

Building the Critical Mass for STPs in Small Countries

- The Namibian Experience

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Abstract

Building science & technology parks (STPs) requires a critical mass of research institutions and innovative companies as well as a significant number of innovative emerging companies. Companies in small developing countries such as Namibia face numerous challenges stifling their potential growth and preventing them from becoming suitable tenants of an STP.

Given this environment, the implementation of the Science & Technology Park at the Namibia Business Innovation Centre (NBIC) was planned as the last step of a staged rollout of programmes targeting entrepreneurs and SMEs across the country in a first and a business incubator as a second step. These steps are designed to build a critical mass of innovative start-up companies that eventually 'graduate' from programmes and incubator to move into the STP. At the same time, NBIC is partnering with existing technology companies that are interested in moving into the STP. A key motivation here is that the STP will develop training programmes for employees and graduates in industry-relevant skills leading to industry certification.

The first phase of implementation already exposed a wide array of challenges for entrepreneurs and existing SMEs as well as a need to focus stronger on rural areas to support entrepreneurs there.

We report on the status of implantation and the lessons learned in creating a critical mass for a sustainable STP in Namibia.

Motivation - The "Critical Mass" for STPs

The number of STPs has grown in recent years worldwide. While many are successful, some struggle to attract enough tenants with viable businesses. Successful science & technology parks (STPs) share characteristics such as

1. Urban location - they are mostly situated in urban areas with many potential customers

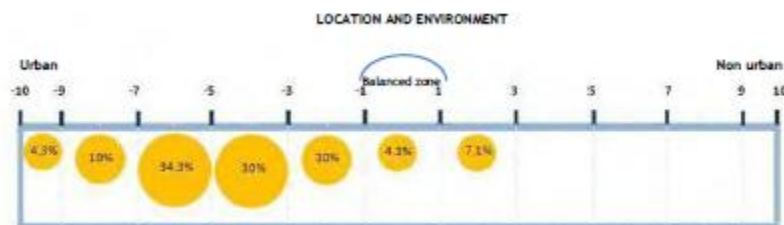


Figure 1: Distribution of STP locations - urban vs. non-urban areas¹

¹ IASP Strategigram Analytical Report 2010, IASP, 2011, p. 7. Note that these and the following figures only represent IASP members, not all STPs worldwide. Especially North America is underrepresented. However, they give an indication regarding a sustainable structure for STPs.

- Most are located in developed or emerging economies;

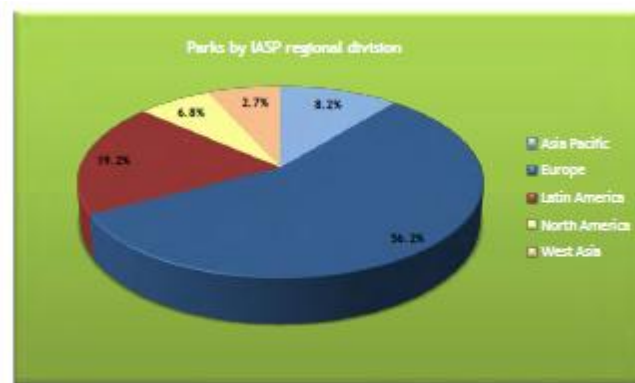


Figure 2: Distribution of STPs by continent (excluding Africa)²

- An educated workforce - Closeness to one or several universities and research organisations as well as availability of researchers and skilled employees.

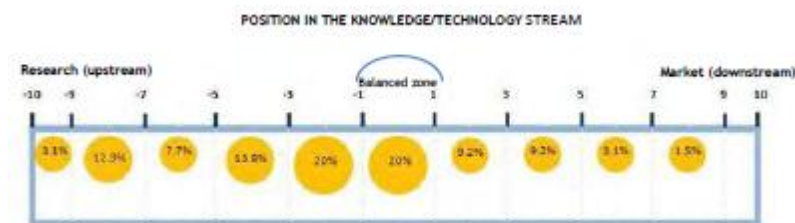


Figure 3: Location of STPs close to research organizations vs. market³

- A culture of innovation and entrepreneurship - a sufficient number of individuals with new ideas and the skills and enthusiasm to put them into reality.



