrepreneur who has limited means, has to pay for all of these services individually, in addition to finding the appropriate office space with reliable electricity and Internet connectivity, then it becomes very difficult to start and grow a business.

In this type of environment, where you are talking about promoting grassroots innovation that comes from individuals with very limited means, an incubator becomes very relevant. It can assist these individuals by giving them the kind of infrastructure and basic services they need to set up a company.

The provision of infrastructure and business services is just one component of business incubation. Many entrepreneurs tend to be creative in nature and are not necessarily good managers or often lack sufficient business experience. Unless the entrepreneur is able to

translate an idea into a commercial proposition, or a commercial product, the entrepreneur will not succeed. Business incubators help the entrepreneur to prepare a business model, a business plan, raise funding, and tap markets. It is an on-going process, where the entrepreneur receives advice, coaching and contacts to develop his/her business. Depending on how available such support services are locally, more or less incubators or different types of incubators may be needed.

IT parks are a slightly different concept. IT parks tend to address the infrastructure constraints rather than providing entrepreneurial services. Some of them also tend to have an R&D focus, and are often located in close proximity to leading universities and research institutions. Generally IT Parks tend to target more mature companies and provide plug and play facilities for companies to quickly establish their operations at a given location. If you have a country where for example, the availability of reliable broadband is limited, and it is difficult to find affordable business facilities, combined with the government's

interest to promote ICT innovation, then IT parks become a suitable solution. IT parks are much more of an infrastructure intervention where the business model is based on lease of office space and payment for related services. They are, therefore, often good commercial projects and an attractive proposition for a developer.

**What should be the main objectives for STPs and incubators in developing countries: development of technology, employment or entrepreneurship?**

The primary purpose of a business incubator should be to enable the creation and growth of viable businesses. IT Parks and incubators support the development of small and medium enterprises, particularly in the technology space. When you do that, you are promoting development of technology. When you do that, you are also creating employment, when you do that, you are also driving economical growth. So, the technology, employment and entrepreneurship objectives are not contradictory.

Through our work with business incubators, we have also seen that incubators can play an important role in affecting the broader environment for entrepreneurship. This is done by virtue of creating success stories that provide a demonstration and inspiration to others who have entrepreneurial drive, but who for whatever reason have not dared to take the necessary steps to realize their dream. It is also done by interacting with policymakers as a voice of a collection of entrepreneurs, and engaging with the policymakers on issues to create challenges for the start-up and growth of enterprises. Policymakers should view incubators as a resource in this regard. The same goes for financial institutions.

**How can we develop Venture Capitals and promote the culture of risk taking in developing countries?**

It is interesting to see how different countries and cultures deal with risk and failure. I remember on one of my first trips to Silicon Valley; I was struck by how the notion of risk taking and acceptance of failure was

embedded in the business culture there. I think that in the U.S. in general there is much more tolerance and acceptance of risk taking and failure than probably most other societies in the world, including Europe. As one venture capitalist told me, he looks for people who keep on trying even after several failures. However, in many countries failure can be very humiliating and entrepreneurs could have difficulties with escaping the stigma associated with public failure for a long time.

Accepting failure and encouraging people to take calculated risks will become a key factor in remaining competitive in the new global economy. Of course taking risks does not mean that people act in an unprofessional or illegal manner, but with a level of openness and educated calculations, some degree of risk should be tolerated and in fact encouraged. This is a very important cultural aspect that I would like to emphasize.

The second is the concept of venture capital that you mentioned. Indeed venture capital is very important as

an industry in and of itself. Venture capital is about people taking bets on entrepreneurs and accepting that by taking risk there are going to be successes and failures. In a typical venture capital firm, out of every ten investments, two would be wildly successful while a few may be failures and the rest average performers. In this instance, the success rate would not be 80% , but the payoff from those two successes would more than recoup for the losses in the rest of the portfolio.

In many countries where there is not an established venture capital industry, entrepreneurs often go to their family and friends to borrow money. This type of approach really constrains innovation and entrepreneurship. Policy makers should look into adopting policies that facilitate the creation of a local venture capital industry as well as encouraging a fundamental cultural acceptance of risk and failure. The government could also focus on reducing the risks associated with such investments by promoting greater financial transparency, protecting inexperienced investors

and promoting greater partnership and networking between industry stakeholders.

**STPs or incubators, which one could play a more effective role on development and promotion of innovation and entrepreneurship in developing countries?**

Technology Parks and incubators serve complementary purposes. Whilst technology parks are designed around spurring R&D and accelerating growth of relatively mature knowledge-based businesses, incubation is about nurturing *start-up* businesses to become competitive SMEs. Incubation can be applied to both low and high tech sectors, and the core of it is to stimulate the creation of a competitive SME sector. There can be a very symbiotic relationship between high tech incubators and technology parks - graduates of incubators can become clients of the technology parks. Once they graduate from the incubation process, the incubator can benefit from access to the facilities of the technology park, the larger firms in the technology park can benefit from

the innovative ideas and dynamism of the start-up entrepreneurs, and the start-up entrepreneurs can benefit from the experience of the more mature companies. You cannot really say that one intervention is more effective than the other, they serve complementary purposes.

For the society which is at the beginning of this road, what do you think about the strategy of starting a Science Park by establishing an incubator? I mean raising up an incubator and converting it to a science park.

Once again, these concepts are not mutually exclusive and starting with an incubator and then scaling up to an IT Park is perfectly fine. This may be a particularly relevant approach in the least developed countries where there is a weak science and technology base and private sector to start with. Whether to start with an incubator or a technology park, it really depends on a variety of factors - the local environment, the demand for office space, the amount of capital available to those who are interested in establishing the incubator, etc. As we discussed earlier, one needs to 1)

clearly understand the goal of the IT Park or incubator intervention, 2) assess the local market conditions for these initiatives, and 3) assess the capital and human resources available. Only after this analysis can one determine what the best approach for the given market is.

## **Dr. Dinyar Lalkaka, USA**



### **Would you please introduce yourself?**

My name is Dinyar Lalkaka; I live in New York City and work as an international development consultant. I was born and grew up in India, but since then I have lived and worked in many different countries worldwide. Nowadays, about half of my work is in business incubators and venture creation , and the other half is in areas like sustainable development, meaning how to balance the priorities of economic development and environmental conservation, and so on.

### **What are the criteria for determining the number of STPs and incubators in developing countries? In other words, is**

**there any norm to specify the number of incubators or science parks such as the number of graduates, the number of unemployed people or the population of a country?**

I think answering the question this way would be too mechanistic. Because instead of talking about how many specific incubators we have, we need to look at the quality of the ecosystem that supports entrepreneurship on developing small businesses. Incubators are just one small element of this ecosystem and to focus too much on this one element can lead to losing sight of the big picture. So, we should not lose sight of the forest for trees. I don't know if I've answered your question adequately.

**Yes, you said that we should define the ecosystem, and the ecosystem can determine what kind of incubators and how many incubators might be enough.**

Let me clarify that: what I'm saying is that it is the quality of the entire ecosystem that is important. Whether you have one incubator, zero



incubators or a hundred incubators, that's not important.

**The number of incubators is not important, the quality of ecosystem is.**

Incubation is just one player or one element of that ecosystem. So, maybe you have zero incubators and you have other kinds of models like entrepreneurship training systems, consultancy outreach, micro credit or enterprise credit. Maybe you are very developed in these areas because this is the need that small businesses in your country have, and in that case, maybe it's okay that you have one incubator or no incubators; on the other hand, maybe the needs of your country require that you have more incubators and fewer micro credit or enterprise credit institutions and so on. So, it's really a question of looking at the big picture and creating a balance that is appropriate to the specific needs of a country rather than playing with some formula saying that we have 10000 businesses, so we should have a hundred incubators.

What should be the main objectives for STPs and incubators in developing countries :development of technology, development of employment -“job creation” or development of entrepreneurship?

Given the three choices that you have given me, technology, employment or entrepreneurship, I would say that development of entrepreneurship is the most important of those three. But again let us step back and take a look at the broader picture. I don't know if you were present in the workshop and the seminar that I participated this afternoon but the point that I made in my presentation over there, is that incubators, and this is also true for science and technology parks, exist to address a market imperfection and that market imperfection lies in the failure of the free market to provide the information, the finance, etc. that small businesses require. It is more attractive for a bank or an accounting firm or an IT firm to serve a big business than to serve a small business. This is why whether it is India or the United States or Iran; small businesses do not receive the

resources they need to grow. The market, in all of these countries, fails to address their needs adequately. So, incubators can serve as a public intervention to remedy this market failure. And it is not even a market failure, this is a kind of social failure, whether it is a free market economy or a planned economy, small businesses do not get the kind of support they need. So, this is where incubation can come in and promote the transition to a more mature society and economy by creating a little island of good support and good service for entrepreneurial small businesses.

### **How can we develop Venture Capitals and promote the culture of risk taking in developing countries?**

I do not believe that the culture of risk taking does not exist in our societies. Persian merchants are found out across the globe such as in China, India or Europe. There were many successful Iranian merchants, entrepreneurs, scientists, technologists who did many entrepreneurial things that involved taking great risks. So, for any people,

any culture, any society this latent potential always exists, but depending on the historical circumstances, sometimes it finds outlet and sometimes it does not. So, to come back to your more specific question of 'How can we give new expression to this genius that the Iranian people have always had?' you know, I think that we have to be patient and let history take its course. There are no magic wands that we can wave that will suddenly change the character of the society. But what we are seeing around the world and also in Iran today is precisely this kind of opening up and being pushed, in a way, being forced because of the pressures of problems like unemployment and so on, to think of problems in a new way. In the past, in India or China or Iran, we thought that somehow we could find insular or local solutions to our national problems. But what we are increasingly realizing is that apart from global society there is no other way out. You know, we can think that we will close all the doors and all the windows and just do our own thing but our recent experience has shown that this is not an option. As soon as

we start opening the doors and windows, we realize that, in fact Indians, Chinese, Iranians, we can be very competitive in the global economy. We have a lot to offer, we have great human resources, and we have great natural resources, and this confidence will also inspire more confidence in our ability to take risks and to be players on the global stage. So to come back to your question, I think promoting globalization is the best fundamental strategy to develop venture capitals and encourage risk-taking in developing countries.

**STPs or incubators, which one could play a more effective role on development and promotion of innovation and entrepreneurship in developing countries?**

I think of incubators and science parks as brothers and sisters in some ways but I think most people would say that science parks focus primarily on bigger and mature companies whereas incubators focus on more early stage entrepreneurial companies. So, if the question is which of these two models can have bigger impact on promoting

*entrepreneurship*, then we should say that it is probably business incubation because the model is more focused on early stage companies, which are typically more entrepreneurial than mature, large companies.

**If our main objective is economical development, which one is more important and has more impact on the knowledge-based economy?**

Well, we cannot really ignore entrepreneurship, can we? Because entrepreneurship is the engine that drives the knowledge-based economy. It is not state-owned enterprises; it is not government research laboratories that drive the knowledge economy. It is entrepreneurial business. Having said that I think you need both parks and incubators because just like in a population you have children, you have young adults and you have old people. In the same way, in the ecosystem of businesses, you have start-up businesses, you have more mature businesses. And you need to serve them all. They have different needs and incubators and technology parks are different instruments to

serve different parts of that business community.

**For the society which is at the beginning of this road, what do you think about the strategy of starting a Science Park by establishing an incubator? I mean raising up an incubator and converting it to a science park.**

I think it is certainly a feasible idea and depending on the circumstances it can be a good idea. I can think of examples where this has been done successfully, but of course one has to look at the specifics of the individual case to determine whether it will be feasible in a specific situation or not, but in principle, yes, this is a good approach.

**Ms. Barbara Harley – USA**



**Would you please introduce yourself?**

My name is Barbara Harley. I am from Silicon Valley in California in the U.S. .I have helped create seven different incubators in various technologies, one of which was a for-profit incubator. The last one I created was an international incubator in San Jose, California, to help the city of San Jose attract foreign companies into its downtown, and we “incubated” their initial arrival to expand their markets. It is now a 10-year-old incubator and the newer term for what we did is “acceleration.”

**What are the criteria for determining the number of STPs**

**and incubators in developing countries? In other words, is there any norm to specify the number of incubators or science parks (such as the number of graduates, the number of unemployed people or the population of a country)?**

The answer is complex because it is related to the mission of the STPs and incubators on the numbers of research centers, the population of potential entrepreneurs and on the government’s development policies. If, for instance, an incubator is to help ICT companies, or software companies or bio-science companies, you have to know how many potential companies there might be, or how many research centers there are in the country that would produce entrepreneurial companies and innovation. So, you might have two or three bio-science incubators in a region because you have two or three universities that are producing technology and innovation and entrepreneurs. Or you might only have one because there is only one center for developing biosciences.. But as to the overall number of incubators in a country, I think that is

dependent on the policy of having an incubator for many different purposes. You might have an IT incubator, you might have a bio-science incubator, you might have an environmental or energy incubator, you might even have incubators for disadvantaged populations or poor populations, or arts and crafts, or service companies. You might have 10 software incubators in your country because of the number of centers creating software and entrepreneurs. Or you might have one in every state or every province in a country. There could be a government policy for a number of different kinds of incubators. In that case you would make a determination of what centers you would want. You might have an incubator for small or micro-businesses that are helping under-served populations. So, the answer to your question is dependent on what you might see as your larger policy. And incubators really serve entrepreneurs in their physical, geographic area. Entrepreneurs don't want to commute more than an hour or two to and from their business. So, it would also depend on how you

divide geographically to fit the populations.

**My question arises from this fact that in Iran we have about 42 incubators; about 12 of them are located in the capital city of Iran. Some of the policy makers believe that we should not raise the number of incubators in the capital city; For example, we have 1% of world population and 100 incubators are enough for us and so on. So, your idea is that it depends on what?**

The number will depend on the numbers of potential entrepreneurs and on the technology that might be transferred out of corporations or universities to create new businesses. For instance I think the number of incubators now in Beijing itself is between 50 and 60 incubators in that city. Now, Beijing has a population of about 8 million. And it also has a large number of universities and technology institutes. It probably is not a good idea to have a dozen or more software incubators that might be inappropriate for the amount of population.

