



TIPS FORUM 2019

INNOVATION AND INDUSTRIALISATION

THE IMPORTANCE OF ALIGNING SKILLS DEVELOPMENT TO SUPPORT INNOVATION: A CASE OF YOUTH SKILLS DEVELOPMENT AND INNOVATION IN GREEN TECH MANUFACTURING IN THE ATLANTIS SPECIAL ECONOMIC ZONE (ASEZ)

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Abstract

It is crucial to promote industrialisation within South Africa's context as a developing country as it enables employment growth and, together with its expected socio-economic benefits, leads to greater equality. However, having a suitably skilled workforce that can take up these job opportunities is critical to the success and sustainability of such job creation efforts.

The green economy in South Africa provides an opportunity for a Just Transition, but will require commitment and support from various levels, not least from national policy. Supporting the growth of the green economy, specifically green technology (greentech) manufacturing, will require significant innovation support, given that innovation is a key feature of industrialisation. Targeting skills development specific to the green economy and innovation is thus integral to creating sustainable employment whilst assisting the country to mitigate, and adapt to, climate change.

The Atlantis Special Economic Zone (ASEZ) for green technology manufacturing has been specifically positioned to provide increased job opportunities in the green economy, but innovation and the availability of a suitably skilled workforce are a prerequisite to make the zone a success. This paper presents the case of the ASEZ – a collaborative government initiative to stimulate economic development and create jobs in Atlantis, a somewhat isolated Cape Town suburb which has struggled with a myriad of social ills driven by poverty and unemployment. It particularly focuses on skills development programmes that foster the necessary skills in youth for innovation to flourish, specifically within a manufacturing environment.

Pitching innovation support at a tertiary level has proven to be too late – the basic innovation “building blocks” need to be in place well before this. The ASEZ skills programme thus aims to reach the local youth in order to promote interest in, and the development of, required skills, and to develop a pipeline of young people well placed to access the increased job opportunities on their doorstep. This is done through three targeted secondary school initiatives: a tutoring programme, career awareness interventions and an annual innovation challenge focused on renewable energy.

One of the key skills interventions, the IkamvaYouth programme, provides tutors and mentors to secondary school learners in their last three years of school. The ultimate goal is to enable these learners to obtain the results required to enter into post-school training programmes, particularly those aligned with the green economy job opportunities available in the ASEZ. This is only achievable if learners have enough information about career options at their disposal, but also the means to access such careers through suitable capabilities and skills. Thus, the IkamvaYouth programme is supplemented with career awareness interventions and the annual Atlantis Renewable Energy Challenge, in order to encourage and nurture innovation from an early age.

Recent results of the various programmes in Atlantis have indicated initial success. The 2017 Matric pass rate was 94% (compared to the regional average of 85%), with 74% of learners meeting university entrance requirements (compared to the regional average of 29%). Of the Atlantis learners, 56% opted for careers in technical training, aligned to work opportunities within the ASEZ, with 7% choosing electrical engineering. The paper thus makes the case for the early implementation of targeted skills development programmes that address the foundation for innovation and prepare youth with the required skills and capabilities to access the South African industrialisation pathway. Such access is of critical importance so that its community can leverage off economic interventions, such as the ASEZ, to alleviate societal problems associated with (youth) unemployment and, in turn, support the community to transition from poverty.

About the author/s

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Abbreviations

SEZ	Special Economic Zone
ASEZ	Atlantis Special Economic Zone
NDP	National Development Plan
WIPO	World Intellectual Property Organization
INSEAD	Institut Européen d'Administration des Affaires
BRICS	Brazil, Russia, India, China and South Africa
ECD	Early Childhood Development
SARETEC	South African Renewable Energy Technology Centre
HSRC	Human Sciences Research Council
SETA	Sector Education and Training Authority

Introduction

The green economy in South Africa provides an opportunity for a **Just Transition**, but will require commitment and support from various levels, not least from national policy. Supporting the growth of the green economy, specifically green technology (greentech)¹ manufacturing, will require significant innovation support. Targeting skills development specific to the green economy and innovation is integral to creating sustainable employment, whilst, ultimately assisting the country to mitigate, and adapt to, climate change.

The Atlantis Special Economic Zone for green technology manufacturing (ASEZ) has been specifically positioned to stimulate economic development and create jobs in the green economy. However, innovation and the availability of a suitably skilled workforce are a prerequisite to make the zone a success.

This paper presents the case of the ASEZ – and focuses particularly on youth skills development programmes which aim to foster the necessary skills for innovation to flourish, specifically within a manufacturing environment. These skills are not solely a requirement for an SEZ, but are necessary to support and grow innovation and industrialisation in South Africa, and thus contribute to sustainable job creation.

Background

Innovation in South Africa

In recent years, South Africa has shown varying ranks in the Global Innovation Index published by World Intellectual Property Organization (WIPO), Cornell University and Institut Européen d'Administration des Affaires (INSEAD).² It is currently ranked at 58th within 126 participating countries in the world and was ranked the most innovative country in Africa in 2018. This ranking has dropped by four in comparison to 2016 (54th position), yet is a slight improvement from the 2015 low for South Africa (60th position). Innovation is very relevant for competitiveness and could thus contribute positively to growth and employment if nurtured and strategically leveraged.