Figure 4: STP focus on new technology-based firms vs. mature firms⁴

In short, STPs seem to work best when a ‘critical mass’ of customers, suppliers, skilled employees, researchers and entrepreneurs exists that can interact with each other with the STP functioning as a catalyst. Developing countries often meet few or even none of these criteria, especially if they are smaller in population size and still grapple with socio-economic development challenges, such as primary health deficits; HIV and AIDS; structural challenges of the knowledge infrastructure; level of economic system development; and a backlog in provisioning vital transport and ICT

² IASP Strategigram Analytical Report 2010, IASP, 2011, p. 6

³ IASP Strategigram Analytical Report 2010, IASP, 2011, p. 11

⁴ IASP Strategigram Analytical Report 2010, IASP, 2011, p. 17

infrastructure⁵. How then, can these states create a 'critical mass' that is sufficient for an STP to develop maybe of limited size but nevertheless successful?

In addition, the macro framework within which STPs operate is often rudimentary and government support is required with respect to funding but also the creation of enabling conditions. Though there is political will, small developing countries such as Namibia face several challenges in this respect such as lack of central government support in fostering entrepreneurship and innovation.

Namibia is an example of a country that has assets such as abundant natural resources, a good transport infrastructure but has gaps in the critical factors outlined above. We describe the initiatives taken to date by the Namibia Business Innovation Centre to create favourable conditions for an STP in Namibia.

Macro Level Framework

Namibia - and similarly other small developing countries - faces a number of challenges to the successful establishment of an STP, namely

- **A small population** and hence, **small market** size. Namibia has a population of 2.1 million and a GDP of US\$ 10.48 billion⁶, i.e. roughly US\$ 5,000/per capita and year. Due to this small market size and facilitated by the Southern African Customs Union (SACU) of which Namibia is a member, most products are produced outside of the country, mainly in South Africa, and imported to Namibia. Most larger Namibian incorporated companies are subsidiaries of foreign enterprises. Namibian companies tend to be small or even micro businesses with activities limited to the local communities in which they are based with very few companies expanding and opening branches elsewhere. Hence most exhibit low or no growth.
- **High income disparity**⁷ witnessed by a Gini Coefficient of 0.71.
- **Already open, free market economy**⁸ making it difficult to fully convert the resource based economy into a knowledge based economy over the medium to long term as envisioned by Namibia's Vision 2030⁹, as local products cannot be protected until sufficient skills and know how has been accumulated to be able to compete internationally.
- **High unemployment** - according to the latest labour statistics, unemployment has reached 51.2% in Namibia¹⁰. The situation is much worse for young people with 83% unemployment rate in the 15-19 year age group. For the reasons above, Namibia lacks SMEs driving job creation as compared to many other countries.
- **High crime rate, mainly of economic nature** - crime prevention is declared a national priority to overcome, as its roots mainly lie in the dire unemployment situation¹¹.
- **Mainly rural population** - Population is centred in the rural areas, mainly in the North, the capital Windhoek, and towns where major mining activities take place. The majority of the Namibian population still depends on subsistence agriculture which are de facto declared rural areas.