**What should be the main objectives for STPs and incubators in developing countries: development of technology, employment or entrepreneurship?**

The incubator is designed for assisting the entrepreneurial or innovative company. In other words other entities are creating the technology -- that would be the universities, the institutes. But the technology being commercialized by a company would be supported by the incubator and/or a science park. My sense is that the policy to create incubators helps support new businesses. It encourages new businesses by giving them an environment that will make for successful businesses. And that would be the reason you would create the incubators. It helps young entrepreneurs who need the advice in a managed environment. And so the result would be perhaps more employment because you are creating more companies that are going to be more successful. But it might also be that it's helping to create a cluster, an industry cluster by having an

incubator that helps serve that cluster of entrepreneurs.

**How can we develop Venture Capitals and promote the culture of risk taking in developing countries?**

I'm not very well qualified to say how you begin those. But one of the ways could be that the government will support development of venture capital funds by being able to provide funds that match with and attract outside grants, loans, and investments.

You have many individuals of high net worth in your country. And they can make small and medium size loans or equity investments, and then they could gather others to create more venture capital. But the government may have to be the first investor where you have none at all.

**STPs or incubators, which one could play a more effective role on development and promotion of innovation and entrepreneurship in developing countries?**

What I saw in the U.S., in the early days of incubators and science parks

was that the incubators were easier to start but did not attract the type of funding that the universities could for science parks. In the early days, it was the governments that began them. The best models seem to be those STPs with incubators in them. In the U.S., that is not as frequent as in Europe and Asia.

much by being inside a park. The two together are very powerful.

**For the society which is at the beginning of this road, what do you think about the strategy of starting a Science Park by establishing an incubator?**

I don't know. It depends on the amount of money that the government in a region or in a country is willing to put into it. It takes less money to create the incubator than it does the science park. Some countries, I have seen, required the science park because it puts their name out there for their marketing purposes for the country or the region. It depends on the demand. But certainly in Isfahan you have a beautiful science park as I have seen in the pictures. It adds a sense of importance to the region that there is a science park. And, of course, an incubator is assisted very



**Mr. Julian Webb - Australia**



**Would you please briefly introduce yourself?**

- I am Julian Webb from Australia. For many years I have run incubators. I am an international consultant in incubation industry. I have just completed the monitoring, evaluation and impact assessment for the world bank's infoDev incubator initiative.

Creeda Projects is my consulting company. It is a spin-out from a non-profit organization which runs 3 incubators in Australia.

**What are the criteria for determining the number of STPs and Incubators in developing countries? In other words, is there any norm to specify the number of incubators or science**

**parks such as the number of graduates, the number of unemployed people or the population of a country?**

Yes, it is a good question. Well, it's probably something like one incubator for something like 250,000 people. But there is a wide range. That's probably the average. The population isn't a good guide, nor probably is the number of students, nor number of unemployed. What is a better guide probably is the number of new start businesses every year. That's probably a better benchmark. But people haven't done the work on that, although the number of businesses starting each year is actually far more directed to incubation. If you can get figures on the number of new start businesses every year, those that are suitable for incubation may be at the most 10 percent depending on the type of incubation. The more technology oriented, the lower the percentage.

**What should be the main objectives for STPs and incubators in developing countries: development of**

### **technology, employment or entrepreneurship?**

I'm not sure there is one main objective. But if there is one for technology incubation and science parks, many people would say it's creation of wealth. And certainly an important objective should be entrepreneurship and employment and in a sense empowerment is the consequence. It's entrepreneurship combined with technology transfer and commercialization of technology developed in R&D institutes. Incubation comes in, to help commercialize that technology or transfer that technology for entrepreneurial growth into businesses. So, really objectives should be to foster growth in technology-based innovative entrepreneurial businesses. Through creation of wealth, employment is created and not just any employment; it should be high value employment and high-wage employment not just any employment. Furthermore you start to get a ripple effect in a community with increased entrepreneurship and innovation. In developing countries - countries that don't have strong R&D

base- technology can be confusing, but probably not for Iran. To aspire to high technology innovation will not be realistic without a strong R&D base. These countries are more concerned with adapting technology that has been developed elsewhere to a particular environment or the development of what sometimes is called appropriate technology which still can be new but it is not really hi-tech, but it's an appropriate technology for particular conditions. But this isn't the situation in Iran, which is an industrialized country with strong R&D base. So, Iran is not like Ghana, for example and R&D-based sort of objectives are appropriate. For Iran the challenge is to improve conversion of that technology into growth oriented businesses; those businesses that can grow and lead to wealth, employment and changes in culture.

### **How can we develop Venture Capital and promote the culture of risk taking in developing countries?**

First of all let's take the first part of the question into consideration: Venture Capital (VC). This is a serious

challenge and to develop a venture capital industry government has to be involved. Government first needs to make a decision that they will start to invest in the venture capital space. It simply won't happen if there is only the private sector. Developed countries like Australia didn't have a venture capital industry and we had to go through a process to develop a venture capital industry. The best way and most common way is for government to invest money in a venture capital fund partnering with the private sector, which should co-invest and manage the fund. Government is not good at doing it itself or at selecting the right businesses to invest in, and government is not good at monitoring, evaluating and continually supporting those enterprises. So, probably the best way is for what's called co-investment. Government creates a fund in which it invests, the private sector puts money in as well, and then the private sector manages the fund. This works well in countries where you have a good transparent legal system and trust. Where partnering with private sector

investors is not possible, government needs to do it itself; providing the bulk of the funding. But even then, government should involve entrepreneurs, the private sector, in helping select which companies to invest in. Both China and India are examples of where Government invests at the early stage. In India, the national science and technology development board invests at the early stage as does the Australian Government, but mostly via private sector fund managers. As conditions change, governments often realize the best way for them to invest at an early stage is via private venture capital fund managers, with controls to make sure the investment is used only at an early stage. So government needs to invest, but people need to understand that private venture capital, traditional institutional venture capital, comes in a later stage, as it's been talked about in the forum here. Venture capital invests large amounts of money and normally at the later stages of business development – not the earlier stages where government needs to invest. So, I'm saying that Iran needs to develop that venture

capital industry and that at the early stages of business development government will need to be the main investor, as it happens all over the world. Other important investors at the early seed and start up stages of a business are what are called ***angel investors*** - individual investors. So, it's important to try to nurture the development of an angel investor community - converting the wealthy people in Iran, who invest in trading and real state, to investors in technology businesses. It is a matter of helping them come to an understanding about how they can improve their returns by investing in early stage companies via business incubators with good business incubation practices. Early stage investment is very risky and angel investors typically help the business to grow as well as invest. Good incubators also lessen the risk and the costs of making the investment. Once business incubators achieve a reputation for quality, for generating good companies it will be easier to attract wealthy people and to start an angel investment industry. But it's not easy. The more trust there is in a community, the easier it is, because

investors need to trust the company in which they invest, which leads to your second question. How do you develop trust? Trust entrepreneurial attitude and risk taking. They all seem to go together and again there is no easy answer. I think education helps. The more educated people are, the more they start to understand what's going on. They trust people. And I think back to one of the key speeches at the beginning of the conference which talked about diversity. When you start to encourage diversity and independent thinking this is a symbol of a more trusting society. I think it's very very difficult and it takes time to develop attitudes of trust, flexibility, openness, tolerance of ambiguity and risk taking, all of which are important for innovation and entrepreneurship to flourish. These don't change overnight. Also government needs to continually improve the regulatory system, making it friendlier for business, transparent and open. When it is transparent and open, government is leading the way and you have a system which applies equally and openly to everyone. So, regulatory reform is important and

through the education system you can start to encourage lateral thinking. Thinking outside the box and developing more positive attitudes to failure are a part of the equation. Business is risky and some will fail; that's ok because by failing people learn important lessons that can help them succeed the next time. You should encourage people to experiment, to do things differently. Business incubators, provide a conducive environment themselves, along with business advice and support, creating a more trusting, risk friendly and tolerant atmosphere. This is an important role for incubator socially and culturally. Overall systems in the country may take longer to change, but business incubators should be pioneers, embracing all of this internally. This means you have to develop trust, encourage risk taking, and help people to handle failure and to handle risk. Incubators should also be advocating changes in the education system and changes in the government regulatory environment.

**STPs or incubators, which one could play a more effective role**

**on development and promotion of innovation and entrepreneurship in developing countries?**

- I'm not sure if you can say one is more effective than the other. Both are important and complement each other, with incubators helping new companies while STPs help larger and established companies. With the need for new companies and new employment in Iran maybe incubators are more important at this stage, but having both working together is better.

**For instance, is this your recommendation for policy-makers in Iran?**

Yes, I think you need both. It's the first answer, you do need both and it's hard to say one has more impact than another out of the context of things. Parks are therefore, really for large companies with links to universities to transfer technology and R&D. They are important for a country and you need the large companies. Incubators are for small start-ups and so you will need more incubators than parks; and the impacts are different. If I had to

choose between having parks or incubators I think I would say incubators because incubators start the new companies that will become the large companies of tomorrow and they have far more reach into the community. Certainly in Iran you have good incubators and you probably need more, but you need to improve their performance to maximize their potential and impact for the good of the country. Incubators have far more reach than Parks in helping more people and they have more impact on the culture than parks do, but you also need parks. They are an important part of the equation and where there are parks, there should be incubators in those parks as well; the two work very well together. But you don't need, in a country, as many parks as you need incubators.

**For the society which is at the beginning of this road, what do you think about the strategy of starting a Science Park by establishing an incubator? I mean raising up an incubator and converting it to a science park.**

That is a good idea. In a park, in a large developed country, you can easily attract large multinationals, such as Microsoft, who want to come and work with leading universities. But in many smaller developing countries it is far harder; you don't necessarily have these multi-nationals or the large knowledge companies who are interested in the knowledge economy, innovation and commercialization. The germination of a park can, in fact be an incubator; growing the companies that eventually tenants the park. So, you create the companies who move into the park and that's a very good way to go. Estonia is a very good example where it all started with an incubator that has now become a leading science park. In doing this you want to make sure you keep the incubator. You also find that a good incubator helps to attract the larger companies into the park. Another example is in Sydney in Australia, and the Australian technology park, arguably the leading Science Park in Australia, and with which the first stage was the incubator.

**Mr. Heinz Fiedler, Germany**



**Would you please briefly introduce yourself?**

I am Heinz Fiedler, president of the global network called SPICE group. SPICE stands for Science Parks and Innovation Center Experts, and this network is set up by individuals who support innovation, entrepreneurship and business incubation. They are now, represented in more than 40 countries works in 15 years.

**What are the criteria for determining the number of STPs and Incubators in developing countries? In other words, is there any norm to specify the number of incubators or science parks such as the number of graduates, the number of**

**unemployed people or the population of a country?**

- There is no limit. Just to take a very simple example, Germany, when we started business incubators in 1985 there was a scientific study and they came up with conclusion that Germany could make use of 12 business incubators of this type. Now, we have approximately 400. So my proposal would be let market speak. So, there is very much room for business incubators. They are of so different types. They have so many different Focuses and if we talk about the core aim of business incubation, we talk about business and entrepreneurship and this is including everything. This is including the agricultural sector; this is including the handicraft sector, this is a bakery and this is a biotechnological firm. So, you have very wide range if you talk entrepreneurship. So the limit is really just the market. See how much demand is there for this kind of services and this will limit the number of incubators.

**So we should expand the market instead of thinking about the number of incubators?**

Not expand the market but just look at the market, see how much demand is there, I mean how many entrepreneurs would need the service and then give them the service as long as they need it and you would very quickly find out if the certain area has now an incubator of this type. Of course, you can not make unlimited number of high technology business incubators in any given place, even if you have the best technological resources. I mean research institutes, knowledge based industries already there. This is a good environment for knowledge and technology based incubators and there is of course a limit. You can not make 50 incubators, in this place, maybe one or two are enough; but if, as I said, if you look for entrepreneurship, then you have much more room and simply see what is needed by the people you want to support to become entrepreneurs and to develop businesses.

**What should be the main objectives for STPs and Incubators in developing countries: development of**

### **technology, employment or entrepreneurship?**

There is a difference between science parks and business incubators in looking at the aims. If you look at incubators first, this is not at all developing technology, it has nothing to do with developing technology, it is solely using results from technological research to start businesses, it is about business not about technology and experience shows that most likely the latest technology is not the best to start a business. It is always the second layer. It is not the latest findings because there are usually not yet in stage where they are marketable, they can really sell them as a product. So, if you look at incubators, clearly in my view, the aim is to support business and entrepreneurship and not to support technology. If you look at technology parks, the aims are slightly different. Because I think the key issue for technology parks is to create synergy between research facilities, research facilities from the private and public sectors. So, bringing them together in a park-like environment and supporting that with a proper management that supports



communication cooperation you create synergy effects and that's what techno parks are about. So, there you have, for example, the situation that undergraduates from a university already working in a company on the science park to get practical experience this is feedback to the training and educate again at the university. So, you generate very close cooperation and understanding and that's very important factor in Science Park to mention just one. All together incubators and science parks have the final goal to create new business activities and thereby they create jobs but they are not made to create jobs; they are made to create businesses.

**How can we develop Venture Capitals and promote the culture of risk taking in developing countries?**

I think looking at this topic means you must look at the issue of financing, not of the issue of venture capital. Venture capital is a tool for approximately four percent of businesses. So, when you talk about businesses, you talk about financing hundred percent. So for 96% of all

the businesses, venture capital is not interesting at all. So, in my view it's absolutely wrong to focus on venture capital. It's one important tool but is just one for very small minority of businesses. What I think is much more important is to create a climate where individual venturing is favored, where people it get attracted to this. They are attracted to invest in business activities and this is easy to say but not easy to do. These need some period of time, of promotion, of creating examples, of showing people in practice. What can happen if you do those kinds of things? So, that you can generate an understanding in the population in the more wealthy population that they say may be I put my money not only on a Swiss bank account where it is safe and generates a little interest, maybe I take a portion and invest it into a company here in my city just to be part of this development. So for me the idea is to bring this parcel into the eyes of all the people that they really see entrepreneurship and business is an exciting activity. It has carried is risks but of courses it also has chances and then doing this over as I said, a long period of time this

will not happen in five years time that you declare today and 5 years later this problem solved. It's a long term activity. It is a long term view, you have to take into account on these kinds of initiatives that create what was called the ecosystem and presentation is during this conference, the environment for the businesses where they really can grow, and it also might affect banks, bank loans are very important instruments to finance businesses this is not as I said, venture capital is just a small portion, you have this private money from family and friends and of course bank loans are also important. As you spoke about the session, When I left the session, I was saying what if Bill Gates met a venture capitalist and he would tell him, it is awful what you are doing you do not want me to do one of these criteria we have; this can not be a successful business. What if that happened? Therefore I like this presentation because it was balanced. Just showed the two ways, I mean the Google which exploded the people made a fortune in a very short period of time and you have the other side where people without any venture capital

with none of these financial instruments became obviously successful.