The map below shows the global comparison in 2018. Developed countries do particularly well in the Innovation Index but, in comparison to our BRICS counterparts, South Africa lies just behind India (57th position) and far behind China (17th position).

¹ Green technologies that reduce or reverse the impact of people on the planet. Examples includes renewable energy technologies (e.g. wind turbines, solar panels, biofuels), energy efficiency measures (e.g. insulation), electric vehicles, materials recycling and green building materials.

² Global Innovation Index 2018

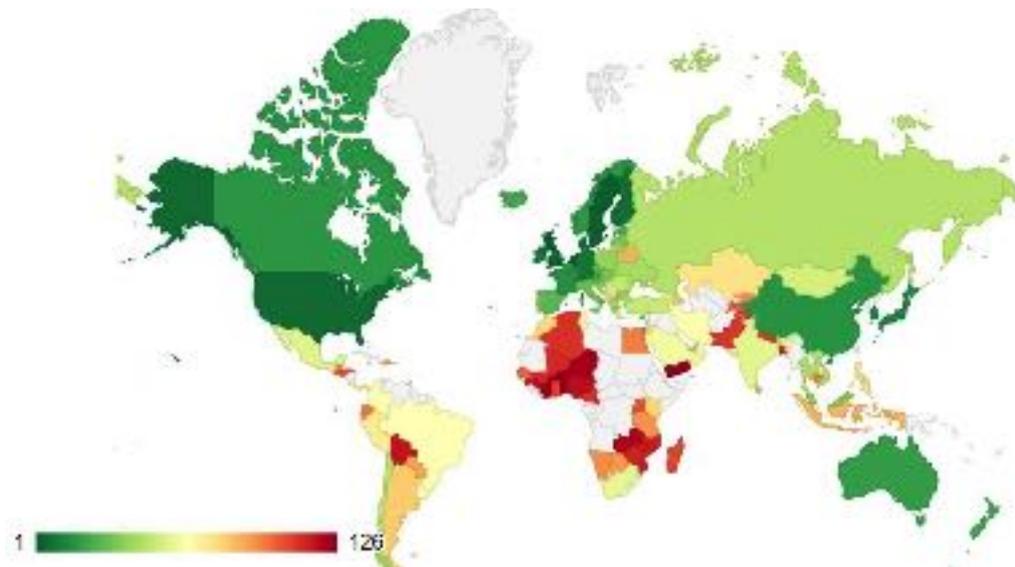


Figure 1: Global Innovation Ranking³

The Global Innovation Index uses 81 indicators across a range of themes and focuses on two sub-indices which track innovation input and innovation output.

- Innovation input considers factors such as institutions, human capital and research, infrastructure, market sophistication, and business sophistication.
- Innovation output, measures knowledge and technology outputs together with creative outputs.

Although the reasons for variations in South Africa’s rankings are difficult to pinpoint based on the wide range of indicators used, it clearly highlights the need to grow and improve innovation in South Africa to improve the economy and to create a pro-employment environment. This is critical in light of unemployment figures of 27.6% as at March 2019, with youth unemployment at 55.2% for 15-24 year olds.⁴ Figure 2 details the seven years of innovation index data together with the South African unemployment rate.⁵

³ Global Innovation Index

⁴ StatsSA QLFS data 2019

⁵ Taken from the Global Innovation Index and Stats SA South Africa labour market: Youth Q1: 2008–Q1: 2015 - 2018



Figure 2: South Africa's score in the Global Innovation Index and unemployment rate

Education in South Africa

Household survey evidence on skills development and unemployment between 1994 and 2014⁶ demonstrate that South Africa has an inadequate education system with persistent racial and socio-economic inequalities. Only half of schooling entrants complete secondary school and the country faces a low-growth middle-income trap, characterised by high unemployment, low growth rates and a poor skills profile.

Although there have been vast improvements since the South Africa's democracy, the speed of change is slow and the expansions of secondary and tertiary completion are hampered by weak learning foundations. For example, a 2016 study⁷ of the South African Early Childhood Development (ECD) environment showed that:

- 46.9% of children are not attending an educational (ECD) institution; and
- only 54.6% of caregivers provide stimulation to their children daily or often through reading or telling them stories.

Figure 3 summarises the impact of education on employment. Although unemployment is on the rise for all education levels, unemployment is highest for those not completing secondary education and tertiary education has provided the highest likelihood of employment. These numbers emphasise the importance of education in accessing job opportunities.

⁶ Based on a StatsSA presentation on "Employment, unemployment, skills and economic growth: 2014" available from StatsSA