⁵ The World Bank, <http://www.worldbank.org>, as retrieved 17 Feb 2011

⁶ IMF, <http://www.imf.org>, as retrieved on 11 Feb 2011

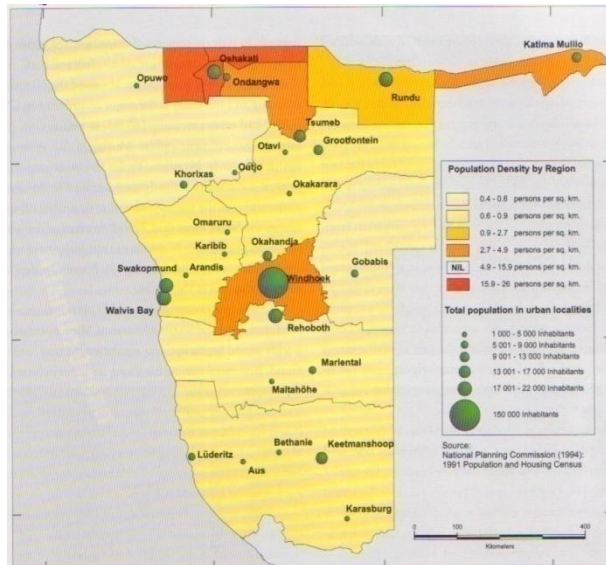
⁷ The CIA World Fact Book, 2003

⁸ National Macroeconomic Framework for 2010/11 - 2012/13, March 2010

⁹ Namibia Vision 2030, Republic of Namibia, Office of the President, 2004

¹⁰ Namibia Labour Force Survey 2008, Ministry of Labour and Social Welfare, March 2010

¹¹ The Medium Term Expenditure Framework, 2010/11 - 2012/13, March 2010.



- **Quality of primary and secondary education** - A significant gap in education quality at the primary and secondary level (rank 112 out of 139¹³) - especially mathematics (120/139¹³) - resulting in students entering tertiary educational institutions with a gap compared to developed countries. This is despite the fact that spending on education is fairly high (5/133¹⁴) and concentrated on primary and secondary education.
- **Lack of capacity at tertiary educational institutions** - Namibia has three tertiary institutions: the Polytechnic of Namibia and the University of Namibia (which are public institutions) and the International University of Management (a private initiative). The public universities together accept about 10,000 students per year out of 55,000 young people in each age group. The resulting low tertiary enrolment (110/139¹³) severely limits the number of university graduates who would be the main drivers in innovation and job creation. While in developed countries typically 35%-45%¹⁵ of students achieve an academic degree, Namibia reaches less than 10%¹⁶. Thus, Namibia ranks 135 of 139¹³ countries in the availability of scientists and engineers. For this same indicator, Namibia ranked 93 of 102 in 2004-2005¹⁷. Instead of building capacity, Namibia is losing capacity.
- **Lack of local technology companies** - most technology is imported. As a result, a low capacity for innovation (113/139¹³).
- **Lack of an institution at the meso level promoting entrepreneurship and innovation** to stimulate job creation and economic growth. Namibia's Vision 2030⁹ as well as its National Development Plan 3¹⁸ acknowledge the need for such an institution. To date a national innovation policy has not been published which would have provided impetus, i.e. provision of sufficient human and financial resources, to establish such national centre of innovation.
- **Lack of major government initiatives** to address key issues such as unemployment, tertiary education and innovation capacity. A national conference on employment creation was held in September 2010; follow up on the next steps and how initiatives that were discussed

would be implemented is outstanding. Some smaller initiatives are discussed below. Within the context of Namibia's membership to the Southern African Development Community (SADC), Namibia has signed the 2008 SADC Protocol on Science, Technology & Innovation¹⁹. To date the protocol has neither been ratified by Namibia, nor the required two-third majority of SADC member states, thus hampering progress further.

From macro-level assessments²⁰ it is evident that Namibia's macro economy is performing well in the regional and international context. However, analysing Namibia's competitiveness and performance at the meso and micro-level economy²¹, it is clear that there is room for improvement. Funding of important socio-economic development projects is readily availed²². However, around 50% of the appropriated expenditure caters for personnel related expenditures of existing central government operations. Although there is a slight downward trend visible, the quality of central government spending continues to be a cause of concern for the IMF²³.

The national priorities remain in the field of safety nets, developing human capital and ensuring food security. More than 50% of all appropriated funds, operational and capital expenditure focus on this area. The other area that receives priority attention in national expenditure relates to investment for growth and job creation. Specific projects have been highlighted in the national budget which should support the initiatives taken at general government institutions. These are:

- A new procurement act to increase procurement opportunities to companies complying with affirmative action policies;
- More funds are directed at promoting youth employment, for example, via the Namibia youth credit scheme to promote young entrepreneurs
- Increased assistance to SMEs development - for example, creation of a SME bank
- Strengthening of the Namibia Competition Commission, and
- Investment in extension, upgrading and maintenance of the national transport infrastructure.

