

# The entrepreneurship ventures from former participants in the Kuyasa Clean Development Mechanism renewable energy project.

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## ABSTRACT

*The Kuyasa project in Khayelitsha township of South Africa retrofitted 2 309 Reconstruction and Development Program houses with 110litre solar water heaters, insulated ceilings and 14watts compact fluorescent lights. The project idea generation was in 1999 and conclusion of the project was in 2010. The project employed 87 community members. These employees were initially trained in carpentry, steelwork, electrical wire fittings, plumbing and administration. The training was conceptualized as leading to employability and did not picture them as potential entrepreneurs. The study's main objective was to investigate if there had been any entrepreneurship ventures by former Kuyasa employees as a result of the training and participation in the CMD project. And it found out that at least 9 out of the formerly employed 87 community members are embarking in renewable-energy related entrepreneurship ventures. Other employees secured jobs in other renewable energy projects and organisations. The main research question was; what entrepreneurial ventures have been embarked upon by recipients of training and participation in the Kuyasa project since its completion? In the study the researchers employed a qualitative approach. A questionnaire with 27 qualitative and 4 demographic questions was used to solicit opinions and information from Kuyasa community former employees. The findings were that some entrepreneurs are now carpenters, plumbers, electricians and involved in steel work as a beneficiary of skills gained from the project. At the same time, these entrepreneurs are positively contributing to the three pillars of sustainability, namely economic growth, environmental conservation and social development. One of the recommendations from the findings was that training must encourage entrepreneurship in the South African renewable energy industry. The study uses as a metaphor, the enterprising activities of the male weaver bird, as a way to think about how to implement the recommendations. The bird has the ability to attract female birds to its intricately woven nest.*

**Keywords:** Entrepreneurship, SouthSouthNorth, 87 Kuyasa community former employee, lessons.

## 1. INTRODUCTION

Renewable energy projects have certainly brought sustainable development (SD) to low income earning urban communities. Some of the SD results brought about by these projects once they are complete will be discussed in this study. The Clean Development Mechanism project for the Kuyasa community in the urban township of Khayelitsha, South Africa is one such example. It is the aim of this study to find out what entrepreneurship ventures are the former 87 employees or participants of Kuyasa project embarking on. Their contributions to the three pillars of sustainability, that are economic growth, environmental conservation and social development, have been welcomed by communities. Encouraging entrepreneurship is 'an important measure' for the sustainable livelihood of members in a low income earning communities (Han et al, 2017). Given its benefits, entrepreneurship has risen on the agendas of policy makers across the globe as a formidable channel for economic and social progress (Cassim 2014:29). The three dimensions of SD (economic, social and environmental) are highly influential (Pablo et al, 2009). It forms the basis of the structure of the indicators of SD collected by key organizations all over the world, including the United Nations Conference on Trade and Development (UNCTAD), the Organisation of Economic Co-operation and Development and the European Commission (OECD) (Nieves et al 2010:786). UNCTAD (2009) has been exploring the development of entrepreneurship frameworks for a while. They disseminated a "suggested policy framework relevant to all countries". This framework comprised:

General entrepreneurship policy (including enabling environment);  
 Awareness and network building;  
 Access to Finance;  
 Entrepreneurship education and skills;  
 R&D technology transfer; and  
 Regulatory environment.

However, upon examination of the frameworks one may conclude that the measures are actually a set of policy instruments to achieve specific objectives in entrepreneurship development (Cassim 2014:33). It is against this background that the study aims at finding out whether the Kuyasa project motivated its former employees into entrepreneurs. And if they are entrepreneurs, what entrepreneurial ventures are they embarking in? And what is their impact on promoting sustainability?

These renewable energy projects for example Kuyasa project have managed to synchronize community member training with each pillar of sustainability development. An example would be for instance, one of the objectives of Kuyasa project was to empower community members with life skills and experience so that they continue to contribute towards South Africa economic growth, social development and environmental conservation even after project completion.

### THE VARIOUS EMPLOYEE ACTIVITIES IN THE CDM RENEWABLE ENERGY PROJECT

The Kuyasa project was registered in 2005 as the first Gold Standard United Nations Clean Development Mechanism project in South Africa (Streeter, 2013). It is owned by the City of Cape Town, implemented by SouthSouthNorthan international non-governmental organization, and involved retrofitting 2, 309 RDP homes in the low-income community of Kuyasa, in the urban township of Khayelitsha (Streeter, 2013). This involved the installation of 25mm ISO board insulated ceilings, 14 W compact fluorescent lights and 110 litre solar water heaters (Goldman, 2010). Its aim was to address the inefficient design of the RDP houses in order to improve the quality of life of residents, especially health, reducing monthly expenditure on energy sources, and creating jobs while developing skills (Walsh et al, 2011).

