

**Practitioner paper:**  
**Developing regional systems of innovation as a strategy to grow  
sub-national economies**

**The Nelson Mandela Bay Regional Innovation Forum  
November 2016**

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**1. Introduction: Why innovation as a strategy for growth?**

Innovation | ɪnəˈveɪʃ(ə)n | *Noun*. Something newly introduced, such as a new method or device<sup>1</sup>.

Innovation, by its nature, is difficult to define, and it is often impossible to identify the exact moment or action that ultimately lead to an “innovation”, whether it is a concept, product or process.

The Department of Science and Technology notes that “[g]lobal economic growth will increasingly depend on innovation, particularly at a regional level. The need to develop structured and coherent regional systems of innovation, aligned to the development priorities and ambitions of regions, is therefore becoming increasingly important in the quest for global competitiveness and regional economic growth.”<sup>2</sup>

Innovation, stimulated, promoted and supported by regional systems of innovation, has the potential to stimulate economic growth and development in sub-regional economies and related growth in employment opportunities.

This paper presents the case of the Nelson Mandela Bay Regional Innovation Forum, with a particular emphasis on the establishment of the Propella Business Incubator, as a best practice case study for multi-stakeholder, innovation-led collaboration as a strategy to grow and develop sub-regional economies and create employment.

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<sup>1</sup> Department of Science and Technology, 10 Year Innovation Plan.

<sup>2</sup> Department of Science and Technology, Regional Innovation Systems Strategy, 2009.



## 2. The Nelson Mandela Bay socio-economic context

The Eastern Cape is home to approximately 6,786,880 people<sup>3</sup>. This is equivalent to 12.5% of the national population and makes the Eastern Cape the third most populous province, after Gauteng and KwaZulu Natal.

The Eastern Cape Province economy grew by 1.5% during the third quarter in 2015 (annualised rate quarter-on-quarter). Gauteng is the only province that grew at a rate greater than the Eastern Cape. This signifies the Eastern Cape as an important, up-and-coming growth node in the country. Furthermore, it is important to note that this growth is attributable to an increase in manufacturing (6.3% increase in annualised rate quarter-on-quarter), trade and finance activities. The manufacturing sector increasingly is becoming a significant growth and development sector in the province; it contributes approximately 14% of the Gross Geographic Product (GGP) of the province. Other major contributors are government (23%), trade (20%) and finance (20%)<sup>4</sup>.

The growth in the manufacturing sector should be contextualized; the sector expanded for the first time in the third quarter of 2015 after shrinking by 2.4% and 6.3% in the first and second quarter respectively. While the growth in the sector is encouraging, there exists vulnerability in the sector and therefore there is a need for further support to ensure sustained economic growth and development, which will translate into increased sustainable job creation in the Eastern Cape.

There has been a marginal increase in employment of in the Eastern Cape from the first to second quarter of 2015 of about 8,000 new employed persons. New jobs were created in construction (48%), agriculture (28%), trade (12%) and manufacturing (12%). This is negligible in relation to the positive increase in the employment rate of 84,000 new employed persons in 2014<sup>5</sup>.

The unemployment rate in the Eastern Cape is 29.1% in comparison to the national average of 25.5%. The Eastern Cape has the third highest unemployment rate in the country and the highest unemployment rate in the country when considering the expanded definition of unemployment (i.e. people that have not actively sought work within the last two weeks).

The unemployment rate in Nelson Mandela Bay (33.2%) is higher than the unemployment rate in Buffalo City Metropolitan Municipality (28.8%). There is a need, therefore, for the Eastern Cape, and particularly the Nelson Mandela Bay region, to create sustainable employment opportunities, particularly for young people.

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<sup>3</sup> Source: Eastern Cape Socio-Economic Review and Outlook, Eastern Cape Department of Economic Development, Environmental Affairs and Tourism, 2015.

<sup>4</sup> Source: ECSECC Quarterly Data Series *Provincial Economic Growth* Issue 4, January 2016

<sup>5</sup> Source: ECSECC Quarterly Data Series *Provincial Labour Market* Issue 3, August 2015

The Nelson Mandela Bay Municipality and the Sarah Baartman District Municipality is located in the western half of the Eastern Cape and extends from the Fish River in the east to Storms River in the west, and from Port Elizabeth in the South to Nieu Bethesda in the north. The main sectors of the economy in the western half of the Eastern Cape are the automotive industry, citrus industry, maritime industry and renewable energy industry.

Nelson Mandela Bay comprises one city, Port Elizabeth, and two towns, Uitenhage and Despatch. Nelson Mandela Bay is the main economic contributor to the Eastern Cape, contributing approximately 43% to the provincial Gross Geographic Product. The Sarah Baartman District (SBD) comprises seven local municipalities and contributes approximately 7% to the economy of the Eastern Cape. The main towns in the SBD include Jeffreys Bay, Port Alfred and Grahamstown.