These central government initiatives are commendable, but fall short of cohesion between the funders, which is central government, and the target group as explained above, i.e. the lack of meso level institutions which equally assist funders and potential entrepreneurs, upcoming SMEs and corporate in need of dedicated research and development services. The challenge therefore remains to find programmes which fit the national priority spending profile and the needs at the grass roots level, or the base of the pyramid.

Challenges that Entrepreneurs face in the Business Environment

Entrepreneurs, especially young entrepreneurs, entering the business arena often face problems that are fundamental and psychologically challenging, rather than superficial, i.e. lack of skills. Below, some of the challenges that entrepreneurs face in different areas/sectors, or phases when entering the corporate world, or starting out as entrepreneurs are outlined.

General Challenges entrepreneurs face when starting out:

- lack of business and management skill and abilities

¹⁹ SADC Protocol on Science, Technology & Innovation, Gaborone, 2008

²⁰ IMF, <http://www.imf.org/external/pubs/ft/scr/2010/cr10269.pdf>, August 2010

²¹ The Global Competitiveness Report 2010-2011, World Economic Forum, 2010

²² Medium Term Expenditure Framework 2010/11 - 2012/13, Ministry of Finance, 2010

²³ IMF, <http://www.imf.org/external/pubs/ft/scr/2010/cr10269.pdf>, August 2010

- inadequate, inaccurate or non-existent financial records
- inability to cope with fluctuating costs and prices
- Inability to price “right”
- lack of knowledge of support mechanisms that can enhance their business, .i.e. micro finance systems, cheap marketing tools like social media and mobile applications;
- limited business networks and contacts leading to isolation, pressure and can even lead to depression and eventually lack of self-confidence;
- limited exposure to mentors or role models who can motivate and also act as sounding boards;
- a lack of credibility, for women often because of gender discrimination;
- employing the right staff and managing people for the first time;
- managing expansion of the business;
- being more aggressive and competitive in order to gain market share.
- securing adequate start up funds;
- managing cash flow especially when it comes to debts and late payments;
- Taking too much money from the business for personal use or dishing out loans to family members;

Practical example in Eenhana:

A woman owns a shebeen which is always full of people. At the end of the month she cannot figure out why she never has any money left over. She calls in a professional accountant for him to inspect the financial records and to spend an evening in the shebeen to observe the situation. He discovers that most of her clientele is family and friends, so she doesn't charge them because of 'guilt' feelings. With a heavy heart and great reluctance she decides to charge the people. The following month the accountant revisits her to assess the situation and discovers that she has doubled the turn over. Six months later she extended her business and added a hair salon.

Programmes to economically empower entrepreneurs exist, but their benefits to entrepreneur attendees are not sufficiently clear:

- often empowerment programmes are developed to create income generating activities without consulting and taking into consideration the context and situation of the entrepreneurs involved. This means that the programmes are largely perceived as just “keeping us busy”;
- entrepreneurs are often ‘set-up’ for failure as there are not sufficient, hands-on support or training skills provided through the tailored programmes;
- there are no training or advisory mechanisms in place to help entrepreneurs to overcome the gaps in their skills and experiences;
- insufficient financial literacy skills and lack of programmes to overcome this problem put entrepreneurs into a high risk zone (e.g. loans in excess of the real needs are provided) instead of investigating alternative ways of starting a business with low or manageable risk;
- excessive theoretical trainings are presented as a solution to all the problems entrepreneurs face in the economy; but this puts overwhelming pressure on the new start up
- commercial advice and consultancy work with entrepreneurs in business encourages unrealistic ideas of quick wealth;
- public / commercial advice and consultancy work with entrepreneurs encourages them to start business when there is no market or too many competitors; e.g. a grape growing project in Kavango, or a weaver in Ongwediva just to mention a few.

Women Entrepreneurs

Women entrepreneurs represent a growing segment despite a number of specific challenges women face in starting and growing a business successfully.