**STPs or incubators, which one could play a more effective role on development and promotion of innovation and entrepreneurship in developing countries?**

As we discussed the differences in aims of these two instruments, is not an either/or. You cannot decide to say it's better to make incubators or even techno parks or vice versa. It's really an analysis of the situation and potential in a given place not a country, in place in city and if you look at this potential, I say, what is better to do here, a science park or an incubator. This is one perspective. The other one is to look at it from the industry point of view. How much money do you need to start a techno park and how much money do you need to start an incubator. So for one techno park you can start twenty incubators for example and if you imagine, twenty incubators can do spread out in a region, in all the places where potential entrepreneurs are located and then take these

effects they come to possibly, to the same level of the techno park. So there are different views on that way but again I believe that you have to analyze the situation you are in and then look at your aims and decide which tool is the better one. For this specific situation and purpose; no general rule.

**Do have any special recommendation for improving and promoting the current status of Iranian science parks and incubators?**

I want to say so. It is simply because I don't know enough about Iran to really have my own view specifically on Iran and this matter. So, I couldn't answer that question some specific recommendations. The only thing I see is that Iran obviously has understood that there is a need to develop instruments to support this kind of entrepreneurial development but I couldn't say that Iran should do more in business incubators or create ten more techno parks, I simply don't know enough about it.

There is synergy between different kinds of research institutes. They

have the synergy among research, business and education. So, these components are much stronger in science parks and they are in incubators. Bringing these three together is one of the main objectives of science parks.

I bring them in one place and you create the potential of doing something together. If it is properly managed, does not just happen. I mean to put these 3 things somewhere and then say ok, go believe it and say go ahead, of course most likely something will happen, but it also needs some overall management and some supportive activities to make it happen faster and to generate that and, that's of course not so much in incubators, not even in technology incubators. They are of small size; they do not have this potential, to that extent, but this again brings the question, 'Do science parks need incubators?' Or can a science park live without an incubator? Or can an incubator live without expansion potential? And I would say, *yes*, a science park can live without an incubator but it's much better to have an incubator

there and because it increases the potential for synergy and for making use of all the potentials of a science park.

If you have an incubator there as well, we have also examples where techno parks started from an incubator. Everything in Dortmund in Germany for example, every thing began with an incubator for 1400 m<sup>2</sup> of space and now twenty five years later you need a helicopter to show how the development was. Because it now is full of new buildings in businesses would research institute. With every thing; so there, the incubator was the start for development in a region. This doesn't happen in every case again. This is why I am always saying not two incubators are the same. They are all different and you have to look very carefully at the local situation and the local potential and then see what you can develop on these regions. I'm not just saying: ok, Go to Dortmund, do it as they did it and twenty years later you will have a flourishing industry. No, most likely this would not happen. You have to adapt to the situation where you are and then build your own tool or your own use

of the set-off tools, which is available, selected tools you need and then begin to work.

**Dr. Peter Harman –  
United Kingdom**



**Would you please introduce yourself?**

- My name is Peter Harman. I am the deputy chief executive of U.K. business incubation which is the national association representing the business incubation industry in the U.K.

**What are the criteria for determining the number of STPs and incubators in developing countries? In other words, is there any norm to specify the number of incubators or science parks such as the number of graduates, the number of unemployed people or the population of a country?**

The first one you mentioned is probably the best sort of measure because there needs to be some sort of relationship between the number of incubators or science parks and the population. I think if we restrict it only to the number of graduates and so forth what we are saying is that it's about only graduates, particularly incubation should be available to any entrepreneurs for any background. So, the best connection to make is population. Having said that we did some work, analyzing the whole global incubation community, and if you take some of the very large population countries like India and China, what you find is that across most economy they may tend to be the developed ones because business incubation is growing very much in the developing economies but if you take the developed economies in Europe and the U.S., for example, surprisingly enough, they average out at about one incubator for a quarter of million people, and they surprisingly consistent across that. India has an initiative there because of the population is extremely high. China has the same sort of problem and it looks at business incubation in

a different way. Because they are much bigger, they tend to be a sort of hundreds of square feet. But certainly across most of developed economies is about one incubator to quarter million of people. About science parks, if you take the United Kingdom as an example, it is about 60 science parks and the population is 60 million. So, as far as U.K. we have done an analysis because we had to look after the incubation side, that's some thing that the science park association would do. The U.K. is another example that's one science park for one million people. But what one mustn't do is to say that while I don't have a quarter million of people in my community, I'm an island in the middle of somewhere and it has only 100,000, therefore, I don't need an incubator. So, I don't think one needs to get, just because as a benchmark, if you fall below that benchmark or above it, I think it's no reason for saying I do or I don't need one. For the same reason if you happen to have a city with a million people in it, it doesn't mean you have to have four incubators. All I'm saying is that analyzing the world as whole; that's currently how it spanned out.

**What should be the main objectives for STPs and incubators in developing countries: development of technology, employment or entrepreneurship?**

I think today certainly one of the main drivers has been about jobs. But I think as time has moved on people have begun to look at the bigger picture around the economic development, there is a consequence of that social development, and I think it's one of the issues that we need just come to groups with better than we do at the moment, both in the developed and developing countries. There is a view that if you go to a high growth, high technology end of the spectrum and consider it as a whole spread around right down to social enterprise even in the United Kingdom there is a big spread and there even where the focus is on high technology and high growth, and therefore you might say, well, it's not about social issues. Well, of course it is. There are social consequences of that economic development and that take place back in the end of spectrum. There is always a social

consequence, but everything you do that comes out of consequences of different point of views.

**How can we develop Venture Capitals and promote the culture of risk taking in developing countries?**

I think a lot of it depends on the background and the inherit culture of the country, in terms of risk taking. I'm speaking about some risk taking from UK. We are not natural entrepreneurs and are not natural risk takers. Now, I said that, I guess looking from your part of the world, you probably see a robust financial community, and you'll see lots of venture capitalism. So, it doesn't necessarily reply but if there is no naturally an entrepreneurial spirit, there would not be there for venture capitalism will follow on for it. Shifting the entrepreneurial culture at the very base is not something that will happen over a night. The Americans did not always behave the way that they behave now. It took a century or more of taking risks for example, most of them landed on the east coast and moved away from the west

coast and established that position across the country and I think that's where a lot of the spirit comes from; whether you have had to cope with crisis in a sense. We're the same except we are on the other side of the coin because we have had no conflicts on our territory for thousands of years; no difficulties, no problems, largely been fairly democratic for a long time. When there is no crisis, everywhere can be a suitable place; and when you can place, and then you can risk and get happy as I am. Why do I need to do anything more imaginative if I have the power to do it, and think outside the current box and do things differently? I think that turns to squash the entrepreneurial spirit down. But the important thing is that this is not going to change over a night. This is a generational thing, with the current entrepreneurs, with the current youngsters, with the students. But also youngsters in schools, if we don't push the entrepreneurial agenda back down the line and talk to youngsters in schools, rather than saying to them: who do you want to work for when you leave the school? Probably he is

going to work for you when leave the school. That's why we need to spend a lot of more time than we do. And also I think educating their parents about the entrepreneurship. We said that not everybody can be an entrepreneur. We need people to work in organizations in order to develop that sort of things. So there is a necessary connection between nations that is not naturally entrepreneurial, as we aren't. I mean, I'm not saying we don't have entrepreneurs; generally we don't, with the fact that there is no venture capital industry. I don't think that two of the necessary things are connected out and it's because there is a fair amount of money, but not a lot of entrepreneurial spirit.

**STPs or incubators, which one could play a more effective role on development and promotion of innovation and entrepreneurship in developing countries?**

That's a very good question. I guess the ones which are the most flexible, probably. Because if they are not provided in that level of flexibility it is necessary in a sense they are

incubators, they are client-based incubators. Well, as you know with a business incubation, the purpose is to move the clients through the incubation process and out and get another group in. so, if you are working on a two or three cycle, for example of entrepreneurs within that environment every 2 or 3 years, you are in tight customer-based change and therefore with different businesses, different ideas, different technologies. So, the approach you need to adopt for them will need to be different. Therefore it needs to be a constant and on-going review. This would apply when you are running a business. Specially client place would change and grow and more over rest of it, but you still need to continue to make the same products you were making 20 years ago in the same way with the same materials, the same market, your business will lose very long. Particularly in the global market, and I think it just comes right back to the situation of incubators and thinking of themselves as businesses and running themselves as businesses and thinking in the same way that entrepreneurial clients think, and there are lots that think don't;



they seem to be doing something else here but they are not. They are just incubating these clients in terms of good practice in business and they should apply those good practices in businesses as well. Sometimes they forget that. But I think it's around the models of the most flexible and out good looking. So, rather than looking very much at my building and more spend on my building, I should know what's going on around the building; how are things changing, how you react to those changing, how you respond to those changes and as the consequence of that looking ahead. It's no good rebuilding your incubator and its processes. Once you've got the new group plans in, you've got to anticipate the client's needs when they are slowly coming through. So it's a constant chain of ideas. As in any business, if you are not flexible, you know, you eventually snap at the end.

For the society which is at the beginning of this road, what do you think about the strategy of starting a Science Park by establishing an incubator? I mean raising up an

incubator and converting it to a science park.

Again I think it depends on the situation and if you take some of them extremely isolated and in deprived areas. I mean the very concept of developing an incubator into some massive science parks in the middle of a rain forest in Sheranka, it just won't happen. If it happens, if the environment is right and if the fund is in place and if there is a necessity and no competition to build an environment around the incubator which is about a science park or technology park, then find what the market need is at the end of the day. But if you go to a little village and you've got a little incubator which is helping small businesses very slowly, becoming more enable through ICT and so for, that is not going to be a science park in a million years, but there remains the question of proximity to universities. Building a science park in the middle of a desert with no university or no institutions? But again to provide the necessary intellectual input it is not going to work. So, again, I mean, it depends on the environment, it depends on

the objection you want to set. And again I think just to assume that an incubator will grow into a science park is also not wise. Because there are so many large proportions of the existing incubators which have nothing to do with science parks. Anyway they are completely separate, they may have relationship with institutions, but they are operating in many cases. So, again it's the diversity that exists in the flexibility. If it's appropriate, then some more you can go for. But may or may not in particular, I guess in many developing countries where it's relatively small scale of geography, you know we got some works in the Caribbean, there are 3 islands; in these three Islands one Islands has got the population of 70000 people. It's a suffering state; it has no connection. Anybody else, is not going to have a science park there; that's not going to happen; no universities, nothing. But they can still have an incubator which serves that particularly needs to help the entrepreneurs to come out and maybe diversifying their economy. It is not going to happen, but if they have one it should be in a different

Island, and the logistics would be a big problem because there is a lot of water in between, which makes it quite difficult.

**Mr. Zindal - India****Would you please briefly introduce yourself?**

I am Zindal. I am the director general of software technology parks of India.

**What are the criteria for determining the number of STPs and Incubators in developing countries? In other words, is there any norm to specify the number of incubators or science parks (such as the number of graduates, the number of unemployed people or the population of a country)?**

I have not looked at it from this angle; I mean, putting a standard. Now, in India as you know we have a very large number of science and technology parks.

India generates maybe nearly half a million per year; as experts, as

engineers in the country. So you see it's a large number, but we feel that India still has a long way to set up this scientific, technology and entrepreneurial park; and the scope is, up today, unlimited and there is room for every thing to grow and I don't think any number will be too large.

**What should be the main objectives for STPs and incubators in developing countries: development of technology, employment or entrepreneurship?**

See the three objectives which you mentioned, none of them are exclusive to each other. When we set up a science or anybody thinks of setting up a science, technology and entrepreneurial park, it is to promote the centre development; it is to promote the entrepreneurship, it is also to promote the economic activity in the field of SME. Maybe it is for domestic sector, or maybe it is for export sector. So I think the three objectives which you mentioned are all important and they all work together, and I don't see any contradiction; these are not exclusive

to each other. So, all the three are important.

**How can we develop Venture Capitals and promote the culture of risk taking in developing countries?**

Well, the need for venture capitals arises because the normal banking channels will not advance money as for the normal loans to a risk taking activity, whereas the venture capital itself assumes that when you fund hundreds of things, all of them may not prosper. Some may prosper and they give very well knowing that you are taking a risk and all may not succeed. So, the venture capital and all cultures have to take that. India needs it, Iran also needs it, every developing country needs it, and this has started in India quite sometimes ago, 10-15 years ago, we had a large number of venture capital funds in India and they have been promoted fully or partially by both government of India and real states of government. Now it is private venture capital; they are promoted by themselves without government help and assistance. But the government has to take initiative in the beginning

because the private people don't come forward.

**STPs or incubators, which one could play a more effective role on development and promotion of innovation and entrepreneurship in developing countries?**

You know again, don't look at exclusive to each other. You see in your situation which takes, the best is you design your own taking important daily mention successful elements from both of these. Again you know, I don't see these are exclusive to each other. You don't have to get married to one model. You see what model suits you ,and what is your purpose. Keep that purpose in centre of your view and then see what elements of these two concepts you need, and marry them; put them together.

**For the society which is at the beginning of this road, what do you think about the strategy of starting a Science Park by establishing an incubator? I mean the strategy of converting an incubator to a science park.**

As I said, do not start with one model and then try to head up right from the beginning. See what elements you need from both of these and put them together, & develop it.