⁷ Education Series Volume IV: Early Childhood Development in South Africa, 2016

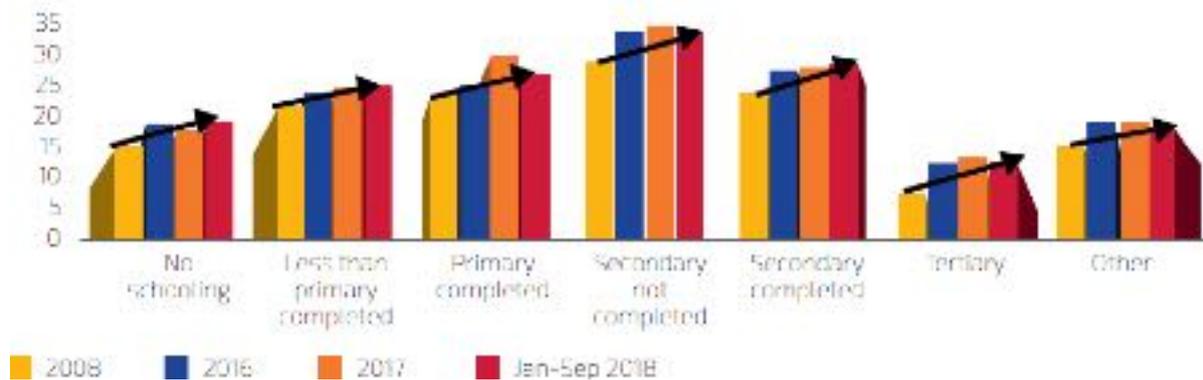


Figure 3: Unemployment (in %) by education level (Source: StatsSA)

The study results and statistics outlined above clearly demonstrate the need for improving education and training to provide a foundation for employability and innovation. This is emphasised by the National Development Plan (NDP) which states that “...Improving the quality of education outcomes throughout the education system [is] one of the highest priorities over the next 18 years, and beyond...”⁸

Atlantis

The suburb of Atlantis is situated on the West Coast of South Africa and is approximately 40 kilometers outside of Cape Town. It was established in the 1970s under the Apartheid government as an industrial centre for the coloured population forced out of Cape Town.⁹ Various incentives were introduced to attract manufacturing firms and even residents to the area. In its heyday, Atlantis is said to have been “booming”, with approximately 50 large manufacturing businesses creating employment for nearly 8,000 households.¹⁰

The subsequent “bust”, experienced from the mid-1980s due to the withdrawal of tax incentives, resulted in a sharp decline in manufacturing activities. Due its comparatively remote location, and without an incentive programme to remain in Atlantis, many businesses considered other options. This, coupled with strong competition from China, specifically in the clothing manufacturing industry, caused many companies to relocate or close. The community, left behind and less mobile than other communities located closer to Cape Town, has suffered since then due to increased unemployment and poverty. The social ills prevalent in the community - drug abuse, alcoholism and gangsterism - are all symptomatic of poverty and unemployment.

Economic infrastructure, such as a Special Economic Zone, can be strategically leveraged to deliver social upliftment. However, this means delving into the social complexities of the context. The systemic implications of approaching the problems faced by people in Atlantis in this way are complex and cannot be “solved” by a straightforward approach. Interventions, in this case an economic infrastructure initiative, interacts with this complex framework of diverse value systems and system

⁸ National Development Plan (2012), page 133

⁹ Cape Town the Segregated city, South African History Online

¹⁰ Atlantis, Western Cape; Wikipedia

dynamics and creates a ‘wicked’ problem¹¹. Such ‘wicked’ problems are not solved; they are managed on an ongoing basis. These problems require innovative solutions that consider all aspects of development. Thus any intervention, regardless of its intention, should carefully consider all actions (or non-actions) in order to prevent unintended consequences.

This is particularly important in the landscape of Atlantis. The people of Atlantis have been let down several times in the past by both government and businesses in terms of promises that were never realised. The community is also often skeptical of NGOs, as many have tried to offer solutions in recent years whilst unintentionally creating unmet expectations or even unintended consequences. Thus any proposed intervention needs to clearly consider community impact, as well as the sustainability of the programme.



Figure 4: Solar manufacturing in Atlantis

Atlantis Special Economic Zone for Green Technologies

Special Economic Zones (SEZs) are key tools used internationally and by the South African government to drive industrial and economic development.¹² SEZs build on the concept of clustering where industries from a particular sector are encouraged to locate in geographically designated areas to benefit from scale and optimised supply chains through co-location. SEZs in South Africa are governed by the SEZ Act (No.16 of 2014) and supported by a range of incentives aimed at attracting foreign and local investment and creating employment opportunities.

The City of Cape Town established a greentech manufacturing hub in Atlantis in 2011 in response to the South African Department of Energy’s Renewable Energy Independent Power Producer

¹¹ A problem that is difficult or impossible to solve because of incomplete, contradictory, and changing requirements that are often difficult to recognise (Rittel and Webber, 1973).

¹² Proposed Greentech Special Economic Zone at Atlantis, Strategic Plan; Deloitte 2015

Programme (REIPPPP), which prioritises localisation of manufacturing and job creation. Since its establishment, the hub has already attracted five greentech investors. One of these investors, a Spanish wind tower manufacturer, has already invested R300 million and is again in full-scale production, after a two-year lull caused by policy uncertainty in the energy sector. In combination with the other four investors they have jointly contributed over R600 million investment into Atlantis. The estimated job creation from these investments is 650.

In 2015 an application was submitted by the Western Cape Provincial Government for the entire Atlantis industrial area to be declared a greentech SEZ to further leverage the national support and incentivise more investment into the area. The decision on the application from the South African Department of Trade and Industry (dti) was approved in June 2018, but, in line with the approach being used for the development of SEZs nationally, only for portions of land within the Atlantis industrial area. In June and October 2018, respectively, the dti published the intention and final designation of the ASEZ in the Government Gazette, moving the ASEZ from concept to operation. President Ramaphosa officially launched the ASEZ on 6 December 2018.