Reasons for promoting women entrepreneurship (especially young women):

- Helps in the development of new skills and experiences which can be applied to many other challenging areas in life;
- Creates employment not only for the business owner but also for the people it employs;
- Promotes innovation and development - it encourages women and society at large to be more solution driven and come up with ideas and ways of doing things. Women always look for ways to enhance the quality of living, making things easier and more efficient due to their own time constraints and this flows over to the way they solve challenges - thus being a great innovation enhancer;
- Helps promote social change and cultural identity;
- Creates a sense of community - one where women, especially are valued and better connected to society
- Gives women a sense of meaning and belonging - most of the time monetary reward is not a motivator for woman but rather doing something which has a purpose and meaning.

Specific Challenges of Entrepreneurial Women

- The role women play within the Namibian economy. Female entrepreneurs seem to cling to traditional "gender based" industries, like beauty, health and wellness, food industry, events planning, jewellery design, fashion, hairdressing, and healthcare. It is very rare to find Namibian women venture into more technical fields such as engineering, science and architecture although these fields are becoming more popular with the younger generation. However, the impact is hardly noticeable.
- The cultural stigma. As mentioned before, women largely perform "female stereotyped tasks", thus making them more dependent than independent. In this regard it is important to redress the emotional attachment that women still have and feel towards this stigmatisation. The innovation programmes offered at NBIC aim to put prospective women entrepreneurs through a process where they are offered self-development workshops and become more self-confident.
- From assessments made by the NBIC, it is discovered that women require specialised financial literacy training to enable them to retain funds not only to cater for the needs of their families and businesses, but also for themselves. NBIC is organising such workshops under the title "Reality Check" and/or "Take charge of your Life/Business" respectively, which deal with the above mentioned topics including time and change management.
- Women are more receptive to adopt new products and technologies than men. For this reason it is vital to keep women abreast with global trends as this would also assist them to uplift their quality of life. For example, more women entrepreneurs use social media networking tools to grow and sustain their businesses and keep in touch with social developments than men do.
- NBIC takes cognisance of the fact that women have to fulfil numerous duties in their daily schedules due to multiple career, social and family related responsibilities. Thus the timing is very important when offering training and workshops for women.
- Training and education programmes of the NBIC are in the process to also become available via radio, mobile messaging and internet communication systems.
- Rural innovation systems roll out is in the process of being developed, also through the anticipated Southern African Innovation Systems (SAIS) programme which is funded and staffed by the Finnish Development Programmes for Southern Africa.
- As part of our active participation and continuous efforts to support women empowerment in the business world, NBIC took the initiative in 2010 to 'sponsor' 8 places per workshop to the Women's Summit Members. A large number of the women felt that the workshops offered the NBIC would really benefit and enhance their overall business skill. Unfortunately the offer was never taken up by any of the summit attendees to date.

Societal Challenges

- most women are encouraged to stay at home instead of joining the corporate world;
- child care - finding someone to care for the child while she plans, starts or manages her business is usually difficult;
- sexual harassment;
- negative attitudes that are displayed by men against women who are in business;
- Other family members can become insistent in demanding full financial support.

Personal Challenges and envy amongst other women in business

- coping with stress, juggling family life, career/business and social life;
- lack of family support system, i.e. friends or husband/spouse that understand her demands but also supports and helps in other chores;
- stigmatisation;
- lack self-confidence;
- soft hearted - women often tend to cater to the demands of other and end up biting of more than they can chew because they want to help or not hurt anyone's feelings;
- resistance to changes
- the PHD (Pull Her Down) syndrome - it is rare to find that women will be supportive of a successful counterpart, but rather find ways of pulling her down and hoping she will fail.

It is encouraging to note that all competitions offered in 2010 thus far have been won by prospective women entrepreneurs. These women are being assisted currently to mature the development of their business plan in order to assure the implementation of their business idea. Coaching and mentorship will continue throughout 2011.