## **Mostafa K. Eghbal – Iran**



### **Would you please briefly introduce yourself?**

My Name is Mostafa Eghbal, the Associate Professor at Soil Science Department at Tarbiat Modarres University. I was the technology deputy at Ministry of Science, Research and Technology in 2004, and also the President of Isfahan Science and Technology Town (ISTT) from 2001 to 2004, as well as the Vice President for Research and Technology in Isfahan Science and Technology Town from 2000 to 2001. Back to 90s I was the assistant teacher in department of Land, Air and Water Resources in University of California, Davis. Before that I used to be the Research Assistant in Department at the same university for a few years.

### **What are the criteria for determining the number of STPs and Incubators in developing countries? In other words, is there any norm to specify the number of incubators or science parks such as the number of graduates, the number of unemployed people or the population of a country?**

I don't think we can develop a general guideline and criteria for determining the number of STPs and incubators in developing countries. Each country should develop their own criteria based on their local conditions. In Iran, for example, there was more emphasis on establishing STPs in the early stages. But later it was clear that we need to develop more incubators because of the large number of university graduates and lack of opportunity for employments for young entrepreneurs. One criterion we used for determining the number of incubators needed for Iran was population of university graduates and estimating the percent of entrepreneurs among them. Another criterion was the budget available in the government to help the

establishment of these. The third criterion was potential support from local governments and universities.

**What should be the main objectives for STPs and incubators in developing countries? Development of technology, employment or entrepreneurship?**

Private sector in developing countries, especially in the area of technology is weak. Thus, one of the main objectives of such organizations is to support SMEs and to create an environment of synergy among them. STPs and incubators are also considered good basis for economic development in the regional and national levels. In Iran, incubators have played a great role in promoting innovative culture especially in universities.

**How can we develop Venture Capitals and promote the culture of risk taking in developing countries?**

In the early stage before private sector gets involved in VC, government should play a role in promoting such activities. For

example in the Third Development Plan of Iran, the government was allowed to support private funds that could act as VC. Four different private funds (VC) were established based on this regulatory provision and the government matched the private funds (49 percent government and 51 percent private). Establishment of STPs and incubators have encouraged some investors especially successful Iranians in other countries to look for potential start-ups for investment and thus act as VC.

**STPs or incubators, which one could play a more effective role on development and promotion of innovation and entrepreneurship in developing countries?**

As it was mentioned in question two, incubators in Iran have played a better role for promoting the culture of innovation. This is probably because the target of these incubators in Iran has been university graduates.

**What do you think about the strategy of starting a science**

**park by establishing an incubator?**

I believe this is a good strategy and it has been used in many countries including Iran. Incubators require less investment. In addition the sponsors of incubators have the opportunity of gaining experience working with start-up companies and develop their services before investing in science parks.



### **Mr. Jawahar - India**



#### **Would you please briefly introduce yourself?**

- My name is Jawahar from India. In fact, I am the executive Director of one of the first business incubators in India and also the vice chairman of the Indian association of science parks and business incubators called ISPA. I have been in the industry for the last 17 years; I have been working in business incubators since 17 years ago. Before coming to this, I was employed for the HAUSE as a management consulting for nearly one and half years; after my graduation as mechanical engineer, I did my master in business administration. But once I came to business incubation field it has become a one-way ticket, because I like the profession, I like working with entrepreneurs.

#### **What are the criteria for determining the number of STPs and incubators in developing countries? In other words, is there any norm to specify the number of incubators or science parks such as the number of graduates, the number of unemployed people or the population of a country?**

I think it's a very good question, because this is what we have been trying to identify in India and there are lot of us on this; but I think the business incubators are social aspirations, what people need is a criterion. We can not just go by numbers, we like to go by the kind of aspiration the civil society has, if a lot of people want to become an entrepreneur, the government feels that there should be a lot of incubators, far promoting entrepreneurs, then I think definitely there is a need for lots of incubators and if the government does not feel that there is a need for business incubators, then there would be no point in promoting business incubators.

At least I can say for the Indian context, at least one business

incubator in each town, each locality, geographical area of at least twenty KM radius is needed. So, that people that are entrepreneurs from that area, can access this business incubator. That would be my long time vision; I'm looking at that from the geographical context in a country, a circle of 20-25 KM should have one business incubator or two business incubators, at least to initiate competition, and that's one way of looking at it and of course as you said another way of looking at it is what kind of unemployment we have and what kind of solutions can business incubators provide for that.

**What should be the main objectives for STPs and incubators in developing countries: development of technology, employment or entrepreneurship?**

I think it is a combination of all of these. But, I would say that technology does not come without people, people carry technology, people use technology, so, people are the center concept of whether this technology and enterprises or whatever of this kind, people are the

center piece. So, I think basically, what we are doing in business incubators, we are using people to become successful by helping adults to get employed, and that is what we are doing. There are incubators which are using other forms of non-technology businesses at non-technology incubators also. So, depending on the situation, they may have to use some technology incubators which deliver technology to related enterprises and we should also look at the rural areas, we should also look at other areas which can generate large number of employment opportunities. The key is business incubators helping people to improve the quality of life. Either they are in terms of good products or in terms of employment opportunities, or by any other means. The quality of life in a particular region should be enhanced by the business incubators.

**How can we develop Venture Capitals and promote the culture of risk taking in developing countries?**

- Yes, but venture capitalism is only one component of business incubation, and if you look at the

global business incubators, only 5% of the enterprises are being supported by venture capitalists, the other 95% are supported by various forms of fund, maybe funds from themselves, or funds from government, or even funds from banks. The venture capitalists are always interested in top of the slots, the creamy layer; But you need a bread, you need other things for running an economy; I think that is where business incubators maintain much broader concept than a venture capitalism per se. But they deliver value to those industries which are not funded by a venture capitalist. So they are of very important value. That is where I think government and individuals have to support entrepreneurs.

**STPs or incubators, which one could play a more effective role on development and promotion of innovation and entrepreneurship in developing countries?**

- Both have value but from my perspective I think business incubators are of more value because if you look at the immediate value of

sort of overcoming the structure of anomaly in the global level, for example, you may not have an IT environment, you may not have technology environment, so you need to bring in foreign director investment, you need to bring in lots of foreign players as well as supporting your existing enterprises. In that sense, to overcome the structural barriers in the world economical situation I think science parks have a role to play. So those aims of science parks, I feel, is within a time frame. Once these structural anomalies go away, once you reach that level of technology or foreign direct investment funds flow, I don't think there is a very great need for science parks and things like that. But when it comes to business incubators, I would like to stress the point that business incubators are people centric, business incubators are innovation driven by the individuals, which supports the individuals as an initiative. So, I think business incubators have a very long term value to deliver. Immediately you may not be able to get results on business incubator. You may have to invest on the results you are

expecting from the incubators, if you invest on the results over a long period of time and if you have enough patience, you will suddenly see over a long period a bloom. It is like farmers harvesting; you pour water, need to have sunshine and etc, for a long time you will not see any-thing, but all of a sudden one shiny morning you will see lots of flowers coming out and that's a kind of value a business incubator can deliver to the society.

#### **And for science parks?**

- For science parks, I think it is more of your own garden, your own distinct value can make your place much more beautiful and livable; it can also be a show-piece far attracting your guest and other people. So, that is the difference; when large companies have market, they can always establish their own enterprises. They know there is a market, they come and establish their own enterprises but small entrepreneurs can not do it, because they are doing it on their individual basis and therefore, I think business incubators which support small entrepreneurs to grow into begin

enterprises. They are not small. They are small now. But eventually they can also become very big; so, in that sense, I think business incubators carry much more value than science parks.

#### **For the society which is at the beginning of this road, what do you think about the strategy of starting a science park by establishing an incubator? I mean raising up an incubator and converting it to a science park.**

- No, I don't agree, because I don't think it's a good idea for developing countries basically because the purpose of a science park and the purpose of a business incubator is not the same. Business incubators do a different work and science parks are far bigger companies to come and park their companies there; business incubators are talking about growth, science parks already have it and they are grown up companies; so a science park is a larger geographical entity where you have a large place where big players can provide a very big business environment; a science park is a value-based organization, it

talks about individual getting entrepreneurial growing at a very fast rate. So, while science parks have a horizontal concept; I think incubators have a vertical concept. So you can take many incubators inside a science park, and the science park can derive value from incubators.

**Mr. Steven Giddings –  
South Africa**



**Would you please briefly  
introduce yourself?**

I'm Steven Giddings & have been involved in incubation activities for the past 4 years in South Africa. Prior to that, I am an entrepreneur, and have started my own business. My educational background shows an MBA in strategic marketing and an MSC degree.

**What are the criteria for determining the number of STPs and Incubators in developing countries? In other words, is there any norm to specify the number of incubators or science parks such as the number of graduates, the number of unemployed people or the population of a country?**

- My perspective on that is no. I don't believe that there should be or could be a standard. I believe that the number of incubators is going to be driven by the amount on one hand and resources that are available to support those incubators. So, it could be in a country where you have an extensive amount of graduates, then you could be using or supporting incubators that have not enough funding to support 5, 10, or 15 incubators. So, in my view it's demand-driven and supply-side driven. By Supply-side I'm talking about the funding, the resources, the amount of resources to set up an incubator and manage it; many countries don't have those resources, human resources as well as financial. But demand is really what you drive it.

**Suppose that the finance side is right, you have to justify it. So, you go to a policy maker and you ask for another new incubator. You just need to justify it. So, resources need the justification. So, could the financial side of it decide? What would you do?**

The justification will come again from a link into what the government

policy is. I mean the government policy is to create employment or to grow the economy which generally is what most governments are after and you can show that incubation can take businesses that are perhaps a little bit starter and convert those 5% one million dollar businesses into 20% ten million dollar or twenty million dollar business. That should be a justification for the government. One dollar invested returns 4 dollars. And I think where most of the arguments break down is that we haven't done good enough monitoring evaluation exercise to prove to government that this is actually the impact. You know, in terms of tax returns, it's a very complicated thing to do because we don't quantify what actually return on that investment is. I think most people logically, the resources are available, if you can assure them there are 20 incubators have now the quite room & capacity for the employment, then the government will in fact come to you and say: how can you do more? Just considering South Africa, the government is pushing the bureaucrats in incubation community to open more & more

incubators, because they have seen the benefits.

**What should be the main objectives for STPs and incubators in developing countries: development of technology, employment or entrepreneurship?**

Well, I think the motivation does differ from country to country, but ultimately it's who is supporting the incubator. I mean who is the primary stake holder in incubator developing. If it's university environment, there is definitely a need for incubation to help in the commercialization process. So, you could say in that case yes maybe there is more technology bias. But I think generally speaking, it's around business creation and business support. It's the business imperative is going to come out very strongly in most incubation initiatives. Creating jobs is probably primarily one of the major roles of government. And it needs initiatives. So, you know, I think it varies. I don't think that there is only one activity, I think the third option I think you said was entrepreneurial development. I don't see incubators and science

parks playing that role. I see incubators and science parks taking people who have already proven their entrepreneurial skills, because for me incubation is about growing businesses more than just encouraging a start up. So, I think that the business and the technology options vary from country to country but both I think are important.

### **3. How can we develop Venture Capitals and promote the culture of risk taking in developing countries?**

- I think the angel investment community is the stepping stone between the government funds and seed funds and the commercial investment activities about banks and venture capitalists. I think what venture capitalists want to see is reduction of risk. And so activities like incubators are very very powerful tools to encourage investment by venture capitalist. You have a process in place which minimizes risk, you have a selection of procedures, you have management of the incubators and I think tools like that when venture capitalist sees that there is support mechanism in place, they are

ready to roll, and traditionally in developing countries, the problem has always been that you often do not have the right resources in place naturally to support development. So, you may have people who haven't had an educational sufficient standing or they do not have the resources, and the collateral behind them to take a loan from the bank and they are naturally more risky investments. Then in developed countries where we have a collateral and you know, you've got a market, you've got opportunities, you've got people to turn to if you have a gap in your own business. You've got resources in other words. Developing countries are very difficult. I mean you've heard today that they're starting to talk about just the electricity supply in Ghana and so if you are a software developer and you don't have electricity you might have a problem. So, what you need to do here I think is, first of all, to show a commitment to putting together enabling environment where people can see that an investment made in a company is going to be backed by a support structure in that country. I think also you need to focus on



attracting angel investment or government investment into these activities. Why? To show success. I think when people see success they'll be attracted to it and I think that will encourage the risk taking activity. You know, if I could give you a guarantee that if you invest in my company and you will get 20% profit, you would invest in my company. But at the moment you know I can't give you that guarantee because I don't know whether I can access technical expertise, or I can access marketing expertise. And that's provided by an incubator environment, and a support structure in a business development services are being strengthened and supported. I as an investor will feel more comfortable to invest. So, my comment is: 'try and encourage angel investment which is literally private sector investment in businesses because it's a stepping stone if I am a venture capitalists and I see other people doing it'. I might be more willing to do that. Then, I think from an Iranian perspective as a developing country, I would encourage strong partnership or joint venture activities between the companies I'm supporting and a

foreign company where the venture capitalists might be more or less worried about the marketing aspects or the ability to scale; most of the markets are going to be in Europe, Japan, Asian countries and the United States, and if you're partnered or joint ventured with companies that have the potential for return on investment from a number of reasons or for a number of issues is going to be greater.

**STPs or incubators, which one could play a more effective role on development and promotion of innovation and entrepreneurship in developing countries?**

It's a difficult question. Most of the developing countries I know about, have had incubation facilities prior to science park activities. I think, my understanding the science park becomes a help for foreign companies, local companies to establish a foot-out and develop around their core business with the incubation activities may be seen as spin-off and accessing the technical expertise of local universities for example to support the R&D

activities. I see incubators as part of a science park primarily because a lot of the developing activities and spin-off activities that happen in the science park can be incubated, maybe initially as non-core business activities of a larger company but certainly using the resources of the science park attracts the foreign investment, foreign donors exchange programs with the universities and other educational institutions outside of the country. I would see that they play two different roles; science parks and incubators, but very closely related.