The manufacturing sector is one of the main sectors contributing to the economic output of Nelson Mandela Bay. The region has two main manufacturing competencies, namely automotive and related engineering, and plastics and chemicals processing, with an emphasis on pharmaceuticals manufacturing. The South African automotive industry produces about 0.8% of total automotive output globally but this accounts for over 11% of South Africa's exports<sup>6</sup>.

Nelson Mandela Bay, known as the 'car capital' of South Africa, is home to a vibrant and ever-growing automotive industry that provides the basis of the region's manufacturing capacity. The largest car manufacturer in the country, Volkswagen South Africa, is situated in Uitenhage, while General Motors South Africa and Ford South Africa are Port Elizabeth-based Original Equipment Manufacturers (OEMs).

Nelson Mandela Bay is also home to many automotive component manufactures. Vehicle manufacturers and component suppliers in the region area have established themselves globally as reliable niche gap fillers. The European Union is the largest export destination for local component exports. The automotive industry is seen as an essential growth area for the future, with support provided at national, provincial and local government levels.

In addition to the automotive sector, plastics and pharmaceuticals are the key chemical industries in the Eastern Cape province. Nelson Mandela Bay is home to Aspen, the largest generic medicine manufacturer in the southern hemisphere and the leading supplier of generic medicines to both the private and the public sectors in South Africa. Aspen is one of the top twenty generic manufacturers worldwide and South Africa's number one generic brand. It recently announced an investment of R1.35 Billion in a sterile facility in Port Elizabeth that will create at least 500 jobs<sup>7</sup>. The plastics industry, albeit small, is highly diversified throughout the region where automotive, packaging, moulding and extrusion, household and construction industries are prominent.

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<sup>6</sup> <http://www.bdlive.co.za/business/trade/2014/05/21/sas-motor-industry-slashes-its-trade-deficit>

<sup>7</sup> <http://www.heraldlive.co.za/aspen-invest-r1-35bn-pe-creating-500-jobs/>

In addition to these sectors, Nelson Mandela Bay has a growing competency in the manufacture of renewable energy technologies, built on the basis of the automotive sector. Renewable energy is one of the fastest growing industries in Nelson Mandela Bay and the Sarah Baartman District. Under the Department of Energy's Renewable Energy Independent Power Producers Procurement Programme, sixteen out of the thirty-one wind farm developments approved will be located in the region and will account for 50% of the total wind power generation awarded nationally.

The Coega Industrial Development Zone (IDZ), located in Nelson Mandela Bay, is a key component of the regional innovation system, as the IDZ has invested in basic enabling infrastructure for industrial development. The existing Industrial Development Zones will be converted to Special Economic Zones (SEZs) by July 2016. It is anticipated that the SEZ legislation will provide greater incentives to investors through tax allowance incentives and customs controlled areas<sup>8</sup>.

In addition to manufacturing, the ICT industry, which is accounted for in the business services sector, is a growing industry in the region. This is bolstered by the nationally recognised competencies of the NMMU and a growing business process outsourcing industry located at the Coega IDZ.

### **3. Defining regional systems of innovation**

The Department of Science and Technology notes that “[p]rogress towards a knowledge-based economy will be driven by four elements:

- Human capital development
- Knowledge generation and exploitation
- Knowledge infrastructure
- Enablers to address the “innovation chasm” between research results and socioeconomic conditions”

It is this last point, i.e. the need for enablers to address the innovation chasm, that gives credence to the establishment of Regional Innovation Forums.

A regional innovation system (RIS) refers to the interaction between businesses, academia, research and technology organisations, innovation support agencies, venture capitalists, local, provincial and national spheres of government and other role players that collectively and individually play a part in promoting innovation and innovation processes within a region.

The strength of a regional system of innovation is its fluidity and dynamism. Therefore, the success of the system should be measured in terms of its ability to identify opportunities and bring together the

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<sup>8</sup> Eastern Cape Socio-Economic Review and Outlook (2015), Eastern Cape Department of Economic Development, Environmental Affairs and Tourism.

right role players to take advantage of these opportunities.

The Department of Science and Technology's (DST) Socio-Economic Partnership Programme seeks to enhance the growth and development priorities of government through targeted science and technology-based interventions and the development of strategic innovation partnerships with other government departments, industry, research institutions and communities.

The Directorate: Sector and Local Innovation is one of the key directorates within this programme and seeks to strengthen the National System of Innovation (NSI) to enhance economic growth by, *inter alia*:

- Forming partnerships with particular industrial sectors that are designed to increase their participation in the research, development and innovation value chain; and
- Coordinating and facilitating local innovation interventions, often referred to as Regional Innovation Systems (RIS).