The ASEZ is expected to provide a major boost to efforts to regenerate the area and will prioritise the Atlantis community in terms of employment and SMME opportunities. However, this requires the local availability of suitable skills and thus targeted skills development interventions are necessary to ensure that the local community can benefit from increased job opportunities, whilst investors can access quality products and services as part of their supply chain.

Case study: The Atlantis skills development programme focused on the youth

In response to the need for local availability of suitable skills to enable the Atlantis community (especially the youth) to gain access to increased job opportunities in the ASEZ, GreenCape¹³ initiated a skills development programme. Various components of the programme have over the years been funded by the dti, the Western Cape Government Department of Economic Development and Tourism and the City of Cape Town.

Key intended outcomes of the ASEZ skills development programme include the following:

- Better equipped learners eligible and capable to gain access to tertiary education.
- A greater proportion of youth and Atlantis citizens enabled with suitable capabilities to access job opportunities, both locally and beyond.
- Specialist skills required in the ASEZ, such as qualified artisans and coded welders, are available from within the local community.

Context

The current education profile for Atlantis provides evidence of the baseline from which skills development efforts can be developed. The figure below, taken from a census in 2011, highlights the extent of the challenge - 68% of Atlantis residents have not completed secondary schooling.¹⁴

¹³ GreenCape is a not-for-profit organisation that supports and promotes the green economy - low carbon, resource efficient and socially inclusive. It assists businesses and investors focusing on green technologies and services to remove barriers to their establishment and growth

¹⁴ StatsSA 2011 Census

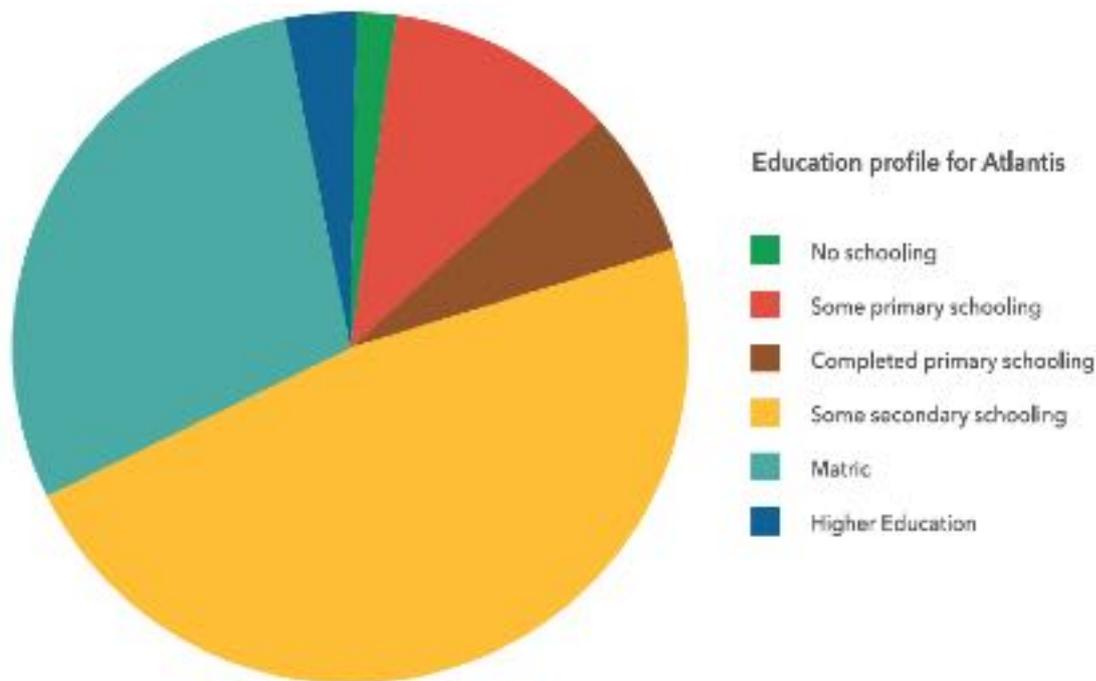


Figure 5: Education profile for Atlantis (Source: StatsSA)

Foundational work and motivation for a focus on youth skills development

As part of the initiation of the skills development work in Atlantis in 2015, a skills audit was undertaken to understand the skills need and skills development landscape in Atlantis. Based on the findings of the audit, skills development interventions were then proposed and successfully implemented since 2016. Based on this deliberate analysis of the skills landscape in Atlantis, as well as the current and future needs, interventions were identified that would yield the best impact for skills development, both now and in the future, and such interventions designed to leverage off the existing service offerings in the area.

Based on the results of the skills audit, it was concluded that the highest value would come from two types of intervention:

- leveraging and linking companies to existing skills programs and offerings, including grant funding support from SETAs; and
- youth skills development, specifically a secondary school tutoring program delivered through IkamvaYouth.

This paper focuses on the latter.

Secondary school tutoring programme delivered through ImkamvaYouth

IkamvaYouth is a non-profit organisation that aims to enable disadvantaged youth to pull themselves and each other out of poverty through education. It specifically equips Grade 8-12 learners from under-resourced schools and communities with the knowledge, skills, networks and resources to

access tertiary education and/or employment opportunities once they matriculate, and actively builds partnerships to allow more and more learners to access post-school opportunities¹⁵.