**For the society which is at the beginning of this road would you suggest to start with a science park or business incubator?**

**What do you think about the strategy of starting a Science Park by establishing an incubator?**

Again I think the question comes down to the market, and that's always my frame of reference to go to the place where the demand is. I think if you have companies that are prepared to invest on a science park and put up, you know really

innovative labs and various infrastructures that facilitate innovation, it's fantastic, and then that is the way to go. But in many cases I would imagine at the same question for the venture capitalists people again ask questions, well if I site my research and development facility in the science park, who is going to help me do the research and development? Do we have enough qualified graduates in this particular area to work for me? Do I have various tax breaks and other incentives that might encourage people to site there? So we get to the second stakeholder which is government; the government sees the benefit of the science park to provide these incentives a lot, you know. So, it's a demand-driven thing in my view, you know, if there is a perception, this is what you really need. You will find the companies investing, but local and international companies. Otherwise why site in a science park environment in for example Isfahan, you know, why we would do that, why we would not site in Silicon Valley or outside London where we can access certain things. I think what incubators do, if that's the

question around how many incubators are needed, is difficult to answer; what's really important in my view is that the incubators provide a hub around which development takes place to the point that people are attracted to them because they see activity helping in innovation and research developing which would help an incubator.

I think you made a very good point. I always think if this business is new, the whole business of science park and business incubator in a country, the precursor of having a science and technology park would be a business incubator. Because this where people get to understand how this is going to work, how business incubator work and how you can create wealth out of innovation. Because a barrier, many countries like ours is that nobody believes in something you can see.

The ownership concept is a very difficult thing. I think we have been discussing it before leasing a Land, is not an easy issue in many of our countries because of this perception of ownership; so, if you do not own something, it's very difficult to get pay for it. And innovation is one of those things. Innovation is something

that is very difficult to communities to pay for it in these countries and I found business incubation process a first step or if you like precursor as I said before, for a science and technology park, and to me the best group as somebody who runs business incubator and the science and technology park at the same time the best tenants in a science and technology park is somebody who have graduated from that business incubator. Because he is the one who comes back and you know that process of spin off is something which could be done by somebody graduated from business incubator better than anyone else. It doesn't mean others won't do it, but you know as you said somebody who has got this experience and got to know this process can do it better.

I think also what incubators do is to open the door to the academic world as well. You know, the commercialization of technology out of universities is always with difficulty. Academic institutions are around teaching and research mainly and commercialization is not often supported by professors and by the

general academic community which see it as a destruction of them. What the incubator does is providing a path way for intellectual property to be commercialized without detracting from the core activity of the university and what that does, I think in many cases, and I think this is very well documented in the U.K., is that around that, when people start to see that there is intellectual property which is coming out in the form of small businesses which as you say, can you go to a science park and grow. They grow. They attract more people of the same type, because people see success in that if they can do that. But I think what it also does, it attracts bigger companies, multi nationals, and other companies with R&D labs that will hang on a second as used to be on a critical mass of innovative activities happening here, and that is what would drive the population of a park that is truly dedicated to innovation activities.

**Another point of view is the government perspective which believes that establishing a science park is so expensive, but on the other hand establishing**

**an incubator is much more frugal. Based on this perspective, we would like to know if the effectiveness of the incubation industry is met.**

My preference is for incubation right from the start. I think as I mentioned what will happen is over time. I think the science park concept will become more cost effective because you brought up a critical mass of activity and it naturally will evolve into science park thinking. I think the problem is in many countries, you know, and it was made in this morning session, you know that, there is no point in coping with people, you know, India has got roots in the software industry; does it mean that any other country can copy and make it happen? No it doesn't. Because of the various issues which make what India has done unique and special. And I think it's the same as science parks. I mean there are so many countries that are putting science parks on the map without any real idea of what is the benefit of having a science park. What are we actually going to do with a science park and I think the role of incubators, especially the technology-

focused incubators who are encouraging commercialization activities, encouraging the development or the flow of good minds through the university environment into private sector companies. That is the process that then encourages the science park to develop and become cost-effective option. I really don't see any reasons why the science park should come first. And this has really some compelling reason. Like you have a Microsoft or a large pharmaceutical company setting up its production facilities in Iran for example, and they have a very large R&D arm net attached to this. That may affect it that you have a large company multinational tech with an R&D arm, it will draw in its supplier base. They might be introducing some R&D and the process issues, and that might be a seed around, that a science park could evolve, but those issues or those activities are very rare.

**Dr. Rafiq Dossani- USA**



**Would you please briefly introduce yourself?**

I am Rafiq Dossani. I'm the director of South Asia initiative at university.

**What are the criteria for determining the number of STPs and Incubators in developing countries? In other words, is there any norm to specify the number of incubators or science parks such as the number of graduates, the number of unemployed people or the population of a country?**

- You see, the need for incubators has to be understood. I think most countries put up incubation without understanding the need and so most countries' incubators don't succeed. If you look at the United States for example, their incubation has not succeeded. It is widely regarded as a

failed experiment to put up incubators. Now what is the reason for that? The reason is that, if you look at a place like Silicon Valley, Why do you need an incubator? Because if you just start a company in a garage, at low cost, you have access to the band width, you have access to people, you call up venture capitalist and they will return your phone call. So, the system there has everything. You don't need to be an incubator. Look at some place outside of that. So, you look at a place like Maryland which is a state in America. There, the university of Maryland has an incubator. And what they say is that without an incubator it's not possible for the start up to be located in a place where they have access to all the facilities. So, you need incubators only where something is missing in the facilities. But if you broaden an incubator you'd better make sure all the facilities are present and nothing is missing. So, you have to have the students who are properly trained, so if they come out of a tech university, they must also understand business management. Don't just throw them from technology based enterprise, where they aren't able to do it. So,

they should have that. You should have venture capitalists who are interested. You have to have bandwidth that is available; and some connections with market either local or overseas, so that the people who develop product are not developing product in a vacuum. And I have visited incubators in India where they are producing products that nobody wants just because they have not studied the market. They are really isolated incubators. That is a big risk of incubation that you create people who are actually weak rather than strong and they become weaker. So, you give them a safe place with proper infrastructure, but if you don't provide everything else, then the system will not succeed. So, to answer your question, what is it related to? I would say the need for incubation is related to technology. But unless you don't have the other components it won't succeed.

**What should be the main objectives for STPs and incubators in developing countries: development of technology, employment or entrepreneurship?**

- The main aim of science and technology incubators should be to develop relevant technology. It should be people coming out of colleges with fresh ideas saying that I see a need in the local market, or in the global market and I would like to cater to that need by developing technology. So, all everything else will follow on. Entrepreneurship will be a byproduct of that, also employment would be a byproduct of that. In this field particularly, incubation of these ideas can lead to a very rapid employment because then you can scale up very quickly. So, I think the goal should be to create useful technology and after it the employment has to follow and entrepreneurship will be the byproduct.

**How can we develop Venture Capitals and promote the culture of risk taking in developing countries?**

I think people will take risk if they see an opportunity. I don't think that risk taking is missing in any country; in fact in poor countries because they are bigger risk takers because they are subject to more uncertainty. If you look in India 70 percent of the

people are in agriculture. They take big risks every year but the rain is not coming; they have so heavily indebted to the money and every year they are gambling on their lives. So, I don't think you need anything to create the risk taking culture. What you need is an environment where people have the facilities to experiment with innovation. That's what you need.

**STPs or incubators, which one could play a more effective role on development and promotion of innovation and entrepreneurship in developing countries?**

I think it should be science parks much more. The reason is that, as I've seen an incubator is not open; it can be a close environment. I would like to see a science and technology park where anyone who wants to do start-up can come there and do it and let him face the world. Whereas an incubator if you don't have the rest of the environment to deal with, you create weakling, not strong products, whereas in a science and technology park at least you know that other companies would be there, whom you

can talk to, the networks would be much better; there'll be a value chain. Well, if you see just an incubator then you have many companies at the same stage of the value chain; in a science and technology park you can expand the value chain. So, from the openness point of view I can see a lot of advantages on competition, I see lots of advantages to a science & technology park.

**And the last question is that what's the main weakness of developing this idea, the idea of incubation industry?**

We have already spoken a little bit about the main strengths and weaknesses; the weaknesses are that they aren't exposed to the full system, only to parts of it, even if that happens; there is not a full chain.

**There is not a full chain.**

Yes. So, it's better to throw them into the deeper; and if you look at the Indian 19<sup>th</sup> century industry, it grew without any incubators. So far no incubation has succeeded.



**Mr. Vivek Chaudhry - USA****Would you please introduce yourself?**

I am Vivek Chaudhry. I have been coordinating the infoDev incubator initiative since it started in 2002, and I'm very interested in the promotion of entrepreneurship and business support services in developing countries.

**What are the criteria for determining the number of STPs and incubators in developing countries? In other words, is there any norm to specify the number of incubators or science parks such as the number of graduates, the number of unemployed people or the population of a country?**

I think the statistics in the world show different numbers of very

substantially across different country regions for example, the best estimates now suggest that there are about 4500 incubators or so all over the world and roughly about 400 of those or %10 are science parks, just about 450 of them. And half of them are in the developing countries. Some countries have as many as 500 incubators. Consider China and then Brazil and then you have countries like India, which have about a hundred incubators. So, if you go by the population I don't think we can come to a conclusion; whether the number of people in a country is the right measure to go by or the number of unemployed people. I think it is a question of what are the needs of the small entrepreneurs; if there are several entrepreneurs, there is a measure of the number of people who want to become entrepreneurs. That should be the determining factor, because the capacities of foreign incubators are also restricted. You can not have an incubator that has any flexible number of people. You can either have fifteen or you can have 20, but you can not jump from ten to a hundred overnight. So, depending on the number of people

who have shown an interest, as for of policy stand point, the feasibility studies should be done to see what the needs are and how many people need the services and then see how many institutions are required to provide those services.

**What should be the main objectives for STPs and incubators in developing countries: development of technology, employment or entrepreneurship?**

- Well, to me I separate the objectives of incubators and science parks; for me the objectives are not necessarily the same. They can have similar objectives but an incubator is very specifically focused on entrepreneurs and very small businesses and to provide some services so that those entrepreneurs and small business can grow and then exit from that incubator. That is a continuous, time-bound process that should be followed and those services are to be determined based on the profile of the client and their needs. On the other hand, for science parks, their objectives are often determined at the national level.

Because they are funded, they have infrastructural needs and those needs are identified and recognized by the governments very often. Sometimes it is public-private partnerships where the private sector gets involved also. But again the science parks are more in terms of providing a home or an environment for businesses to work together. They are not necessarily looking at exit strategies. They want the companies to be there for a long period of time to make that environment, the country or the vision more competitive, and for the companies to grow and become more profitable. Yes if the company grows out of that and grows toward and sets up its own campus some other place, which is fine. It had happened in India where the infoSys for example, used to be a science park in Bangalore and now it has its own campus. So, that has happened but a science park is essentially a wide area where many companies are co-existing & are tenant companies and they actually provide employment and generate revenues as well. So, increasingly we have seen that some of the functions of the science parks are also extending to well support

services. And those support services that an incubator can provide, can be within a science park too. So, in that case again the strategies need to be slightly tuned, because an incubator should have an exit policy for its client companies whereas a science park doesn't always need to have exit policy unless the companies want to live by themselves.

**How can we develop Venture Capitals and promote the culture of risk taking in developing countries?**

- I think the answer to that question is that promotion of venture capitalist and funding mechanisms will only come off when the culture of entrepreneurship is already present. Venture capitalist will not promote entrepreneurship. The culture of entrepreneurship needs to be embedded in the culture or other society from the education system, and within the family value system and as they begin to appreciate the fact that in colleges it is not only a science degree that is valued. There you could go have a business degree. You could follow up your own business ideas or your own product

ideas. Universities can start absorbing and developing ideas of commercialization of some of the technologies that want to develop to scientific knowledge which is there and that culture needs to come from that segment; the educational system and the family system and the value system in a society and what is prevalent to the next step is to approach the venture capitalist.

Because the venture capitalist themselves are not likely to come to promote the entrepreneurial culture. They will come to promote their business deeds in a country and this has been faced in several countries: the United States has, Canada and others have venture funding and you have seen that India also has several funds, but all of these are generated from the developed countries.

Because there are funding opportunities that are now opening in developing countries; the funds are going there to invest. So one way of promoting the venture capital or the financing mechanisms for financial institutions in these countries is to explore how to setup VC arm or mechanisms that can fund small ventures. If they don't have venture

capital funds there, they can have institutions in their countries, start partnering with outside VCs or other institutions so that they can begin to bring that culture into the country or also secondly to actually learn from these in terms of how the mechanisms take place and how they are. They can be used in the specific environments.

**STPs or incubators, which one could play a more effective role on development and promotion of innovation and entrepreneurship in developing countries?**

- I think both of them have their own unique contribution to promotion of entrepreneurship; both incubators and science parks. Incubators work with smaller companies with small entrepreneurs, individuals or small businesses that have an idea and they want to grow and become more competitive to take to the next stage. Science parks on the other hand, have contributed by making existing companies or SMEs more competitive by providing the right environment so that they can grow and share some of the common services that a

science park can provide. So, I think the entrepreneurship means that an incubator provides support to entrepreneurs, whereas a science park provides or helps companies to grow within the park itself or the area, but also provides opportunities for critical effects; it creates more jobs in the vicinity, in the region, in the area that may or may not be entrepreneurially necessarily but at least it's providing jobs. So, it is providing a culture of having an impact on the society. So, in both respects they both contribute, but in different ways.

**For the society which is at the beginning of this road, what do you think about the strategy of starting a Science Park by establishing an incubator? I mean raising an incubator and converting it to a science park.**

- I think again it is most important to consider what the demand is, what the needs are. If we just set up a goal that is what we want to do, we want to set up an incubator and then convert it to a science park, that may or may not lead to success. We have had several cases where science

parks were constructed but they have not been actually contributed in the manner that it was planned.

So, that all goes back to the fact that you need to see the profile of the client companies. What other companies will be begun? What is its technological expertise or a sector in that region that you want to highlight? Is it whether the newer emerging technologies, biotechnology or nanotechnology or if you want to do it in the medical fields or if you want to do specific science and technology applications. If you have those expertise or those things in that particular region, then you can provide support services through an incubator for small entrepreneurs in that sector all if you have companies then you can bring it into a science park so that they can all work together collectively .So, it is not necessary for an incubator to grow into a science park.

It should be kept separately but if it emerges that's fine too. That could be a natural progression but it should not be definitely planned from the very beginning.