This can be achieved through facilitating and supporting multi-helix innovation partnerships and platforms at local or regional level, and supporting processes to design and develop approaches to sector innovation planning. In order to achieve this, the Directorate supports and facilitates the development of regional innovation forums with the intent of strengthening RIS. These forums are intended to:

- Provide networking opportunities for small and medium enterprises to participate meaningfully in the emerging knowledge and information-driven global economy by fostering collaboration with knowledge generators and experts;
- Promote innovation within a defined region within a province, using existing provincial and local government structures, institutions and other support structures as implementation agents;
- Act as communities of practice for national research, development and innovation projects, with a local footprint;
- Inform provincial and national innovation policies from the bottom-up; and
- Initiate the management and leveraging of funding for evidence-based studies to identify gaps in the system.

It is within the context of the DST's Sector and Local Innovation Programme and the related Directorate that the NMB / SBD Regional Innovation Forum was conceptualised, established and continues to operate.

#### **4. Regional systems of innovation in metropolitan areas**

GIZ published a discussion paper in June 2015 entitled "Innovation Systems in Metropolitan Regions of Developing Countries: Challenges, Opportunities and Entry Points". The paper notes that there is a distinct difference between stimulating and supporting innovation in developed countries and developing countries. In developing countries, strengthening a regional system of innovation will yield

higher levels of innovation and knowledge in emerging industries that may not yet be identified and/or supported at a national level.

The emphasis should, therefore, be on the identification and development of new or existing industries based on competitive and comparative advantages of the region, identifying and strengthening the interactivity of firm and institutional players within these industries (i.e. relevant international, national and regional players). Ultimately this will lead to sharing and deepening of technological knowledge and learning emanating from the identified industries. It is an emphasis on these aspects that should underpin and express innovation within the region.

The discussion paper also emphasises the importance of interaction between the various components of research, invention, technological development, learning and innovation. It is a network of institutions in the public and private sector whose activities and interactions initiate, import and deepen the diffusion of new technologies.

The most notable observation in the paper is distilled into one overarching premise:

*In developing countries it is important to focus more on technology diffusion than on novel innovations, and more on interactive learning rather than R&D-based approaches. The identification of truly motivated actors is of high importance, as is the promotion of reflexive policies that also entail space for exploration and a learning-by-doing approach. It is proposed that this process should start with trying to determine who in the region is creating useful knowledge, who is using knowledge creatively, and who is disseminating knowledge... In addition, identifying organisations or individuals that have insight into the unique challenges or problems in the region may provide opportunities for collaboration and the development of creative solutions that build trust, confidence and stronger local networks. It is not about the presence of organisations, but about the dynamism between different actors and elements in the innovation system.*

The paper proposes that in building a regional system of innovation in a metropolitan region of a developing country six focus areas should be strengthened:

- Innovation at firm-level including incentives to drive innovation and collaboration and the strengthening of networks of suppliers and customers;
- Macroeconomic and regulatory framework and policy that promote technological capability and innovation at firm and institutional level;
- Technological institutions that disseminate knowledge;
- Training and education institutions capacity for developing employees, industries and institutions;
- Interaction and dynamics between individual role players in the regional innovation system and the dynamism of the system as a whole; and

- Identification of demands and related opportunities not actively pursued by the regional system of innovation.

Robust interconnectivity and interventions at the macro, meso and micro level of the economic environment are required to support innovation and ultimately enterprise growth and development and job creation. At a macro-environment level, national policies to stimulate and support both early- and late-stage research and development and entrepreneurial ventures should be expanded. Supporting institutions play a pivotal role at the meso-environment level in providing the infrastructure and enabling environment required to stimulate and support economic growth and development. At a micro-environment level, business development support should be the focus of the sub-regional economic system.

Therefore, innovation activities within developing countries' metropolitan regions need to focus not only on traditionally defined research and development output, but more on strengthening the interaction within the system to identify opportunities, link firms and institutions and build the capacity to deepen technological diffusion within the region. These focus areas form the basis of the determination of key performance indicators for the NMB / Sarah Baartman Regional Innovation Forum.

## **5. The Nelson Mandela Bay Regional Innovation Forum**

The Nelson Mandela Bay Regional Innovation Forum (RIF) aims to stimulate, promote and support innovation in the Nelson Mandela Bay region. The Forum is an association of national, provincial and regional government, industry and academia stakeholders that have joined forces to drive innovation in the Nelson Mandela Bay (NMB) and Sarah Baartman District (SBD) region, supported by the Department of Science and Technology.

Nelson Mandela Metropolitan University (NMMU) was approached in 2010 by the DST to act as an agency to support the maintenance, growth and development of a Regional Innovation Forum to be established in the western region of the Eastern Cape.