The renewable energy project was completed in 2010. It had a well-designed daily work plan. Table 1 below shows the daily work activities for the 87 community members employed in the project.

A typical installation by the local Kuyasa working team was as follows:

Day	Activity (some activities can occur in parallel)	Team
	Solar Water Heater steel frame assembly team	8 people
One	Electrical team completes wiring and electrics	5 teams of 2 people each
Two	Carpentry team do steel frame for ceiling	5 teams of 2 people each
Three	Geysers team install steel frame on roof to support geyser	2 teams of 2 people each
Four	Ceiling team do ceiling boards	5 teams of 2 people each
Five	Female members of team do cornices of ceiling	4 teams of 2 people each
Six	Plumbing team run pipes and install hot tap and geyser. Tree planting team	4 teams of 3 people each 10 people

**Table 1; illustrates Kuyasa Clean Development Mechanism training outline.**

Source: Kuyasa Project: Renewable energy efficient technology for the poor, 2010.

However, a given project should not only be sustainable according to the aforementioned three dimensions. For the purpose of the study, systems thinking approach would be applied. It is an approach to sustainability that considers the various agents interacting in the world as systems. The approach acknowledges the complexity of these interactions and recognises that solutions to the problems confronting the world cannot be reduced to 'one dimensional mapping' (Clayton & Radcliffe 1996:12). Nieves et al (2010) highlights that this calls for a wide social participation process in the implementation of SD activities at the local level whereby all interested parties are involved. The acceptance or rejection of the project by the local population can make the implementation of a renewable energy project and its contribution to local sustainability either a success or a failure. According to Energy Sector

Management Assistance Program (2012) the project partners actively engaged the Kuyasa residents for implementation of the retrofits and, as a result, the community benefitted immensely through technical training and capacity building for residents, job creation and an enhanced sense of ownership and responsibility as bought out by picture 1 below. The issue of entrepreneurship ventures by the 87 former Kuyasa employees has not been explored by previous and current authors.



Picture 1: Kuyasa low-income housing and Installation of energy efficient measures  
 Source: Kuyasa CDM Project Website (<http://www.kuyasacdm.co.za/index.php>).

**The objectives of the study**

The main objective of this study is to find out what entrepreneurial ventures have been embarked upon since the Kuyasa project completion in 2010 to date. A secondary aim is to find out how those who are enterprising contributing towards the three pillars of sustainability (economic growth, environmental conservation and social development). To mirror the objectives of the study two research questions motivated the research design and methodology with the aim of solving the research problem. The research questions of the study are stated thus:

What entrepreneurial ventures have been embarked upon since the Kuyasa project completion in 2010 to date?; and How are those who are enterprising contributing towards the three pillars of sustainability?

**Assumption of the study**

The underlying assumption that enthused the study to bring into the open the investigative research questions was that the Gold standard project combined with its skills training initiatives would result in entrepreneurship venture by the former project employees.



**Figure 1:** Assumption of the study that lead to study investigative research.

Literature brings out that roughly one-third of all CDM projects involve technology transfer, and produce former project employees whose skill and experience fits well in the job market. Technology transfer varies widely across project types and is more common for larger projects and projects with foreign participants. Equipment transfer is more common for larger projects, while smaller projects involve transfers of both equipment and knowledge or of knowledge alone. Technology transfer does not appear to be closely related to country size or per-capita GDP, but a host country can influence the extent of technology transfer involved in its CDM projects (Erik et al, 2011).

<sup>1</sup>Heil(2017:8) System theory was developed by a Geman Scientist called Ludwig Von Bertalanffy in the 1930s. System can be open or Closed , but only open systems can bereally studied. All system have components in them that have interdependent relationships in them.

However the above hypothesis goes further by highlighting that a gold standard project plus skill and knowledge must result in entrepreneurship. It is by this study though a qualitative research methodology approach, findings would avail whether to accept or reject the hypothesis.

The Kuyasa project is an interesting case study into how technology transition and transfer, spurred on by the international climate change regime and aligned with national government priorities for example the 2003 South Africa Renewable Energy White Paper, might interact with local development through the mechanism of skills development. The study assumes that skill development must result in entrepreneurship venture.<sup>87</sup> community members were employed permanently by the Kuyasa project and trained into carpentry, plumbing, electricity, steelwork, plant plantations and administrative work for the period 2008 to 2010.