### **Mr. Omer Oz, Turkey**



#### **Would you please briefly introduce yourself?**

I am Omer Oz. At the moment I am the manager of Bahrain Business Incubator Center. Formerly, I used to be the manager of Middle East Technical University, Kosgeb , a technology development center for 16 years, so my experience in incubation and science parks is around 20 years.

**What are the criteria for determining the number of STPs and Incubators in developing countries? In other words, is there any norm to specify the number of incubators or science parks such as the number of graduates, the number of unemployed people or the population of a country?**

- In these days there is a trend for establishing incubators and techno parks without doing any need-analysis or any reports. For example, when you build a mosque, at first you make an analysis, how many people in the area need the mosque? How big the mosque is going to be? and so on. There is a very famous Turkish architect called Nima Sinan. When he builds a mosque, he first analyzes the number of people there; where is the nearest mosque? How easy can people go there? So without any analysis, without any feasibility study program, I think it is wrong to establish any business incubators. So you have to know why you are building the incubator or science park.

**What should be the main objectives for STPs and Incubators in developing countries: development of technology, employment or entrepreneurship?**

As you know, the SMEs consist of more than 90% of the companies all over the world. So the idea to support SMEs is to increase their value-added activities, and to support their

survival. So there is no one answer for this topic. It all depends on what you have as resources. If you have human resources, if you have well developed universities and research centers, it will be a good idea to establish and support technology-based companies. This is the trend; which means without technology, you can not reach anywhere. Technology is the keyword for success. But not all the countries have these capabilities, so sometimes you have to start from scratch. First you create the industry then you don't look for technology but just want to create enterprises. Nevertheless the main goal is the innovation and technology.

**How can we develop Venture Capitals and promote the culture of risk taking in developing countries?**

- In order to let venture capital operate, there must be ventures. What I mean by ventures is that there must be good opportunities, good companies, and good business ideas. Without any promising business ideas, without any ventures, why should a venture capital go and do something about it? At the end of

the day, venture capitalism is earning money through technology, why venture capital goes for technology? Because in this year if you invest technology in a right project, there is a chance that you put one dollar, after 5 years, you get 20 dollars, or 100 dollars. This is the idea of a venture capital. Venture capital doesn't care about how to help the companies to grow. It is not an economic matter. But you can use it for your benefit. Venture capitals are not angels. In their agenda it is not to help the economy. No, they want to earn good money. That's ok. So far as to use venture capitals for our good projects. Venture capitals usually have large portfolio. In this portfolio they support lots of companies, but usually high added-value companies. For example in biotechnology, in electronics or niche market, if they support, ten companies, if just three out of ten succeeds, the money they earn out of these three, cover the loss of the other seven companies, but this is not understood in our countries. In our countries venture capital want to make 100% sure, but this is not the nature of these things. If it is 100%

sure, then there will be no risk in returning your capital. Maybe you put one dollar and you get one and half dollar at the end of five years. I will put my money on this one. But this is not the idea in most of the countries. There is a special law for venture capitalism & capital companies. So in this law in Turkey we have to establish our venture capital company according to this law. Otherwise what is the difference between getting a partner with a company, the same? But venture capital company takes a share on your company but they have a very specific exit plan, and because of these things, they get incentives, and during the venture capital with your company, they don't pay taxes, but they have to exit Turkey, after 5 or 10 years. Without exits, they become monopoly. I have the money & you are a small company. I put money on your company, and I can kill you, after twenty years I can even run the company, so it's against the payer business. This is why we have established a venture capital law in Turkey. By this law at the end of 5 or 10 years venture capital has to exit, and the share of the sister company

which we call it Ruchanhak is sold to the other party.

I mean, if I sell this thing. Ok my share is a venture capital. First I have to ask you: do you want to buy this? If you say yes then I will buy it, and also I will have to give it to you, not to any other persons; you've had the right first. You say ok Omer, I will buy this one. So if there are good technologies, if there are good innovations, if there is good infrastructure and there are laws for venture capitalist companies, it works right then.

**STPs or incubators, which one could play a more effective role on development and promotion of innovation and entrepreneurship in developing countries?**

They all play similar roles. Incubators as you know is for start up companies. In Turkey model, after they graduate from incubators, they go to science parks. But not all of the graduate incubator companies go to science parks, because without any incubation, people can come to science parks. It has all to do with R&D objectives. If there is a potential



in the university or research centers, they go to science parks to set up their own business. But then, for entrepreneurial support, you can do both. You don't have to establish big science parks, because it is costly. You can start with an incubator and you can develop into a science park. But it all depends on the situation. If you have a very strong research center or very strong university, you can start. But even if you start straight with a science park, you must have an incubator inside. Because maybe the academicians and professions know the technology, for example they can measure diameter of the sun, but they probably don't know how to run a business. So this kind of services is easier to give in incubators than the science parks.

**For the society which is at the beginning of this road, what do you think about the strategy of starting a Science Park by establishing an incubator?**

It really depends on the economics and social culture of the area where you are doing this. It is safer to build the incubator than go for a science park. And also all of the incubators

are not technology-based ones, there are lots of incubators that help the local people to become an entrepreneur and develop. For example, you can establish a handcraft incubator. You can have an incubator for women to have the handicrafts, for women to work. So the concept of incubator and the science park, sometimes overlap, and sometimes differ. But in the beginning what I said, you have to have a deep analysis and a deep feasibility study, not just deciding 'let's establish a science park' and see what happens. Sometimes I have seen lots of science parks that are not doing very well. The same thing goes for incubators. We have lots of incubators in Turkey that are not doing very well, just because we didn't plan them in the beginning. It was just decided that the incubator is good, so why not? Let's build an incubator. It doesn't work like that.

**Mr. Hayri Solmaz, Turkey**



**Would you please briefly introduce yourself?**

- My name is Hayri Solmaz, the manager of the Kosgeb Technological Center. I have been the manager for the last two years of that center. My professional is an under graduate degree in sociology and a post graduate degree in demography.

**What are the criteria for determining the number of STPs and incubators in developing countries? In other words, is there any norm to specify the number of incubators or science parks such as the number of graduates, the number of unemployed people or the population of a country?**

- Incubators and science parks are two different stories. Incubators are technology oriented. There should be a need assessment first. If you are not very aware of the subject of what an incubator is; it is not easy to make a bulk of work from which you create ideas of created incubators, so it is a trial and error method.

**I mean is it dependent, for example on the population of a developing country ?**

- No.

**For developing the industrial areas and so on?**

yes, I mean, in all cases, it is the first of all. It was for the technical universities that we created our incubators which have moved up to 20. So it is not that we have a center government as you know the local governments are not really keen on making their own incubators and so it's the local center decision and made from the center. Now, the techno park business is that it was run by Kosgeb 1992-2001 about the creation of techno parks and incubators. The science parks are

now on under license of ministry of industry trade. A new law and a bylaw was created. Then again in all universities techno parks are in universities and then in collaboration with universities specially leading pioneering universities, our pioneering industrial of creating techno parks, a need assessment is made by university and it is evaluated by the government and if they are subject to the conditions positively then techno park creation procedure starts.

**So all of the incubators in Turkey belongs to the technical universities?**

- No, it was the case initially, then it began to run by all other normal universities too.

**What should be the main objectives for STPs and Incubators in developing countries: development of technology, employment or entrepreneurship?**

In our case, our main perspective is creating companies from technologically based start-ups in my case. In some of the perspectives it

may be creating jobs. In some of the cases in a project such as social support project of the World Bank, the aim is to make the retrenches to create all their companies with the global support on World Bank. So it changes from one case to the other as all incubators are different from each other. You can not just follow one model. It is a local condition which makes the process to be named as this or that.

**So you mean it's different from one country to another.**

Exactly, I think that it is not a model, it is a big model, and actually it is the process which draws your world map.

**How can we develop Venture Capitals and promote the culture of risk taking in developing countries?**

Venture capital is not a very new story in my country. The very first venture capital application has been established in middle east with a governmental venture capital organization, but however in the first couple of years it was a good practice to be understood but as time goes out

there are quite some inventor outcomes such as two partners as the venture capitalists. As the original of the technology idea owner, I had too many disputes as a venture capitalist who owed more than 50 percent of the shares and they are not technical people to know how the fortune to be done. There are some new local on the national & international venture capitalist coming and searching for new ideas, new entrepreneurs and to make some new partnerships, but the venture capitalism is not the only way to capitalize the companies. So it is one of their aspects. It is one of the matters to be used so it is not easy for a new injection of a new idea to an online system. So it has to be evaluated for risk-takers, we don't have a big engine mechanics in Turkey, but it is to stop beginning to emerge such things to be done. For example again in my university an enduring network of middle east technical university graduate is tried to be created now and those graduates have a good feeling towards the university. We are navigating together, coming together, if possible to be business angles for the new start-ups.

**STPs or incubators, which one could play a more effective role on development and promotion of innovation and entrepreneurship in developing countries?**

Being small means it is more likely to be managed easily so if you start from small nucleus from small seeds it will be much easier to ornament that structure to make it better but if it's just a big huge structure and try to fill it with this or that I don't think that it will be very successful. There are opposite examples to this situation all over the world. We started in 90s to create incubators. Before that there was the idea in Techno parks, but it was until the end of 90s, and since the beginning of the twenty first century the techno parks era has started. For the time being we have 14 techno parks. But only a couple of them are working well. Now their systems add some new on-going activities to their systems and so on. So in my opinion it should not be regarded that incubators are the only way to create jobs, to create technology, to orient technology to a higher situation and commercialize

their basic applied research. What I think is again when I answer one of those previous questions. It is to be regarded that it is a process and the process is very locally based from my point of view.

**My last question is that some people have an idea for developing this kind of objects in the area of technology. I mean incubators and STPs. Do you agree with this idea for developing an incubator initially and after that convert it to a science park?**

My answer to this question will be the same to the last question. In global experience both are the ways. You start from one incubator and grow up to a techno park but in another example you first put up the big structure and after that you establish incubators according to the needs. It's a very dependent story. It depends on the conditions. It is hard to say that an incubator is a tool to come up with a techno park or a techno park is a prerequisite to create some incubators. It's different in Iran, in Tunisia, in England etc.

## **Mrs. Lisa Ocampo – Argentina**



### **Would you please introduce yourself and your experiences in the field of science parks and incubators?**

I am LISA OCAMPO, MSc: Economist and expert in management of innovation

I have an international and broad based expertise in analyzing, developing, negotiating and implementing innovation strategies as well as the design of specific financial instruments for supporting new knowledge-based companies. In recent years my main focus has been in Latin American communities, although I maintain strong business and investment contacts throughout Europe and internationally such as Development banks, WIPO, INSME,

Universities, technology transfer offices, etc.

I started my career as a junior consultant at Meta Group, an international company dedicated to the creation and growth of knowledge intensive companies and regions. Having worked in several areas as innovation policy, management and finance of seed capital instruments, services to new companies, I am now in Buenos Aires as managing director of Meta Group Argentina.

Areas of expertise include:

Coordination and implementation of support actions for entrepreneurship  
Financing engineering: design and feasibility of mechanisms and instruments to fund new ventures,  
Feasibility studies of science and technology parks and infrastructures as incubators

Re-definition of TT centers and liaison offices by defining their potential, marketing and positioning in terms of local development and support to innovative projects with high contents of intellectual property

Scouting, valorization and acceleration of innovative based companies

I have worked in Panama, Nicaragua, Dominican Republic, Mexico, Peru, Chile, Argentina; Italy, Slovenia, Spain, and several regions of East Europe.

**What are the criteria for determining the number of STPs and Incubators in developing countries?**

I don't know about criteria. My guess is that most of the time STPs and incubators are created as a consequence of public policy related to employment and local development. In Argentina we don't have a "master policy" orienting the location of STPs and Incubators, for example directing where, how and who might be involved in such initiatives. Mainly because we don't have specific incentives. Some of the STPs are simply natural consequence of the local-regional organization of science and productive activities (universities and research centers working closely with private sector); some other is the "modernization phase" of the old industrial Parks. Incubators are created from the University, although in the past 2 years they have emerged private

initiatives of incubator-accelerator of high growth companies, providing also seed capital investments and/or contacts. Few are the cases where a local government as a Municipality promotes the creation of incubators and STPs. These cases are characterized by a strong presence of PPP – Private Public Partnership – a mixed of common objectives as promotion of company creation, increasing access to job opportunities for citizens (including generalist and/or social incubators), attraction of investments.

Here in Argentina we have the **AIPyPT** (Asociacion de Incubadoras y Parques Tecnologicos) which once a year develops a survey on Incubators and STPs. Very recently there was also launched the **Venture Capital Observatory**, which offers details of gaps mainly in seed and start up stages.

**What should be the main objectives for STPs and Incubators in developing countries?**

They should have the following objectives:

- To propel the Technology Transfer process (lots of public research within centers and Universities but scarce exploitation of results). The question is how to improve the allocation of resources (more efficient) in terms of benefits for the society in general (spillovers)
- To offer companies better facilities (services, infrastructure, and conducive environment) and protecting them from external economic ups and downs (so frequent in Latin American (LA) countries).
- Initiatives in LA countries regarding innovation policy and support are so disorganized: Incubators and STPs can play the role of a good articulator by concentrating programs and funds, information and professional resources.
- To create new high growth potential firms. To add value to local production and explore new global markets, through global value chains. The problem that I find is that public-supported initiatives are just too protectionist and offer resources without demanding results, mainly due to a failure in the selection of competitive process of the allocation

of those resources. There is a lack also of good management and market approach. This sometimes undermines completely the goals of Incubators and STPs.

### **How do you think the culture of venture capital should be developed in these countries?**

Key issues will include, according to me:

First creating a risk / venture culture. For example by giving good examples, showing that Business Angels and venture Capital can actually make a difference in the way companies are accelerated and developed.

Actions on environment. Legal environment must be created; incentives to capital (inflows) must be set; clear rules are to be defined.

Public supported actions as programs for increasing the deal flow (in terms of quantity and quality); investor and investee readiness; etc – here it is my advice to work with incubators.

PPP – Public private partnership to create professional managed seed and start up funding instruments, as seed capital funds and side car funds.

Public sector plays the role of



attracting investors in the start up phase while the private management company will accelerate the new ventures.