The Forum was established in 2010 and was officially launched on 3 March 2011. The Forum is an initiative of fourteen key local organisations from government, industry and academia that have joined forces to drive regional innovation within the NMB and SBD region.

The Regional Innovation Forum has grown from an initial 124 members in 2011 to 723 members in 2016. Members comprise business (45%), research and academia (35%) and government (20%).

Membership is free and members may join the Forum via the website, [www.innovationeasterncape.co.za](http://www.innovationeasterncape.co.za), and may change or update their details via the website.

The three key objectives of the Regional Innovation Forum are to:

- Stimulate innovation by bridging the gap between research and industry, highlighting comparative and competitive advantages in the region, identifying gaps and opportunities in the region; and creating synergies through networking;
- Support innovation by creating linkages between role players; facilitating an enabling environment; hosting relevant workshops and events; assisting with access to finance; and lobbying for innovation seed funding. In addition, in terms of supporting innovation, the Forum noted the need to assist in the development of an incubator and Science and Technology Park; and
- Promote innovation by providing a "voice" for innovation in the region and publicising success stories.

Based on the complementary comparative and competitive advantages of both the regional economy of Nelson Mandela Bay and Nelson Mandela Metropolitan University, the focus of the Regional Innovation Forum is the promotion of advanced manufacturing specifically in the following sectors:

- Automotive and related component manufacturing, including composites;
- Energy, with a particular emphasis on renewable and alternative sources of energy generation and related manufacturing; and
- Plastics and chemicals manufacturing, most notably pharmaceuticals.

The Technology Innovation Agency (TIA) defines Advanced Manufacturing industries as *“those that have the following characteristics or are positioned to transition towards:*

- *Increasingly integrating new innovative technologies, in products and processes;*
- *Adopting new technologies and able to use technology to remain competitive and add value.”*

This definition is augmented by the United States of America’s Presidents Council of Advisors to include activities that:

- Depend on the use and coordination of information, automation, computation, software, sensing, and networking; and/or
- Make use of cutting edge materials and emerging capabilities enabled by the physical and biological sciences, for example nanotechnology, chemistry, and biology. This involves both new ways to manufacture existing products, and especially the manufacture of new products emerging from new advanced technologies.

To this end, a focus on ICT promotion and development to support innovation in the automotive, composites, alternate energy and plastics and chemicals industries is required to underpin the promotion of advanced manufacturing in the region. This is commonly referred to as Industry 4.0 or the fourth industrial revolution.



It is this defined focus within the context of the regional economy that will benefit entrepreneurs in connecting with through agglomeration principles, all underpinned by active business development support.

By introducing relevant support structures that strengthen and support entrepreneurs and other players in the regional economy, entrepreneurs are able to thrive in an environment that concentrates on building a base of capable entrepreneurs. These support structures will recognise and encourage the risk-taking attributes of the entrepreneur and will assist the entrepreneur in positioning their innovative business and assist in identifying and reducing the risk of failure of an enterprise.

As alluded to previously, the success of a regional system of innovation should be measured in terms of its ability to identify opportunities and bring together the right role players to take advantage of these opportunities.

The Propella Business Incubator concept was born out of the Regional Innovation Forum. The NMMU and Engeli Enterprise Development (EED), both members of the Regional Innovation Forum's Steering Committee, jointly established Propella after meeting at the RIF and realizing that they had a common goal: to help small, innovative businesses flourish in the Nelson Mandela Bay region.

## **6. Propella Business Incubator**

Propella Business Incubator seeks to grow the critical mass of innovators in the region, and encouraging entrepreneurs to stay in region and contribute to the sub-national economy.

*"It's all about growing the critical mass of innovators in the region, and encouraging entrepreneurs to stay in Port Elizabeth rather than moving to Johannesburg or Cape Town ... It is important that we retain the skills in order to grow the economy of our city in order to create sustainable jobs." - Jaci Barnett, Director: Innovation Office, NMMU, Chairperson: Innovolve (NMMU's wholly-owned commercialisation company) and Chairperson of the Regional Innovation Forum.*

Propella Business Incubator both is an incubator and accelerator. The National Business Incubation Association refers to business incubation as follows:

*"Business incubation is a business support process that accelerates the successful development of start-up and fledgling companies by providing entrepreneurs with an array of targeted resources and services. These services are usually developed or orchestrated by incubator management and offered both in the business incubator and through its network of contacts. A business incubator's main goal is to produce successful firms that will leave the program financially viable and freestanding."*

A Business Accelerator is very similar to an incubator but differs in that they usually have a greater focus on companies entering or growing in a national or global market. Business accelerators are an evolved version of incubators, designed to facilitate fast-developing technological ideas and propelling them towards marketable products. The key difference is the level of hands-on involvement.