The ASEZ skills programme team partnered with ImkamvaYouth to deliver a multi-year tutoring programme as part of the broader skills development drive in Atlantis. The programme started in 2016 and specifically works to address socio-economic challenges through education and skills development at a high school level.

Building on IkamvaYouth’s history, geographic footprint and model

In 2003, two young researchers at the Human Sciences Research Council (HSRC), Joy Olivier and Makhosi Gogwana, were looking at the ways in which science, technology, innovation, research and development boost economic development. Interested in the links between education, skills, employment, and economic and racial transformation, they were shocked by the abysmal maths and science results of black matriculants. Moved to do something about it, they set off with their friends, to begin tutoring at Makhosi’s old school in Khayelitsha.¹⁶

What started as a small group of committed volunteers and learners in Makhaza has over the last fourteen years grown into what IkamvaYouth is today. Many learners, volunteers and social entrepreneurs in more communities across South Africa have since joined and there has been a substantial impact, as is evident from IkamvaYouth's results. IkamvaYouth has offices in Cape Town and Johannesburg, as well as the several townships across five provinces. These are shown in Table 1 below.

Table 1: IkamvaYouth branches in South Africa

Western Cape (WC)	Makhaza, Kuyasa , Masiphumelele, Nyanga, Gugulethu, and Atlantis
Kwa Zulu Natal (KZN)	Umlazi and Chesterville
Gauteng (GP)	Ebony Park, Ivory Park and Mamelodi
North West (NW)	Ikageng & Mahikeng
Eastern Cape (EC)	Joza

IkamvaYouth’s model is shown in the infographic overleaf. IkamvaYouth is guided by five values which appear around the edge of the circle in yellow. These inform the organisation’s operations which are in grey.

¹⁵ IkamvaYouth: Building youth resilience in Atlantis, South Africa: <https://www.greencape.co.za/content/resilience-case-study/>

¹⁶ IkamvaYouth Organisation



Figure 6: IkamvaYouth's model (Source: IkamvaYouth)

This model, which was designed collaboratively by a group of volunteers and learners during the first few years of IkamvaYouth's operations, continues to be improved upon and applied in different environments and contexts. This iterative and agile approach to programme design, implementation and scale ensures that IkamvaYouth is constantly integrating the lessons learned about how to reach more learners and improve the quality of its results. The following three components help build youth skills and resilience in particular:

Empowering individuals through education and training support

The focus on education is important as it is tied together with employment. Education and training is ultimately a long-term strategy to make the workforce more employable and raise the level of labour productivity. IkamvaYouth stretches beyond assisting learners to achieve a matric pass and focuses on increasing eligibility for tertiary education, which ultimately increases their opportunity for all kind of placement opportunities, including learnerships and jobs.

It also includes a career guidance aspect, to assist learners to make the connection between academic achievement and accessing opportunities for post-school study, financial aid, leadership and work – a particular interest in terms of developing a skills pipeline for the ASEZ. As part of this, IkamvaYouth, assisted by GreenCape and several other organisations, run holiday programmes to expose and broaden learners' awareness of career options. They also run a mentoring programme, for Grade 12 learners, to encourage and assist them to apply to post-school opportunities.

Building confidence and networks through peer-to-peer support

IkamvaYouth supports a peer-to-peer learning model. This builds individual and peer resilience through building motivation, self-confidence, independence and agency, all of which can contribute to coping strategies within their community environment.

Providing a broader network of community support for youth

Although IkamvaYouth has a great academic track record and is often simplified as an academic programme, it provides a platform for important relationships and interactions to take shape. This has ultimately developed broad partnerships that drive collaboration and improve youth resilience. Specifically, the development of an integrated community of stakeholders to support the students is considered vital to the programme's success, both in the short and longer term.

At an early stage, this community of stakeholders assist to shift perceptions of what is possible and understand what will be required for their youth to access tertiary education and/or employment, and how to support them to achieve success. Long-term, this network can play a critical role in equipping youth to find employment. It can include locating opportunities for employment through information sharing, and a support mechanism for coping, alleviating isolation and enforcing a resistance to accepting joblessness.

This programme is unique as it does not only target learners with high academic potential; it enrolls students on a first-come-first-serve basis; and students are retained when they maintain a minimum attendance record of 75% which demonstrates their commitment and diligence.

Each of IkamvaYouth's programmes has the following components:

- Supplementary tutoring and homework sessions to help learners improve their grades.
- Career guidance to broaden learners' awareness of post-school opportunities.
- Mentoring to ensure that learners change their mind-set and access opportunities.
- Computer literacy and access to equip learners with essential ICT skills and information¹⁷

IkamvaYouth's impact

The programmes results nationally and specifically for Atlantis are shown overleaf in Figure 7.