The remainder of this article is organised as follows. Section 2 provides the theoretical background for our analysis. A review of the relevant literature would be in section 3. The methodology and data used is introduced in section 4. Section 5 presents and discusses the results. Section 6 concludes.

### THEORIES AND CONCEPTUAL FRAMEWORK

The study uses the SD (Nieves et al, 2010) and Systems Thinking Approach (Gallopín, 2003; Clayton & Radcliffe 1996) conceptual framework as they bring out that skill development and sustainable interaction with various agents must transform into entrepreneurial venture. What is their contribution of those former project employees towards SD activities, and what systematic and sustainable interaction network have they created for the long time survival of their businesses.

The study came up with a conceptual framework (figure 1) whose objective is to bring out a link between skills gained through a renewable energy project transforming to an entrepreneurship venture. The theoretical framework brings out that the entrepreneur must contribute positively towards sustainable development of their communities. Sustainable development is achieved through open systematic interaction between agents involved in that particular industry. The participating agents involved are namely; former Kuyasa project employee, SouthSouthNorth, Department of Energy, Eskom, City of Cape Town municipality, institutes of higher learning and Department of Small Business Development. There are challenges that might hinder the converted entrepreneur which a solution must be implemented.

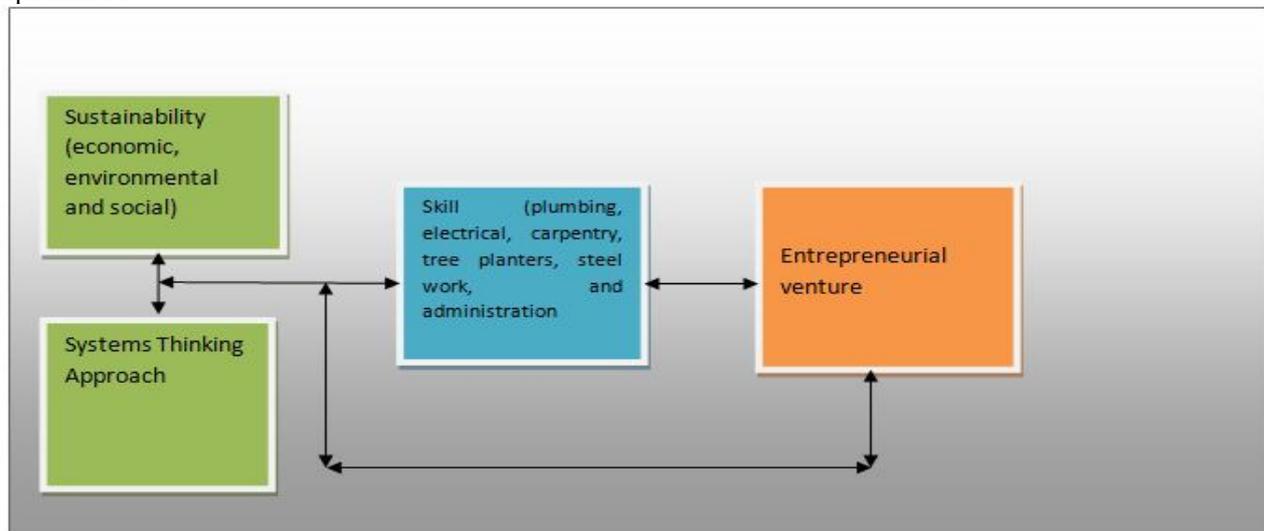


Figure 1: Conceptual framework of the study where every agent involved in the study is interlinked.

The study conceptual framework compared to the hypothesis brings out that skill acquired from the renewable energy project motivated the 87 former employees to become entrepreneurs. A qualitative research method approach would be used to find out and conclude by whether or not to accept or reject the hypothesis. To encourage implementation of recommendations of the study the metaphor that is the enterprising male weaver bird was used.

### Literature review

Our literature review showed that there has been no comparable study of the entrepreneurial ventures post the Kuyasa project. Previous studies had indicated in general community member training should transform into work



opportunities. An example would be for instance Goldman (2010) Kuyasa Project report and James (2014) who reviewed a link between skills development and well-being through job opportunities. The ESMAP report of 2012 highlighted that by engaging local residents from idea generation to conclusion also played a critical role in the project's success. The residents were mobilized to support the project at an early stage, invited to actively participate in executing the project, and tasked to operate and maintain the technologies in their homes. By ensuring that the local residents were trained to install and maintain the energy technologies in Kuyasa, the City was able to leverage this project to impart sophisticated technical skills to the community members and expand project benefits to include job creation and income generation.