The Namibia Business Innovation Centre

Structure

The factors outlined above have had a major role in defining the mission and structure of the Namibia Business Innovation Centre (NBIC)

- National scope - Given a situation in which a framework and policies to promote entrepreneurship and innovation were missing on a national level, it was clear from the start that an STP in Windhoek alone would likely not be successful but would need to include promotion of innovation and entrepreneurship in policies and regulations on a national level.
- Motivation - as very few young people consider entrepreneurship, motivation is the starting point to drive SME creation
- Entrepreneurship - Focus is on those entrepreneurs that have innovative ideas with high growth potential.
- Innovation - support for established organizations and companies in innovating their business processes, products and services.
- Outreach - as most of the population resides outside of Windhoek, NBIC has to reach entrepreneurs and companies in smaller towns and rural areas.
- University driven - To secure the future of its graduates and lacking progress on a national level, the Polytechnic of Namibia took the initiative in establishing NBIC.

Implementation

Top-down Approach

Initiatives are under way in most Southern African countries to establish STPs and incubators. In most cases, the respective governments are either the driver or at least support the initiatives through funding of the key infrastructure and incentives for companies moving into the STPs.

Botswana is a good example for this top-down approach. Due to the fact that revenues from diamond mining will run out in the not too-distant future, the government has identified five key areas into which it invests to create future industries through vertical hubs²⁴, namely

- Innovation Hub
- Transport Hub
- Agricultural Hub
- Education Hub
- Health Hub

The Botswana Innovation Hub²⁵ starts with building the STP facilities and offering incentives such as fast-tracked work permit, cheaper telecommunication rates, government co-funding for employee trainings and also R&D projects. A strong focus in finding tenants is on international companies.

Bottom-up Approach

Namibia is an example for countries without comparable government initiatives. The main driver in establishing the Namibia Business Innovation Centre has been the Polytechnic of Namibia with the objective to secure and increase the future opportunities of its graduates.

The approach chosen is bottom up, i.e. starting with programmes for entrepreneurs to incubation to establishing a science park. This approach has been chosen for several reasons:

- A limited number of established companies that would fit within an STP
- Challenges in attracting international companies that typically choose a base in South Africa with its much larger market
- No existing pipeline of innovative start-up companies that could move into an STP in the near future. Creating a critical mass by building a pipeline from the ground up is therefore a requirement.
- Limited funds and the need to create awareness nationally in order to obtain public support.

These confining elements have led to the development of an implementation concept that includes the following elements to be implemented in succession starting with programmes designed to create the critical mass for the successful establishment of an STP as the ultimate step:

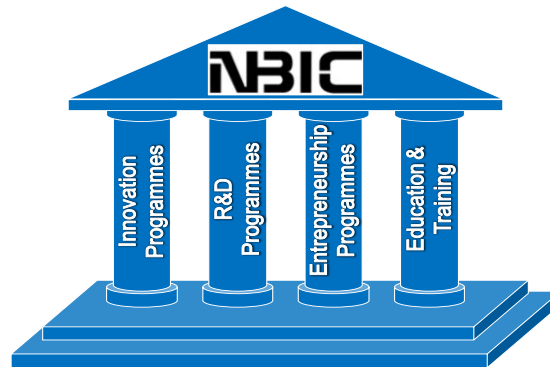
1. Programmes

- **The Innovation Marketplace™** - a programme targeted at the public to **educate** about entrepreneurship and innovation and **motivate** potential entrepreneurs. The programme includes public talks by entrepreneurs that can serve as role models, lectures by experts, business idea competitions and creativity and innovation workshops.

²⁴ Botswana Government Hubs, <http://www.gov.bw/en/Tools--Services/Government-Hubs/> , as retrieved on 13 Feb 2011

²⁵ <http://www.bih.co.bw>

- **Entrepreneurship Programmes** are designed to support entrepreneurs from the business idea, through market research, business planning, business setup and growth in the first three years with emphasis on training and mentorship.
- **R&D Programmes** support established companies and organizations to implement innovations in their internal processes and their products or services. A second objective is to identify potential STP tenants and involve them in the planning process at an early stage.
- **Education and Training Programmes** with focus on leadership and innovation management training. These target companies but also government, NGOs and other organisations many of which are also stakeholders and potential partners for an STP.



• **Figure 6: NBIC Core Pillar Structure**

2. **Business Incubation** providing access to office space, IT infrastructure, conference rooms and business services to some of the entrepreneurs within the NBIC programme.
3. **Science & Technology Park** with a central building housing the incubator and shared facilities such as conference rooms or cafeteria, buildings providing for rental offices and labs for smaller companies and space for larger companies to construct their own buildings.