**STPs or Incubators, which one could play a more effective role for promoting the culture of innovation in developing countries?**

First a distinction. In my opinion incubators are a means to create new companies, while STPs are a means to support SMEs.

I believe that Incubators may be more effective. LA countries are characterized by having a high level of entrepreneurial activity, lead by the so called "Entrepreneurship by necessity" (GEM). So, if an environment (Incubator) linked with university (deal flow of ideas/projects) and/or business schools and private sector (professional managers and investors) can create a dynamic process of high growth potential firms, then the incubator will not fail to become a source of innovation.

In any case attention to good management must be given, also to pre-incubation activities to stimulate

the flow of projects with high growth potential.

STPs are more focused on clustering existing firms and/or to concentrate productive activities in a certain area for local development taking account of logistics. However some initiatives are emerging as a node concentrating: i) universities and research centers, ii) professional services companies; iii) intelligent modular buildings including an area for incubation and an area for SMEs, etc. When it will be proved that this kind of STP are successful then in the future they may be also a source of innovation.

**What do you think about the strategy of starting a Science Park by establishing an incubator?**

In some cases where public and private sectors are involved, this is a good strategy. In Rosario, Santa Fe province, Argentina, there is an example (focused on Biotechnology). In line with what I have stated earlier, I believe it may be a good strategy if there is the commitment of several actors, and the resources (human and financials). But to do so,

Incubators must have an excellent performance, more acting as an “accelerator”. In Brazil the situation of Incubators is different-better, because they're well-linked with companies and seed money.

**Mr. Bob Hodgson –  
United Kingdom**



**Would you please introduce yourself and your experiences in the field of science parks and incubators?**

I'm Bob Hodgson, the Managing Director of Zernike (UK) which manages an ICT focused incubator and provides start up capital for knowledge based firms. I have nearly thirty years of international consulting experience – I have worked in 45 countries including nearly 30 on innovation policies and technology commercialization mainly with international agencies like the World Bank.

**What are the criteria for determining the number of STPs and Incubators in developing countries?**

Many initiatives develop as local initiatives and as such should be encouraged but there has to be sufficient realism as to the potential of a local economic and social system to support STPs and Incubators as distinctive knowledge based initiatives. If there is little scientific activity then a basic ingredient is missing and similarly if there is no technology-based business activity then there is unlikely to be the available demand to sustain the scheme. In some instances this has led to undermine the difference between science parks and business parks to the damage of both. The exceptions in the region include Dubai Internet City which effectively attracted a new knowledge base which is not dependent on any national science capability. Where there are national policies to support STPs and Incubators the issues are different in that they usually revolve round where to place public budgets and /or public incentives. Here the criteria reflect political and social objectives as well as economic criteria so vary with each country and often within each country criteria related to geographic

distribution of activity. So for example, the Chinese Torch programme and the Russian special technology zones selected specific locations, while the Norwegian programs run by SIVA emphasized the development of sparsely populated regions away from the capital and the Turkish programs encourages competition between the universities and research centres to propose their own solutions against set criteria for qualification as technology zones with a strong incentives package.

There is no magic number of STPs or Incubators that is right for every circumstance nor is it a number that should be fixed over time. In Madrid, for example over a twenty year horizon the first generation of parks sought to bring big name international technology companies to the city, the second had an emphasis of technology commercialization from universities and the third had an urban regeneration objective. In Cambridge, a city region of around 250,000 population we have at least 10 STPs and more are being planned without any public budget support

with the main criterion being commercial viability.

### **What should be the main objectives for STPs and Incubators in developing countries?**

First it is worth bearing in mind the different emphases of the two tools – STPs work more with larger existing companies while incubators work with new small technology based businesses – so their objectives must reflect these differences. Having said that, the two models can be combined to cover both populations of companies and when this is done it is important to develop separate objectives that relate to each component.

But in general the objectives reflect the range of factors listed in Lisa's response – new innovative businesses, demonstration effects, impact on science and research agenda and cultures in academic environments, retention of talent and trained young people through high quality job opportunities and better facilities to encourage modern businesses. It is also important to be realistic in setting objectives,

especially if they relate to publicized targets as they should be sufficiently ambitious to be challenging but not so challenging to be unachievable. The need is to build a culture of success that achieves its objectives and then raises its goals to the next level as each objective is achieved. The process of innovation and upgrading is never ending and this needs to be built into the model from the start.

**How do you think the culture of venture capital should be developed in these countries?**

The main goal should be to develop a fully articulated financial system that enables entrepreneurs to access capital in appropriate forms as they are needed at the different stages of the growth of the new business. So at the earliest stage there is a need for startup and seed capital (here there is typically a need for a public contribution to encourage the private sector to play a full role), as the firm grows the need is for development capital and expansion financing which is the main area of work of the Venture Capital sector. This then leads on to further expansion and the

growth of a market in shares in the companies so the formation of a second level, even sometimes with a technology emphasis such as NASDAQ, as well as the main commercial stock exchange becomes important

The role of public interventions is usually in the early stages to reduce the cost of preparing investments (transaction costs of due diligence in funding are similar for large investments as they are for small so discouraging the private sector to offer small capital investment) and reducing risk by either offering some sort of matched fund (grant, loan or equity) or partial guarantee. There are many different models in use and lots of experience to learn from as to what works best.

**STPs or Incubators, which one could play a more effective role for promoting the culture of innovation in developing countries?**

- In terms of developing innovative businesses and attracting to their region a new type of business with high knowledge intensity there is a strong innovative impact from both

tools. Where the main effort is to attract from outside a STP is probably more appropriate and where it is to build a local technology base then an incubator comes to the fore.

However, there is also the challenge of building a culture of innovation in traditional or established industries in the region and there needs to be efforts to ensure this is also addressed.

So using the park and incubator as nodes in the innovation system and bringing existing businesses on to the site to learn about the opportunities and potential of new technologies is an important additional responsibility. This means that S&T parks should be established with facilities to attract outside parties from its region to come and participate in events and be active in programmes on the park to mutual benefit. These can include exhibitions and fairs, training workshops and seminars and conferences on innovative topics.

**What do you think about the strategy of starting a Science Park by establishing an incubator?**

I think that every effective science park should have an incubation process to assist the development of new technology based firms but that it should also include larger and established firms in its target tenant base as it is the combination of established and new businesses that gives the true dynamism and impact. So starting with an incubator is a good strategy but remembering that the job is not finished so not to stop when the incubator is finished.

Another aspect worth worrying about is the financial viability question as incubators alone do not make sufficient returns to sustain a development organization unless they are endowed with a large capital base. By combining returns from renting property and land to established companies the incubation activity becomes more financially sustainable as well as benefiting from the expertise in the established companies and their potential role as clients for the new firms.

## Dr. Marta Czyżewska – Poland



by: M. Darzi

### **At first, please tell us about Business situation and job creating in Poland and say how much the economical environment is ready for job creators and capital investors?**

- Setting up and running a business in Poland is rather difficult. The process of company's registration takes about a month (the process requires to register it in 5 or 6 administrative institutions). Also all procedures connected with business agreements and their executions are very long and complicated.

The environment anyway is ready and open for investors, the market seems to be very attractive for foreign investors. The statistics show that the FDI level in Poland is

constantly growing – i.e. in 2005 they amounted 7,7 bln EUR and in 2006 direct investments formed the sum of over 11 bln EUR. Over 80% of FDI came from EU countries.

The most important factors making Polish market attractive for foreign capital are following – the size of the market, employment costs, economic growth and human resources.

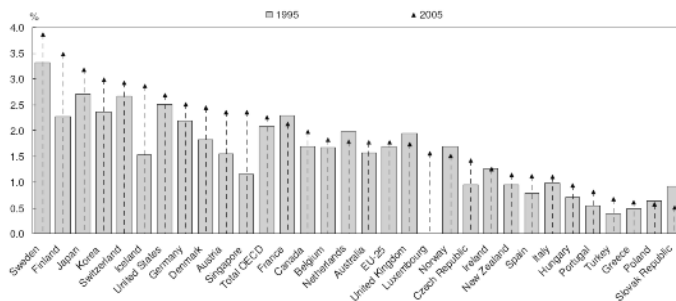
However, for more specific information I recommend the website of Polish Information and Foreign Investment Agency<sup>1</sup>.

### **As you know, knowledge and innovation has the key role in economic development; what are the government and related institutions doing for growing and dehisning of innovation and job creation?**

- Policy priorities of our government put stress on increasing innovativeness level of the economy. However results are not so visible in reality as in the governmental strategies. With regard to expenditures on R&D (in % of GDP) in OECD countries Poland takes penultimate position in the ranking.

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<sup>1</sup> . [www.paiz.gov.pl](http://www.paiz.gov.pl)



Source: OECD, Main Science and Technology Indicators, 2006/2, December 2006.

All ministries, especially Ministry of Economy<sup>2</sup> and Ministry of Regional Development<sup>3</sup>, Ministry of Science and Higher Education<sup>4</sup> and also some agencies like Polish Agency for Enterprise Development<sup>5</sup> are aiming especially at increasing the innovativeness level of Polish enterprises and the whole economy. There are some institutional networks supporting enterprise development. One of the most important is National SME Services Network<sup>6</sup>. Its activities are driven for advisory help to SME sector, transfer and diffusion of new technologies, searching for partners,

providing loans and warranties and informing i.e. about funds available for investments, about events like trade fairs, exhibitions etc.

Very important network created for diffusion of innovations is pan-European Innovation Relay Centers Network. Its mission is strengthening the companies' competitiveness through international technology transfer<sup>7</sup>.

With support of the European funds Poland is building institutional infrastructure improving technology transfer and increasing the awareness level in possibilities of introducing innovations in Polish enterprises.

European funds and other public funds as well are directed also to

<sup>2</sup>. <http://www.mg.gov.pl/English>

<sup>3</sup>. <http://www.mrrm.gov.pl/English>

<sup>4</sup>.

[http://www.eng.nauka.gov.pl/meinen/index.jsp?place=Menu01&news\\_cat\\_id=-1&layout=0](http://www.eng.nauka.gov.pl/meinen/index.jsp?place=Menu01&news_cat_id=-1&layout=0)

<sup>5</sup>. <http://archiwum.parp.gov.pl/en/>

<sup>6</sup>. <http://archiwum.parp.gov.pl/en/ksu.php>

<sup>7</sup>. <http://www.irc.org.pl/en>



increase the employment. There are several programs directed to young people - especially refunding costs of graduates hiring, loans to entrepreneurs for creating new jobs and also funds for setting up own business.

Also incubators help new entrepreneurs to gain those funds as well (they organize some help – i.e. training in business plan writing, process of setting up a business and other administrative assistance as well).

However the government policy needs to be improved significantly – Poland needs strong science and technology base, the linkages between science and industry are very weak, there are not visible incentives enhancing investments in R&D in enterprises. The innovation system is poorly governed.

**How many science and technology's parks and technology Incubator are in Poland? What is the role of these centers in job creation, occupation and finally in economy development?**

Now in Poland we have 61 technology parks and incubators. They are located mostly in Silesia. On the map below there are shown the numbers of project for investments in those parks and their value (submitted and funded by EU funds in 2004-2006. The total sum reaches almost 1 bln PLN (82 projects were classified).



Source: Ministry of Economy<sup>8</sup>

- EU funds were good impulse for parks and incubators ideas development. Currently 39 new parks are in the organizational phase. Since next year incubators can be funded by Innovative Economy

<sup>8</sup>

<http://www.mg.gov.pl/Wiadomosci/Innowacyjno-sc/Parki+i+inkubatory.htm>

Operational Program (priority 5.3 Capital for innovation<sup>9</sup>)

The actual role of parks and incubators depends on many factors – management, active local market, localization, infrastructure etc. But the most important thing is good and close cooperation among industry, local government and universities.

**What missions are followed by Poland's science and technology parks and incubators separately, and what are their differences in functionality?**

- Technology parks transfer knowledge from science to industry whereas incubators help the business to grow in order to prepare it for self-dependent functioning on the market. Parks usually possess incubators and some research laboratories. Parks and incubators as well offer advisory help, trainings and organize financial support for the enterprises. As incubators are frequently located in parks, their functions are - to some extent – similar.

<sup>9</sup>

[http://www.konkurencyjnosc.gov.pl/NR/rdonlyres/2BC5DE85-3F14-4D6B-9440-5442CD2E89F5/29691/POIG\\_tlumaczenie\\_05\\_02\\_2007.pdf](http://www.konkurencyjnosc.gov.pl/NR/rdonlyres/2BC5DE85-3F14-4D6B-9440-5442CD2E89F5/29691/POIG_tlumaczenie_05_02_2007.pdf)

**Nowadays, in developed countries they discuss *job creating university*, does this term point to development of STPs and incubators? What is your view point?**

- Universities are becoming more aware of the necessity of bringing help to their students and graduates in searching for suitable jobs. They organize Career Offices for that purpose. The addresses are in here<sup>10</sup>. Academic Career Offices cooperate in career office national network<sup>11</sup>. Universities are more and more important actors in boosting entrepreneurship. Apart from academic preparation; they try to enable their students setting up their own businesses. There are several academic incubators – all cooperating in network (on this website you can see the list of addresses of Entrepreneurship Academic Incubators

[http://inkubatory.pl/index.php?option=com\\_content&task=view&id=40](http://inkubatory.pl/index.php?option=com_content&task=view&id=40))

<sup>10</sup>

<http://studentnews.pl/serwis.php?s=143&pok=4167&c1=&c1m=>

<sup>11</sup>. <http://searchportal.information.com/index.masp>

The government also comes up with some ideas, like programs for clusters or techno starters (people with some original ideas for business who are going to start it in park or incubator). Universities are becoming more aware that they cannot restrain their scientists from going into business. It is natural process. Some universities are noticing that much more profitable would be let them set up the business than loosing the employees. Universities lend them equipment needed, make accessible specialist labs but they keep 20% of stock in that spin-off companies at least.

That phenomenon is not popular in Poland but now the idea is bearing.

In Polish parks and incubators, what services do they provide the graduates, settled companies and techno- units with?

- Incubators usually help the entrepreneur to set up a business: apart from an office with access to needed equipment, usually employ an accountant, advise suitable form of accounting and other aspects related with running the business. So on this

map<sup>12</sup> you can view specified offers of polish parks and incubators (facilities, training, advising, prices, etc.).