Entrepreneurship has been seen as a self-employment opportunity, and as a key factor that positively influences the economy, generating jobs and acting as a catalyst for innovation. According to Rio-Carmenado et al (2016:2), Schumpeter in 1934 was the first in identifying innovation as a key factor for economic development. Shane and Venkataraman conceptualize entrepreneurship as a process of identifying, evaluating and exploiting opportunities. It is this opportunity that is the starting point in the entrepreneurial process. Rio-Carmenado et al (2016:2) acknowledges Schumpeter (1934) who highlighted that innovative entrepreneurs increase their ability to identify those opportunities other have not seen. An example would be for instance the former Kuyasa employees now entrepreneurs rather than seeking to being employed soon after the Kuyasa project completion. This comes at a back-drop were South Africa's current economic and socio-economic conditions demand serious economic reform. Although South Africa is one of the strongest economies in Africa, it is distressing to note that unemployment and poverty are still major issues for the majority of citizens. According to Statistics SA (2011), approximately 24% of the working age population is unemployed.

However, the Organisation of Economic Co-operation and Development (OECD) have principally noted two serious constraints to effective entrepreneurship policy. First, the regulatory environment, especially in terms of tax and access to finance, often negate strategies that aim to encourage people to become entrepreneurs. Secondly, measuring the effectiveness of these policies and modifying them accordingly is often an unworkable task given the lack of useful data (OECD, 2011a). If governments are to increase their commitment and investment in strategies to promote entrepreneurship, accurate measures are needed to assess their effectiveness, in order that they may be modified accordingly.

The study uses the metaphor, the male weaver bird *Textorcucullatus* (Millet), the Common Village Weaverbird of Africa (also variously known as *Ploceuscucullatus* (Millet), the Hooded Weaver, or the Black-headed Weaver), which builds a highly organized and complex nest (Nicholas et al, 1962:568). Entrepreneurial lessons can be learnt on how the male weaver bird builds attractive nests compared to other male birds of a different species. Literature has revealed that the male weaver bird build beautiful and unique nests that other male bird species cannot do no matter what condition. Nicholas et al (1962) in their experimental study of the weaver bird, they were astonished to the conditions under which abnormal nests were produced. Such nests were most common at the start and at the ending of the breeding season and in individuals presumed to have low motivation to build. As they are able to attract females to their nests so should entrepreneurs attract strategic alliances and sustainably develop their communities.

Nicholas et al (1962:569) enlighten by highlighting that no person has ever before successfully constructed a bird's nest of any real degree of complexity compared to the male weaver bird's nest. The male weaver bird in its description by (Nicholas et al, 1970), this colonial and polygynous species the black and yellow males are strongly territorial and build the outer shell of the nest to which they attract the females by means of stereotyped nest-invitation displays (Nicholas et al, 1970).

The study intends to bring out the impact of skills gained to transforming the former Kuyasa employees into entrepreneurs. At least find out how many former employees are now entrepreneurs. What entrepreneurship activities are they embarking on, and are the activities sustainable enough to develop their communities in the short and long term period? The male weaver bird motivates the study by implementing lessons for example, its ability to build complex at the same-time unique nests which are readily attractive to female birds.

#### **METHODOLOGY**

A questionnaire with 27 (twenty seven) qualitative and 4 (four) demographic questions was used. The questionnaire implemented the Sustainable development three pillar approach with obviously a systems thinking approach. The sample comprised of 6 (six) former Kuyasa employees out of the 87 former project employees. The study implemented a random sampling technique. A pilot study was conducted were the former employees would pin point on the

questionnaire shortcomings. This aided the interviewer to refine the questionnaire to a standard which the entrepreneurs would clearly understand. Most words were complex but through the ‘run dry’ the questionnaire was refined.

The interviewer put stress on consideration of research ethics. The interviewer with the assistance of the former Kuyasa project site manager went to the entrepreneurs’ business premises. The study employed a face-to-face interview approach. The entrepreneurs were first asked to complete a consent form, which outlined the purpose of the questionnaire and gave an undertaking that the information they provided would be treated as confidential and only published in an aggregated form. Once that had been signed, the researcher administered the questionnaire. It took the researcher two days to administer the questionnaires. The entrepreneurs’ business sites were geographically located far from each other. Although appointments were made, the nature of their business demanded their attention even in our presence. However, all questionnaires were successfully completed and this translates to an effective response rate of 100%.

The researchers manually summarized and presented the data obtained from the 6 entrepreneurs. The data was grouped under three titles that are economic, social and environmental. The interviewer could have used Atlas-ti to analyze the qualitative data. He opted to do it manually since the sample size was small enough. The results of the study are provided in the next section.