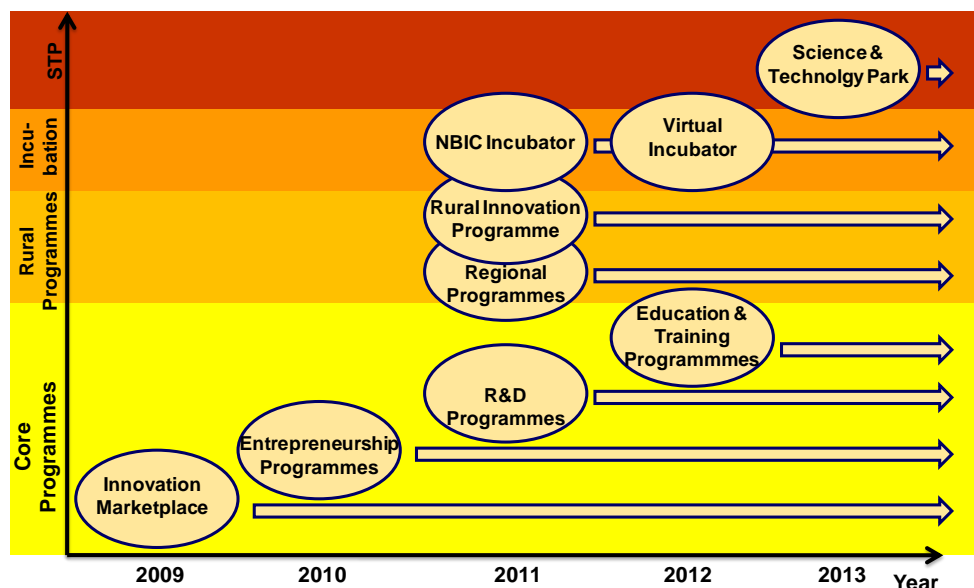


Figure 7: NBIC Rollout Plan

Lessons Learned

A number of lessons can be derived already from the implementation and execution of NBIC's programmes.

Education has to start at an early stage - NBIC found that starting programmes for entrepreneurs at the business planning level is not sufficient to generate a strong pipeline of innovative start-up companies. The I'm Innovation Marketplace™ operating programmes at the pre-idea level has been included due to the fact that most young people and students never consider entrepreneurship as an alternative to employment due lack of information. Indicators in this respect included direct feedback from students but also the lack of interest in public business planning trainings offered by other providers. The I'm has been built out over time to include

- Public educational talks and lectures on entrepreneurship and innovation
- Motivational talks by Namibian entrepreneurs and motivational speakers
- Creativity workshops to help interested participants develop their own business ideas
- A yearly business idea competition
- Templates for entrepreneurs and also NBIC staff to screen their business ideas against key criteria

Fine tune communications - email is useless, posters help only a little bit, so do public ads. Facebook and SMS are by far the most efficient tools to reach young people in Namibia. NBIC is building out additional communication channels such as mobile chat to reach young entrepreneurs at low cost using means available to them.

No freebies - to be perceived as being valuable, participants have to register and pay for events other than public talks or they won't come. The fees being charged have to be affordable. NBIC pays back all or part of the registration fees to students or young participants upon successful completion of a stage in the entrepreneurship programme.

Commitment & Results - NBIC does not generate profits from the workshops it offers - but it expects commitment from the entrepreneurs. The programme therefore has defined steps with deliverables at the end (business idea description, business plan, business registration & setup, plan implementation status) that are used to verify the status of an entrepreneur. Only upon completion of a stage can the entrepreneur receive a refund of registration fees and admittance to the programme of the next stage.

Mentoring is key - many providers offer trainings in business planning and other topics. NBIC found a low success rate. The main issue mentioned in interviews was lack of mentoring. Participants of a training workshop were not able to implement the learned content on their own without help.

Frequent contacts - even without need for mentoring, regular meetings with the entrepreneurs should take place to maintain a personal connection. NBIC achieves this via the Entrepreneurs' Circle which meets every two weeks to discuss a specific topic relevant to their businesses. The topic is usually introduced by a brief presentation of an external speaker.