¹⁷ Further information on ImkamvaYouth and its specific link to building resilience in the Atlantis community can be found in the City of Cape Town's 100 Resilient Cities case study <https://www.greencape.co.za/content/resilience-case-study/>

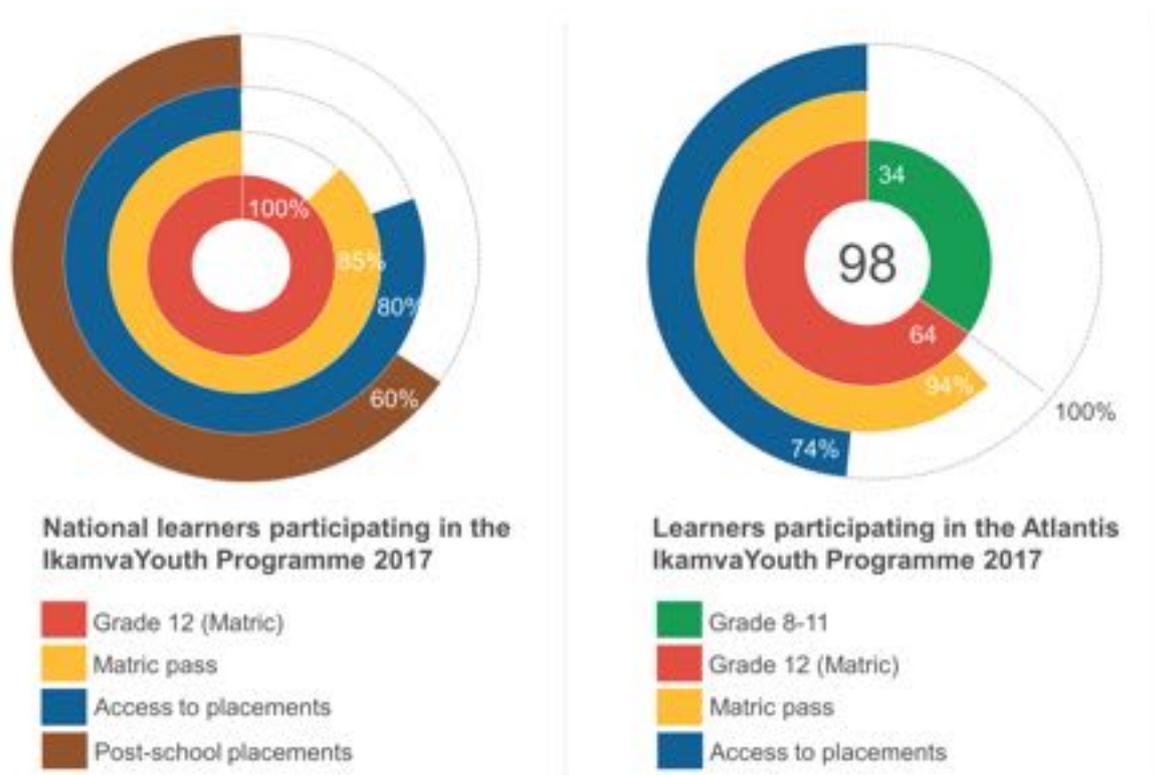


Figure 7: IkamvaYouth results and impact

Over the last 5 years, 85% of all Grade 12 students have passed their matric (high school graduation). Such results are seldom achieved in townships. More impressively, 74% of these learners achieved a pass that enabled them access to college or university (i.e. a diploma or bachelor pass), and 55% of all IkamvaYouth learners over the last 5 years have been placed in college or university. Research suggests that only 4-5% of learners from townships have a post school qualification. Overall, 89% of IkamvaYouth learners have accessed a post school opportunity - either in further education, a job or a learnership within 4 months of matriculating.



Figure 8: IkamvaYouth tutoring session in Atlantis, 2018

The IkamvaYouth tutoring programme has been successfully running in Atlantis since the third term of 2016. The programme received a staggering response from learners upon its start; with applications far exceeding the 80 learner enrolment target set for 2016 (180 applications were

received from grade 10 and 11 learners at Saxonsea High School alone). The programme has also received much support from teachers and parents, who have welcomed the intervention as an opportunity for youth to improve their academic results and access meaningful post-school opportunities.

Initial learner improvement ranged from 10 to 20% in comparison to the previous term's reports. The 2017 results for Atlantis, the first year IkamvaYouth students wrote their matric exams, are also impressive. Most of the Grade 12 students enrolled in the programme passed matric (94%), with the majority eligible for tertiary education opportunities (74%). Within this 2017 cohort, the vast majority of students (74%) accessed placements of some kind: 53% chose to enter into vocational training and/or improve their results in 2018 through upgrading and supplementary exams, 15% were placed in learnerships or employment, and 6% chose to pursue tertiary education.

The 2017 matric results were testament to everybody's hard work and the positive impact achieved through dedication. These results sharply contrasted with provincial and national results – the Western Cape provincial pass rate was 85% and nationally, only 29% of matrics achieved bachelor's passes.

A few words from the learners:

"If you look at our community, our peers are joining gangs and participating in a lot of bad activities. I could be there with them but I chose my education first and that is why I joined IkamvaYouth. We want IkamvaYouth to help us become something one day!" - Marlin Cupido, Grade 11 Proteus Secondary School Learner

"It is such a cool thing interacting and learning with learners from a different school. We get to share the different explanations we get in class and explaining to one another makes it easier to remember the work." - Amber Donson, Grade 11 Atlantis Secondary School Learner

"Our youth have to accept the responsibility of breaking the cycle of poverty in their families. This can only be done by utilising opportunities when they present themselves." - Mr V Murray, Robinvale High School Principal



Figure 9: IkamvaYouth tutoring session in Atlantis, 2016

Other youth skills development initiatives in Atlantis

Other youth skills development initiatives include career awareness and a broader understanding of the green economy, both prioritised in support of the skills development efforts in Atlantis. These initiatives have included capacity building interventions for teachers, with support from the Center for Renewable and Sustainable Energy Studies at Stellenbosch; as well as developing relevant material with the support from the provincial Energy Security Game changer.