Propella Business Incubator, like many incubators, provide two specific services, namely:

- Business development support: Incubators accelerate emerging companies' development by providing hands-on assistance during vulnerable start-up years. Assistance typically takes the form of a package of business and technical support services including guidance and mentoring on business strategy, management, marketing, financial, legal, and product development issues as well as facilitated exposure to a "know-how network" of outside business resources and sources of capital.
- Facility-based services: Locating entrepreneurs in one facility creates opportunities to lower costs associated with supporting a new business. Incubators usually provide office space to a number of complementary businesses, by offering flexible leases, shared use of conference rooms, reception, telephone, local area network and Internet services along with shared use of basic business equipment such as copier and other office equipment. An incubator can also provide a new company a much-needed visible identity to help promote its offerings and find funding or investment capital.

However, it is Propella Business Incubator's partnership and operational model that distinguishes it from other incubators, as outlined below.

### **6.1 Model**

Propella Business Incubator selects small and medium enterprises or entrepreneurs in key target sectors, namely renewable energy generation, energy efficiency and related technologies, advanced manufacturing, ICT, creative arts and textiles and provides business development support services along with office or manufacturing space at Propella's Humewood base or Bird Street satellite facility, in the case of the arts incubatees, for the purpose of developing and growing small businesses that will positively impact the regional economy of Nelson Mandela Bay.

In some instances, Propella provides virtual incubation, where the incubatee remains on their own premises, but has access to mentors and support services.

The key target sectors were selected on the basis that these are competitive advantages of the region and are strong focus areas at NMMU, relevant in the region and globally. NMMU serves as the education and research institution for developing and accessing the necessary skills, equipment and research links to assist the entrepreneurs. Incubatees have access to NMMU's technical expertise and equipment. It gives innovators and entrepreneurs access to equipment and expertise they would not otherwise be able to afford. Through the University they are also linked to research institutions

around the world, which ensures that they are on the cutting edge and aren't repeating something that has already been done.

Engeli Enterprise Development, the incubator management company, provides business development support, including mentoring and training. Business development support focuses on eliminating the three major impediments faced by emerging entrepreneurs: access to market, access to business support and mentorship, and access to finances.

For the mentorship aspect, Propella assigns external mentors, who perform the role of life and business coach, to each incubatee, giving them an opportunity to learn the softer skills required in a business environment, from an experienced businessperson. Mentors are appointed on a contract basis for a finite period and assigned to a specific entrepreneur or company.

Propella can accommodate up to 10 technology start-up businesses on its premises per year, and will expose up to 1150 individuals annually to training, pre-incubation, hackathons, incubation and other entrepreneurial initiatives.

Generally, the business incubation period ranges from one and a half years (for ICT) to three years (for manufacturing), at which time the incubatee graduates as a more established company, and much more likely to succeed.

Propella Business Incubator creates a culture of inter-connectivity; incubatees do not simply share office space, but also collaborate and share experience.

*“One should see Propella as an innovative precinct that brings all the partners together to stimulate innovative thinking. We assist entrepreneurs and companies to develop innovative thinking ... From providing skills and expertise to sourcing finances, we work together. Our whole performance is based around partnerships.” Wayne Oosthuizen, Director, Engeli Enterprise Development (incubator management company).*

## 6.2 Partnerships

The Nelson Mandela Metropolitan University (NMMU) committed initial seed funding to Propella Business Incubator. This initial investment resulted in the Industrial Development Corporation (IDC) approving seed funding for Propella Business Incubator, a concept that would not fit into the traditional dimensions of IDC development finance and / or agencies. It is significant that IDC committed co-funding to an unproven concept, but based its approval on the track record of the founding and implementation partnership, i.e. university and private sector.

The NMMU and IDC (R 7 million) seed funding has leveraged private sector funding of R21 million collectively from GMSA, BASF (both members of the Regional Innovation Forum) and Algoa FM (in-

kind advertising sponsorship). Propella Business Incubator, therefore, is funded by a true triple-helix partnership, where all parties share in the risks and rewards of the arrangement.

Telkom is a major donor, providing Propella with the fastest Internet connection in the Eastern Cape, a 100MB fibre link. This was launched in May 2016 as the “Telkom FutureMakers Hub”. This fibre link enables local tech entrepreneurs working on app development to have adequate connectivity and capacity. In addition, Propella’s advanced manufacturing enterprises are able to share engineering files and collaborate with other entrepreneurs around the world.

In creating partnerships for a new creation, all parties share risk, even government organisations. This is required to catalyse new and relevant structures to support the growth of entrepreneurs and ultimately create employment. Risk is mitigated by means of a Service Level Agreement between Propella Business Incubator and the incubator management company.