**Please introduce some network, websites and active institutes that support parks and incubators for more developing? ((For getting in touch with Iranian incubators))**

List of Academic Incubators<sup>13</sup>

Polish Business and Innovation Centers Association<sup>14</sup> (the website is now in rebuilding)

Map with links to the institutions<sup>15</sup>  
Centers of Excellence<sup>16</sup>

**Considering the importance of venture capital companies, how much are these companies and funds formed in Poland and Europe, and how do they create jobs?**

Currently we have 32 venture capital and private equity funds associated in

<sup>12</sup> . [http://www.pi.gov.pl/upload/dokumenty/parki/index\\_en.html](http://www.pi.gov.pl/upload/dokumenty/parki/index_en.html)

<sup>13</sup> . [http://inkubatory.pl/index.php?option=com\\_content&task=view&id=40](http://inkubatory.pl/index.php?option=com_content&task=view&id=40)

<sup>14</sup> . <http://www.sooipp.org.pl>

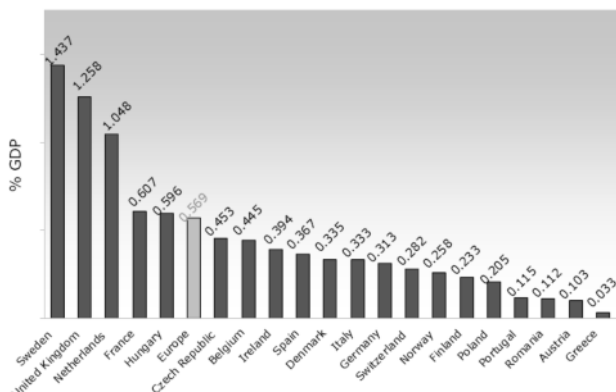
<sup>15</sup> . [http://www.pi.gov.pl/upload/dokumenty/parki/index\\_en.html](http://www.pi.gov.pl/upload/dokumenty/parki/index_en.html)

<sup>16</sup> . <http://www.6pr.pl/pliki/4400/1slowo%20wstepne.pdf>

Polish Private Equity Association. The level of investments of vc/pe funds in

Poland is far worse than in other European countries.

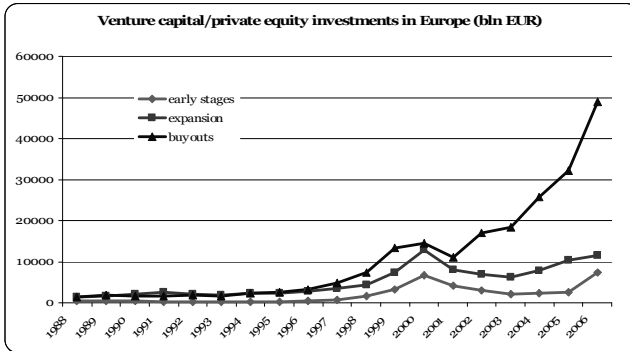
2006 Investment as % of GDP  
– Investments by Country of Destination



Source: EVCA/Thomson Financial/PricewaterhouseCoopers

There are strong barriers for setting up a VC fund in Poland. The funds are registered mostly in some more law- and tax – friendly countries. The funds like confidentiality and not so strong - as in Poland - supervision. Over 99% of capitals come from abroad.

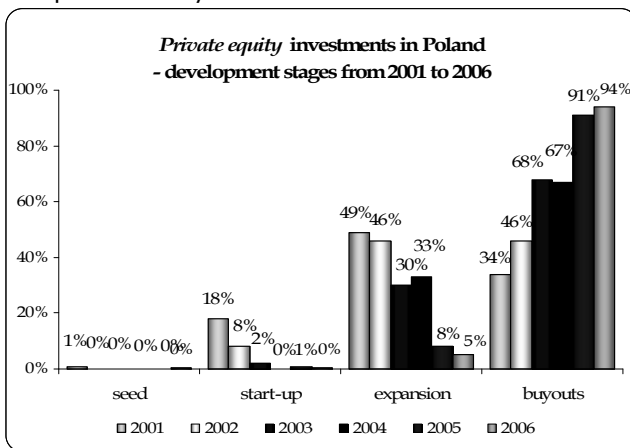
Most of the vc/pe funds invest huge amounts of capital – over 5 mln EUR. They are not interested in early stages financing. However the amount invested in investments in early stages increased three times in 2006 in relation to the previous year.



Source: EVCA Yearbooks

The structure of the investments is becoming worse (in my opinion) because the capital for very young enterprises is relatively decreasing. Nevertheless general numbers are a little bit more optimistic lately – the

number of investment almost doubled (32 in 2005 and 46 in 2006), whereas the value of the transactions grew by 1,6 mln EUR to 6,4 mln EUR.



Source: EVCA Yearbooks

In my study using European

Innovation Scoreboard<sup>17</sup> data, I tried

to check if there are visible correlations between early stage high-tech VC investments and other factors of innovativeness. 12 out of 21 factors describing innovativeness level in 33 countries show very strong connections with the share of high-tech VC investments in GDP. These are as follows:

WORKPOP – population with tertiary education (Poland took 20<sup>th</sup> position in the rank),

LIFELONG – participation In lifelong learning (Poland – 19<sup>th</sup> position),

EMPSERV – employment in enterprises producing high-tech and medium –tech goods,

PUBLRD – public investment in R&D share in GDP (Poland– 18<sup>th</sup> position),

BUSRD – industry expenditures on R&D share in GDP (Poland – 23<sup>th</sup> position),

EPOHIPAT – patent applications sent to European Patent Office in high-tech (Poland – 25<sup>th</sup>),

USPHIPAT – patents in high-tech given by United States Patent and Trademark Office (Poland – 21<sup>th</sup>),

EPOPAT - patent applications sent to European Patent Office (Poland – 24<sup>th</sup>),

USPTOPAT – patents given by United States Patent and Trademark Office (Poland – 24<sup>th</sup>),

SMEINNOVCOO – SME introducing innovations in cooperation with other enterprises (Poland – 17<sup>th</sup>),

INTERNET – access to Internet (Poland – 17<sup>th</sup>),

VAHITECHMAN – producers value creating in high-tech (Poland – 20<sup>th</sup>).

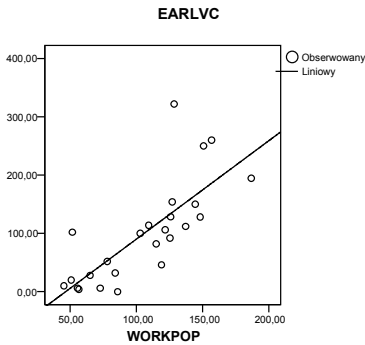
In the chapters below you can see the linear regression equations between private equity investment in early stages high-tech share in GDP and the indicators mentioned above.

We should notice that the evident relations between those factors and vc investments. This can be an introduction into identification of necessary conditions of vc market development.

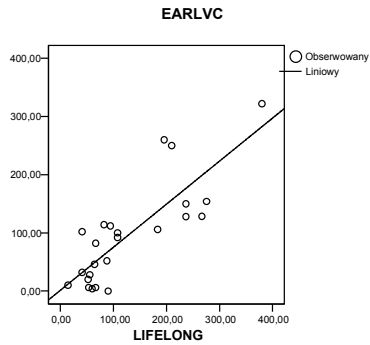
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<sup>17</sup>. European Innovation Scoreboard 2004. Comparative Analysis of Innovation Performance, "Commission Staff Working Paper, Commission of the European Communities", Brussels, 19th November 2004 r., SEC (2004) 1475.

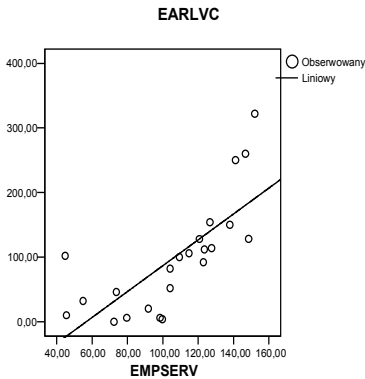
**13 a)**  $EARLVC = -78,955 + 1,6907 \text{ WORKPOP}$



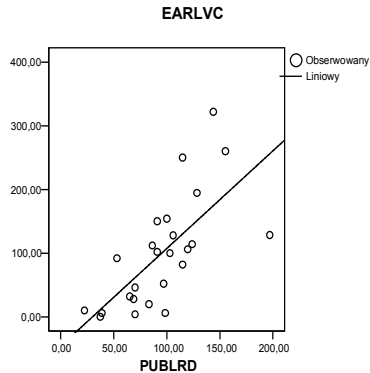
**13 b)**  $EARLVC = 1,3377 + 0,7401 \text{ LIFELONG}$



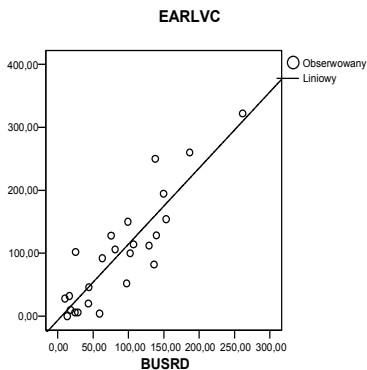
**13 c)**  $EARLVC = -113,74 + 2,0042 \text{ EMPSEV}$



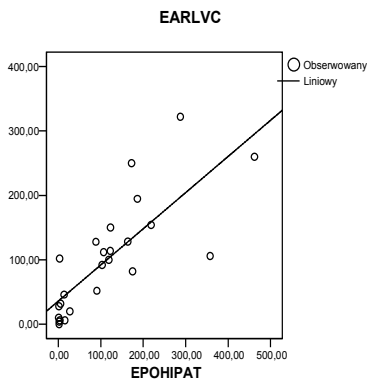
**13 d)**  $EARLVC = -45,959 + 1,5330 \text{ PUBLRD}$



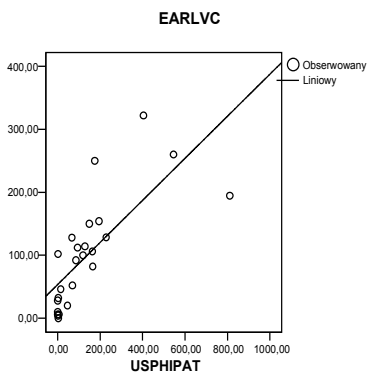
**13 e)**  $EARLVC = -6,5871 + 1,2098 \text{ BUSRD}$



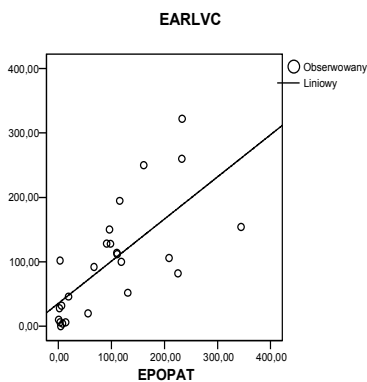
**13 f)**  $EARLVC = 35,9724 + 0,5613 \text{ EPOHIPAT}$



**13 g)**  $EARLVC = 53,5324 + 0,3342 \text{ USPHIPAT}$

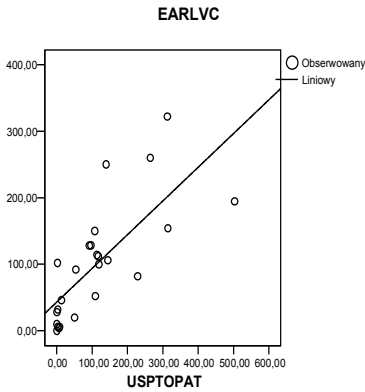


**13 h)**  $EARLVC = 35,5466 + 0,6544 \text{ EPOPAT}$

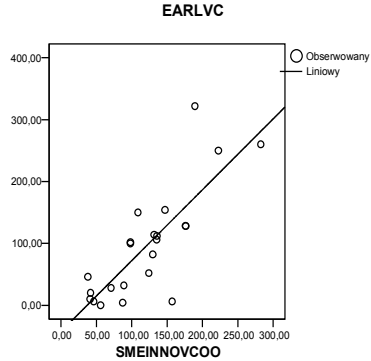




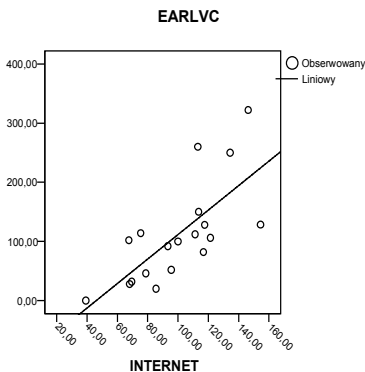
**13 i)** EARLVC = 43,0685 +  
0,5069 USPTOPAT



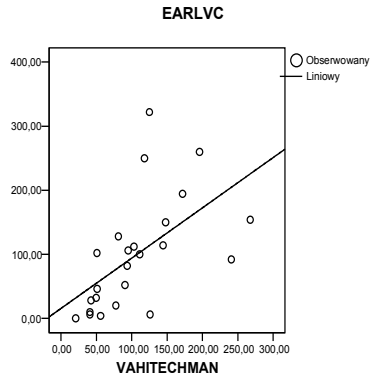
**13 j)** EARLVC= -42,443 + 1,1460  
SMEINNOVCOO



**13 k)** EARLVC = -95,314 +  
2,0691 INTERNET



**13 l)** EARLVC = 15,6187 + 0,7850  
VAHITECHMAN



Source: Prepared on a basis of European Innovation Scoreboard 2004.

**Polish incubators are more private, or governmental? If governmental, are they university based or not? And how do they support for financial affairs?**

- As parks need more infrastructure, the land or building are brought in by local government but also other participants are engaged (research units, universities, development agencies etc).

As I mentioned, there is the network of academic incubators, but also some parks (such as<sup>18</sup>) are settled by universities.

**If you have any further comments, please go ahead.**

Thank you very much for this interview.

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<sup>18</sup> . [http://www.nanonet.pl/index.php?option=com\\_content&task=view&id=257&Itemid=34](http://www.nanonet.pl/index.php?option=com_content&task=view&id=257&Itemid=34)