This support included:

1. Workshops and toolkits for teachers

Workshops and toolkits were provided to teachers and these were relevant to both climate change and renewable energy and were aligned to the national curriculum. Energy audit toolkits were specifically made available to Physical Science classes for Grade 8 and 10 learners and a design thinking workshop was held with primary school learners to tackle innovative solutions for the recent water crisis in Cape Town.

2. Career awareness initiatives

These initiatives focused on assisting high school and primary school learners to develop a better understanding of career opportunities in the green economy. Over recent years this has been done through:

- conference visits for the learners;
- winter school programmes, linked to IkamvaYouth, which include workshops about food security, sustainability and climate change; and
- the annual Atlantis Renewable Energy Challenge, which is now in its fourth year.

The Atlantis Renewable Energy Challenge is a competition encouraging learners to submit their understanding of renewable energy and has a wind and solar focus to date. Learners' enthusiasm and creativity have been readily observable as they engage with the topic and submit innovative designs and prototypes to the competition.

A few words from a local teacher:

"Since our involvement with the first annual Atlantis Renewable Energy Challenge I realized there is a need for Science Club at the school. Since we then started this I noticed the learners show more enthusiasm for Science. I attribute our success in winning the last 2 challenges to this and look forward to where the Science Club will go next." - Mr A Michaels, Robinvale High School Teacher

Impact of these other youth skills development initiatives

Taking the 2017 matric cohort results into consideration, the career awareness activities have seemed to gain traction with 56% of the matriculants opting for careers in technical training, aligned to work opportunities within the Atlantis SEZ, with 7% specifically choosing electrical engineering.

Also, based on the success and popularity of the Atlantis Renewable Energy Challenge, one school has started a science club to further encourage learners to pursue and tackle innovative solutions through education and science.



Figure 10: Atlantis Renewable Energy Challenge 2016

Lessons learned from the youth skills development programme

There are several lessons other communities can learn from the skills development efforts in Atlantis, including IkamvaYouth's work.

1. Effective partnerships build resilience

IkamvaYouth has demonstrated that partnerships between support organisations, schools, parents and the wider community can provide a foundation to empower youth and assist them to empower one another through peer-to-peer support. This is particularly important in terms of building resilience, as current experiences can shape future attitudes toward work and the types of strategies developed to overcome challenges.

2. Community is taking responsibility for their future

Programmes such as IkamvaYouth are critical to ensure the local community are given the opportunity to develop the education and skills required to secure job opportunities within the ASEZ and beyond. However, the effectiveness of IkamvaYouth and other initiatives in Atlantis will only be felt if the whole community bands together to address the broader societal issues in the area.

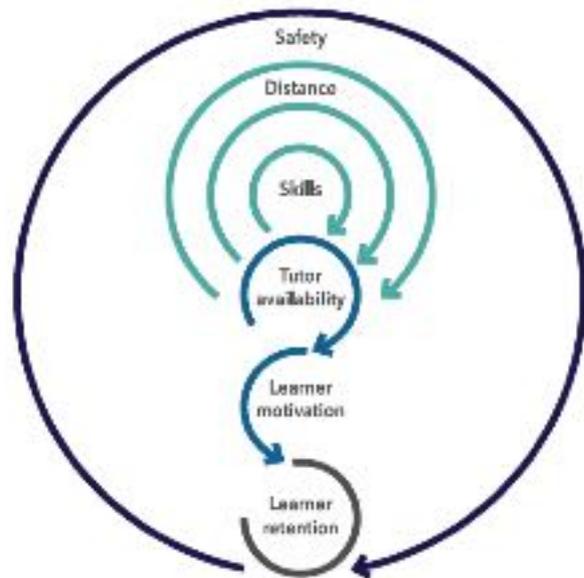
3. Accept that there will be unique challenges based on the local context

There are several challenges to consider when replicating similar programmes. In the Atlantis case, these specifically include challenges related to learner retention and infrastructure, which are strongly linked to other societal issues, such as community safety.

Learner retention

The diagram below shows the factors that are affecting learner retention in the programme.

As indicated, providing a safe environment for learning was the important factor for both learner and tutor retention. In addition, the availability of tutors with relevant skillsets was also important for learner motivation and retention specifically for the technical and dual language medium school (English and Afrikaans).



4. Adapt and evolve

The programme engaged with various stakeholders to reflect on the challenges faced in 2017 and discuss how it could be adjusted to better meet the community's needs. It was agreed that the traditional IkamvaYouth tutoring model was challenging to implement in the Atlantis context and that, in order to attract and retain learners, it is essential to adjust the programme. These suggestions included:

- Alternative tutoring strategies, specifically using an online platform to address distances from urban areas and tertiary institutions.
- A shift from regular weekly tutoring sessions to a longer session on Saturdays to attract larger tutor numbers (tutor numbers are particularly low during the week).
- Use the student sessions during the week to focus on computer literacy and career guidance.
- Lower the intake of learners for 2018/19 to increase the tutor-to-learner ratios and improve the quality of the tutoring sessions

Future plans to support innovation in Atlantis

Innovation requires key skill sets such as problem solving, logic, mathematics and science and technology subjects. Ideally these should be learned from a young age. Starting with foundational learning to ensure literacy and numeracy are mastered early on allows for an easy transition into learning coding and digital literacy skills; all relevant for innovation, the green economy and the Fourth Industrial Revolution. Due to the need for equipping Atlantis youth with relevant future-proof skills the following programmes will be rolled out in the short term (commencing in 2019/20).