### 6.3 Impact

Propella was officially launched in June 2015 with the first incubates coming on board in November. Propella Business Incubator received 80 applications during its first year of operation. This demonstrates the need for business development support for fledgling businesses and / or technologies.

Propella Business Incubator has demonstrated tremendous results within its first year of operation. Currently 26 new and existing small businesses are in the process of incubation or acceleration. An aggregated overview of a selection of indicators of success, i.e. revenue and employment creation, is as follows:

**Table 1: Propella Business Incubator Impact (first year of operations)**

Indicator	Baseline	Current
Revenue (businesses entering incubator)	R690,000	R2,654,000
Employment (businesses entering incubator)	12	35
Funding	R10 million	R31 million

Source: Propella Business Incubator (2016)

That translates into a 285% growth in revenue and a 192% increase in employment for incubatees in the first year of incubation. This is relatively evenly spread amongst the small businesses and there is no one business that has increased revenue or increased employment significantly greater than another.

The greatest impact arguably is not quantitative, but rather qualitative, as is evidenced by feedback from incubatees, commenting on the partnership between the Regional Innovation Forum and Propella Business Incubator:

*"I enjoy the networking sessions because of the wonderful people we get to meet there. Many an opportunity has been unlocked through conversations held at these events and the long term value thereof is almost unquantifiable in its potential". – Sabelo Sibanda, Tuse (incubate)*

*Timothy Whitaker (incubatee), the Technical Director and Owner of IDM Solutions, has praised the impact that the Networking Sessions facilitated by the RIF has had on his business. The attendees have been of a high calibre and led to successful discussions on how IDM Solutions could benefit both them and their immediate networking partners.*

## **7. Benefits of multi-stakeholder innovation-led collaboration**

It has been noted that in developing multi-stakeholder innovation-led collaboration that all parties share risk. All parties, too, share rewards and it is the mutual benefit to all stakeholders that strengthens the Propella Business Incubator partnership configuration.

The mutual benefit derived by several stakeholders from Propella Business Incubator may be summarised as follows:

- Private sector: Propella provides an effective virtual delivery mechanism in terms of enterprise and supplier development. This enables private sector players to focus on their core business while allowing experts in business development support, i.e. Propella Business Incubator, to pool resources to grow and develop. The leveraging of resources will result in greater impacts that have a far broader reach than individual efforts would have.
- Government: Business development support ultimately will result in “decent job” and wealth creation. In addition, the sustainability of the incubator is secured by private sector investment and it is envisaged that very little public sector financial support will be required in future. Key economic sectors, as identified in the Industrial Policy Action Plan (IPAP), e.g. advanced manufacturing, are stimulated and supported.
- Academia: Universities and research entities are able to channel potential commercialisation of academic research and development to Propella Business Incubator. In addition, academic institutions will receive a return on investment for Enterprise and Supplier Development spend, in their contributions to Propella Business Incubator.
- Regional Innovation Forum: The Forum is able to channel entrepreneurs and entrepreneurial endeavours, similar to academic institutions, as outlined above, to ensure that innovation-based opportunities appropriately are supported and developed, as required. Propella Business Incubator has the necessary infrastructure to grow and develop innovation-based entrepreneurs, technologies, etc.
- Entrepreneurs: Propella Business Incubator gives innovators and entrepreneurs access to equipment and expertise they would not otherwise be able to afford. Through the University they are also linked to research institutions around the world, which ensures that they are on the cutting edge and aren’t repeating something that has already been achieved.

The following benefits are accrued to the region generally and the sub-regional economic stakeholders share these successes:

- Business development support for emerging enterprises and entrepreneurs that results in increased revenue and employment opportunities in the region. This is evident in the immediate impact of Propella Business Incubator, as outlined in the preceding section. The growth of economic activity in the region ultimately will result in an increased rates base for municipalities.
- Growth and development of an advanced manufacturing hub in the region. This is supported by strong research and development capabilities and world-class manufacturing infrastructure and related cluster opportunities at Coega Development Corporation.
- Growth and development of an ICT hub in the region. This is supported by strong research and development capabilities and supports the retention of NMMU's "highly sought-after computer science and information systems graduates"<sup>9</sup>.

## 8. Recommendations

Several salient principles and practices may be noted from this case study, and may be contextualised and applied either nationally, in terms of policy development, or to similar situations in other sub-regional economies.

### a) Review the findings of the COFISA programme to identify policy imperatives and practical applications to national and regional systems of innovation

The Department of Science and Technology (DST) entered into an agreement with Finland in terms of the *Cooperation Framework on Innovation Systems between Finland and South Africa* (COFISA). In terms of his programme, Finland shared its progressive model for regional systems of innovation with South African innovation role players for the purposes of strengthening national and regional innovation systems in South Africa.