Entrepreneurship Programmes in small doses - Market research and business planning workshops were conducted as a series of one or two day workshops with gaps of 2-3 weeks in between to allow participants to apply the learned material with the help of a mentor if needed. Most participants only partially completed the series as they could not free up full days due to work or university schedules and were not able to complete larger assignments after each workshop. NBIC now uses two formats:

- The Entrepreneur Bootcamp which has weekly two-hour sessions with shorter assignments that can be completed in a reasonable time by the participants.
- The Entrepreneur Crash-Course which does the same but as a block over one or two weeks.

Building out ‘enabling skills’ - analysis of issues entrepreneurs face resulted in the addition of additional trainings to complement the market research and business planning programme:

- Financial planning workshops - Most entrepreneurs had issues with financial planning and required a deeper workshop with hands-on work on their financial plans.
- Excel classes - some entrepreneurs did all calculations on paper with a calculator, then typed the results into a word table or spreadsheet.
- Presentation skills classes - entrepreneurs were not able to communicate the core points of their business in a concise way to loan officers at banks, potential investors and customers. NBIC offers workshops to train entrepreneurs on how to do a short pitch presentation.

Competitions feed the pipeline - to attract enough entrepreneurs, NBIC conducts three competitions in a yearly cycle. These include a Product & Technology Competition (idea + prototype), a Business Idea Competition (idea only) and a Business Plan Competition. The first two feed into the Business Planning Stage, the latter into the Business Setup Stage.

No business plans from external consultants - many consultants, mainly freelancers, offer entrepreneurs writing of a business plan for a fee. Customers are typically SMEs who need a business plan to obtain a loan. NBIC does not accept such plans as the entrepreneurs in most cases are not familiar with the content of her/his own plan. NBIC’s objective is to enable entrepreneurs to write their own business plan and be able to explain it to others.

Market research covering international markets - NBIC focuses on entrepreneurs with high market potential. To obtain support at the higher stages, entrepreneurs need to demonstrate how they will enter the national and international markets and who the competitors in these are.

Many Entrepreneurs are in rural areas and smaller towns - NBIC currently only has offices in the capital Windhoek, but an increasing share of requests for support come from smaller towns and rural areas. NBIC will therefore partner with existing community outreach organizations and institutions to be able to support these entrepreneurs. This includes training of staff of these organisations.

Based on the programmes that have been implemented, NBIC has built a pipeline of entrepreneurs at different stages of development. While most are still in the business planning stage, several have reached the business setup and incubation stages. With the experiences gained to date, NBIC is modifying existing and adding new programmes to increase the rate of entrepreneurs completing a given stage and doing so in a reasonable amount of time.

To increase incubation capacity while containing cost at the same time, NBIC has developed the NBIC Innovation Village concept - utilizing a number of former single-family homes and their side buildings for office and incubation space in a park-like atmosphere. The Innovation Cafe at the centre provides a meeting spot for entrepreneurs. The Innovation Village can grow by adding additional buildings.

Building a pipeline of new innovative start-up companies while planning an STP with established technology companies and public institutions are the two key ingredients for NBIC to develop the critical mass needed to sustain an STP long term. Timing for the STP opening should match the first SMEs growing beyond the space available in the incubator.

Conclusion

Science & Technology Parks in smaller developing countries need to prepare their environment to be successful in the long term. Most importantly, a critical mass of SMEs that are possible tenants is needed. To ensure sustainability requires building a pipeline of innovative start-up companies that mature and become possible STP tenants while involving established technology companies in the STP planning process. STPs in cities that do not have a large population plus several research institutions close by need to extend their reach to get sufficient numbers of entrepreneurs involved in their programmes.

The Namibia Business Innovation Centre has chosen a bottom-up approach in building a pipeline of entrepreneurs from the ground up as well as partnering with existing companies in the planning of an STP. The experience gained so far is limited to the early stages of the roll out plan and does not include (yet) lessons learned from start-up companies that have reached the growth phase - within or outside of the incubator.