1. Literacy, numeracy and reading support

All the recent strategy documents for the ASEZ recommend interventions to improve the quality of education at a foundational and primary school level. This often yields a much higher return on investment than support programmes introduced in secondary level. Literacy skills provide good indication of future academic success in all subjects. Thus foundational skills development programmes that encourage reading for meaning, logic and problem-solving will be implemented at pre- and primary-school level in Atlantis.

2. Coding at schools and digital literacy

It is essential for skills development programmes to remain current and train youth for the future. The growing international focus on automation and artificial intelligence as part of the Fourth Industrial Revolution should not be neglected within the Atlantis context, in part due to its relevance for greentech manufacturing. Readyng the local community for the opportunities inherent in this disruptive environment is imperative to prevent gaps of inequality widening. It is prudent to identify current skills required in automated production and project these onto future demands.

The Fourth Industrial Revolution has various opportunities but also poses a threat to jobs which are at the risk of being lost to automation. This trend makes it an absolute necessity for learners to be able to code and to become digitally literate. This type of training needs to be offered in Atlantis to ensure the local community is not left behind. This in turn will build resilience for the local community amidst the disruptive changes the future workplace may hold. In addition to resilience, innovation will encourage growth and development, ultimately closing the gap on inequality.

Conclusion

The growing relevance of the green economy in South Africa requires innovation to drive progress and enable local greentech manufacturing, such as that being enabled through the Atlantis SEZ. This in turn will create sustainable employment, ultimately contributing to a more equitable society.

This aligns to the NDP, which states: “SA has set itself the goals of eradicating poverty, reducing inequality, growing the economy by an average of 5.4%, and cutting the unemployment rate to 6% by 2030. Education, training and innovation are critical to the attainment of these goals”¹⁸. However, these efforts require many role-players and its proper coordination is critical¹⁹. Thus science councils, government departments, NGOs as well as the private sector have a crucial role to play in improving South Africa’s global competitiveness, in supporting research and innovation by universities.

This has been demonstrated in Atlantis, where the collaboration between various stakeholders to form the foundation for innovation has yielded success. This work forms part of the ASEZ skills development programme, driven by the knowledge that the success of the ASEZ is dependent on suitable skills available from the local community. This is not only necessary to ensure investors are met with access to readily available and adequately skilled local labour; but ultimately for the Atlantis community to benefit from the increased job opportunities and to transition from poverty.

The overarching skills development goal “to enable the Atlantis community to take up increased job opportunities” is achievable only through dedicated, tailored and integrated skills development solutions which address the situational context and continue to improve through an iterative process.

Similar to any economic intervention, skills development may take some time to show improvement and deliver results. For this reason it is crucial to lay a solid foundation and to ensure the basic innovation “building blocks” are in place early on. The importance of a focus on youth is recognised by both IkamvaYouth, its partners and its students, as demonstrated in the quote below:

“I believe that organizations that are involved with youth development are a crucial need in Atlantis. We must really focus on helping develop the youth into the leaders of tomorrow and it is essential for

¹⁸ National Development Plan, page 296-7

¹⁹ National Development Plan, page 295

them to develop skills as early as possible. I think that should be more organizations that help the youth.” - Leeroy Maans, IkamvaYouth Alumni

The recent years’ work in Atlantis have shown that the skills development interventions implemented have yielded positive results particularly in providing access to tertiary education, particularly technical fields, which will support increased innovation in South Africa. This suggests it is worth continuing on the current trajectory, specifically in terms of youth skills development to ensure access to future opportunities in Atlantis and beyond. However, there are opportunities to broaden the scope of the skills interventions offered to start much earlier (e.g. with ECD and primary school interventions) and to prepare the youth for future skills needs e.g. coding and digital literacy training.

Policy provides an opportunity for embedding skills development in support of innovation in South Africa and this can be done at a local level within the SEZ context. Making integrated skills development programmes a requirement for any SEZ will translate into an enabled environment for communities and investors. The overall increase in available skills will support not only the SEZs, but will drive positive employment and contribute to poverty reduction in South Africa.

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Bibliography

- National Planning Commission (2012), National Development Plan 2030: Our future make it work
New Growth Path Framework (2010), Green Economy Accord
New Growth Path Framework (2010), Basic Education and Partnerships with Schools
Education Series Volume IV: Early Childhood Development in South Africa (2016)
Dr Lehohla, P (2017). Reflections on South Africa’s Education Landscape – 1994 to present
Dr Taylor, S (2017). Comments on Education Series Volume III report
Global Innovation Index (Online) Available at <https://www.globalinnovationindex.org/analysis-indicator> (accessed on 23 May 2019)
GreenCape (2019), IkamvaYouth: Building youth resilience in Atlantis, South Africa

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