One of the main outcomes of the successful COFISA programme was the exploration of the establishment of Science and Technology Parks within the South Africa context, for the purposes expediting the commercialisation of new technologies.

Other notable outcomes of COFISA include the establishment of Living Labs, where ICT role players cluster together for the purpose of creating innovational products and service and Foresight, a multi-disciplinary and multi-stakeholder methodology intended to assist governments and other role players to respond to possible long-term futures through innovative programmes and practices.

It is outside the scope of this paper to provide details of notable COFISA practices introduced into the national and regional systems of innovation, but suffice to say that it is recommended that COFISA

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<sup>9</sup> Jaci Barnett, Director: Innovation Office, NMMU, Chairperson: Innovolve (NMMU's wholly-owned commercialisation company) and Chairperson of the Regional Innovation Forum.

reports be revisited by national and local innovation role players to identified policy and practice principles that may be applied to further strengthen regional systems of innovation.

### **b) Build a regional system of innovation based on strong multi-helix networks and partnerships**

The strength of the NMB RIF and Propella Business Incubator lies in the multi-helix partnerships created and strengthened. The NMB RIF nurtured the establishment of relationships between academia, government, business and the innovation community, e.g. inventors and entrepreneurs, generally. This is a slow, steady and continuous process. The key to building networks and partnerships is identifying the individual mandates and objectives of prospective partners and articulating these objectives in specific programmes and projects.

Propella Business Incubator required partners to take the next step in the relationship: to “put their money where their mouth is”.

It is recommended that in creating partnerships for the creation of a new concept, all parties must share risks and rewards, even government organisations. This is required to catalyse new and relevant structures to support the growth of entrepreneurs and ultimately create employment. This is a contradiction to traditional South African Public-Private Partnerships, as governed by National Treasury, but when compared to similar Public-Private Partnerships, seems to be more effective in the delivery of its mandate largely owing to the flexibility in configuration and limited administrative activities that often take the place of delivery-based activities.

### **c) Create lean, agile structures to support business development**

The NMB RIF and Propella Business Incubator both are configured on the principles of lean, agile, dynamic and responsive structures, as follows:

- **Lean:** It is recommended that in establishing any new innovation-based entities, programmes or projects that the initial implementation structure is as lean as possible. Operations should not be compromised, but neither should a ‘build it and they will come’ approach be taken to the supporting structure. Rather, the supporting structure should grow and develop as the entity / programme / project develops and requires additional dedicated resources. This reduces the burden of overheads in the establishment phase, often which is detrimental to development, both business development and business development support services. RIF and Propella Business Incubator both have very lean structures, one part-time coordinator and four full-time employees respectively.

Human resources do not need to be full-time employees of the structure, but should be a combination of dedicated capacity and programme-based capacity that is required ‘as and when’.

This approach also has the unintended benefit of redirecting funding that often is deemed necessary to set up a large supporting structure to programmatic funding that may yield greater impact.

- Agile: A lean structure allows for agility in approach, both from the perspective of increasing or decreasing the need for a specific service that is required by users, i.e. members in the case of the NMB RIF and entrepreneurs in the case of Propella Business Incubator.

Propella Business Incubator is not a traditional incubator in that there is no set incubation and / or acceleration programme. Rather, a tailored business development support programme is developed for individual incubatees, based on an assessment of the current and potential level of entrepreneurship and business development.

There is no expectation that a 'final' incubation model will be developed, but rather there is an expectation that Propella Business Incubator will continue to develop new models and modes of business development support, through an iterative process and in consultation with all stakeholders, including incubatees.

- Dynamic: Good, dynamic people make a structure work. Therefore, the recruitment of suitably experienced and passionate people to fulfil key roles within a lean structure is of paramount importance. Employment contracts should be performance-driven to encourage growth and development.
- Responsive: Programmatic and / or business development support must be responsive to the needs of the end user, generally the inventor or entrepreneur. An agile structure best suits this approach, as *ad hoc* professional and suitably qualified and experienced capacity is contracted on a needs basis. This maximises the use of all capacity, both permanent and temporary. It is only in appropriately supporting the entrepreneur that employment creation is possible and therefore the structure of a programme or project must be determined to best suit the needs of entrepreneurs.

#### **d) A few degrees of flexibility in government-funded innovation programmes**

The success of the Nelson Mandela Bay Regional Innovation Forum largely is attributable to the Department of Science and Technology (DST), in that DST permitted the NMB RIF a degree of dynamism to develop a responsive regional system of innovation. The original concept included a top-down structures-based approach where several interrelated structures were to be established within the province and thereafter innovation-based activities were to be developed and implemented. The actual process and outcome differed significantly from the original idea. The NMB RIF opted to develop a regional system of innovation using a bottom-up approach, where members of the RIF identify programmes and projects to support innovation-based activities in the region. The most



notable 'project' and prime example of projects identified by the NMB RIF is Propella Business Incubator.

DST must be commended for providing the NMB RIF the 'space' to be able to develop (and continue to develop) through a member-based iterative process to develop a credible working model over the course of five (5) years. The model continues to be re-imagined and redeveloped based on new thinking, trends and technologies.

In addition to the DST, the Nelson Mandela Metropolitan University (NMMU) committed initial seed funding to Propella Business Incubator. This initial investment resulted in the Industrial Development Corporation (IDC) approving seed funding for Propella Business Incubator, a concept that would not fit into the traditional dimensions of IDC development finance and / or agencies. It is significant that IDC committed co-funding to an unproven concept, but based its approval on the track record of the founding and implementation partnership, i.e. university and private sector.

The NMMU and IDC seed funding has leveraged private sector funding in excess of double the seed funding committed. Propella Business Incubator, therefore, is funded by a true triple-helix partnership, where all parties share in the risks and rewards of the arrangement.

It is recommended that any government-funded innovation-based programmes and / or development finance be sufficiently flexible to allow for the emergence of multi-partner developments that are designed to lithely respond to innovation-based needs of sub-regional economies. This requires the relaxation and / or amendment of key performance areas or programmes, as included in any given Service Level Agreement. This is particularly pertinent in developing and growing a regional system of innovation. The only way to confidently claim that a programme has worked, or not worked, is to implement and evaluate and based on the evaluation, determine if the programme works within a particular geographic and / or economic context. 'Failure', i.e. the objectives of a particular programme are not realised as intended, should be encouraged, but not repeated.

#### **e) Incremental innovation-related infrastructure development**

Nelson Mandela Metropolitan University, an active participant in the COFISA programme, carefully considered the development of a Science Park. A detailed feasibility study was conducted to determine the techno-economic feasibility of the establishment of a Science and Technology Park in the Nelson Mandela Bay region. The outcome of the feasibility study indicated that a Science Park is feasible given the level of research and development coupled with industrial interest in the region.

NMMU noted that while there exists the opportunity to develop a Science and Technology Park in the region it may be premature to develop the envisaged Science and Technology Park in its entirety. The 'build it and they will come' approach too often has not realised the intended impact.

Instead, it was decided to initiate the establishment of an incubator and accelerator as the first phase of the development of a Science and Technology Park. This is important, as the incubator will build a critical mass of tenants as a pipeline of potential tenants for the second phase of the development, i.e. the development and establishment of a Science and Technology Park.

The immediate development of the Science and Technology Park in its entirety may have resulted in an expensive real estate development, where the core business focus is to secure tenants, rather than the objective of a Science and Technology Park, which is to cluster, support and grow and develop entrepreneurs, inventors and innovators that seek to commercialise innovative products and processes. The latter is only possible if a critical mass of innovation-based businesses is at a stage where they are at a stage in the business development lifecycle where co-location at a Science and Technology Park would be beneficial to the individual company and the Science and Technology Park community collectively.

**f) Replicate successful elements of regional systems of innovation within economic and geographic contexts**

It is recommended that principles and practices noted in this practitioner paper be applied within economic and geographic contexts of sub-regions. Therefore, it is key to determine the focus of regional systems of innovation and related support structures and programmes. This should be based on, *inter alia*, the following:

- Socio-economic situation of the sub-region;
- Social and economic challenges within the sub-region;
- Research and development capabilities, capacity and activities within the sub-region;
- Investment in infrastructure to support research and development; and
- Stakeholders' and their respective mandates and objectives.

**g) Review national policy in relation to regional systems of innovation, to be articulated in the current review of the national Science and Technology White Paper**

The Department of Science and Technology currently is undertaking a review of the Science and Technology White Paper to strengthen the national system of innovation and science and technology innovation to respond to socio-economic challenges, within the context of the National Development Plan.

The recommendations outlined in this practitioner paper, in terms of policy and practice principles that may be applied to further strengthen regional systems of innovation, should be considered by and inform the Department of Science and Technology in its current review of the Science and Technology White Paper.

It is further recommended that the Department of Science and technology increase its support to build and grow regional systems of innovation, based on best practice presented in this and other related papers, e.g. measuring the impact of regional systems of innovation. This requires a re-imagination of the purpose and impact of regional systems of innovation. Many recommendations contained in this practitioner paper may be applied to other sub-regions, within the specific geographic and economic contexts of respective sub-regions, for the purpose of stimulating, promoting and support innovation in sub-regions and in doing so, cultivating an environment to grow and develop economies and related employment opportunities.