**RESULTS AND DISCUSSION**

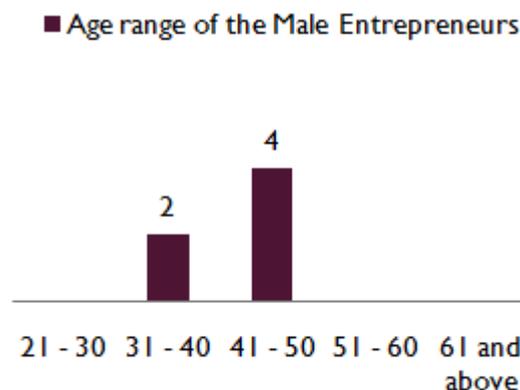
**4.1 Economic growth**

Empirical evidence suggests that entrepreneurship plays specific, but important roles in economic development. ACS (2006) notes that entrepreneurs, in developed and developing countries, help keep the levels of unemployment and poverty low; simply because they create new businesses, and new businesses in-turn create jobs. High levels of entrepreneurship will thus translate into higher levels of economic development and growth in the macro economy.

This section firstly informs the study that the 6 respondents personally interviewed brought out that the 87 former kuyasa employees were randomly selected to work in the project. They were from the Kuyasa and nearby surrounding communities. One of the respondents highlighted that he volunteered to work for the Kuyasa project. There was a steering committee which was comprised of community leaders, a scholar, teacher, ward councilor, nurse, pre-school teacher and Zuko Ndamane. It was the steering committees’ mandate to recruit, select, and that those selected are motivated financially and non-financially. The respondents acknowledged that the Kuyasa project produced more male entrepreneurs compared to their female counter parts as illustrated by table 3 below.

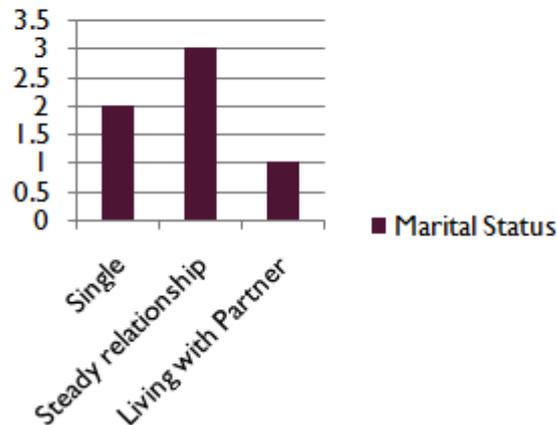
Gender	Number of respondents	Percentage % of respondents
Male	6	100
Female	0	0

The 6 male entrepreneurs interviewed had their age ranges distributed as illustrated by the bar graph 2 below.



Further deep into the research the study found out that the 6 male entrepreneurs had varied marital status.

## Marital Status



Bar graph 2: Marital Status of the respondents

Further discussion with the male entrepreneurs brought out that a total of at least 9 out of the 87 former employees are engaged in various entrepreneurship ventures. Naudè (2010) affirms the position that entrepreneurs are the main vehicle for economic development, adding that as the number of entrepreneurs in an economy grows, so does the economy. Some of the former employees secured jobs in organizations for example at the City of Cape Town municipality. It was through this study that upon project completion SouthSouthNorth gave the employees the tools they were using. Some of the former employees are involved in steel work, plumbing, carpentry, electric wiring, geyser repairing and putting and repairing ceilings. One of the respondents in expressing the project benefits is now earning a living from Township tourism and education tourism. Tourists from all over the world are invited and informed about the Kuyasa Township. The respondent highlighted touring Kuyasa with students from as far as Britain and America, and locally from University of Cape Town, South Africa.

At least all respondents acknowledged having been involved from Project development up to conclusion in 2010. One of the respondents highlighted being introduced to the Project by Professor Thomas Cousins from Stellenbosch University, South Africa right in the project development stage. It is through this project that the respondents got to learn new skills. They all appreciated that the project taught them new skills they did not have before. 5 of the respondents got practical training in electric wiring, carpentry, steel work and geyser installation from North-link College in Bellville, Cape Town. The site manager was trained in Project Management from University of Cape Town. He also acknowledged learning computer operating skills which he did not have before. To add on, the study also found out that the 3 administrators out of the 87 former Kuyasa employees received training from, Damelin College in Mowbray, Cape Town.

The 6 respondents interviewed brought out that at least 9 out of the 87 former employees of the Kuyasa project are now entrepreneurs. SSN had hoped that giving the former employees the tools they had used during the project would assist them in setting up their own businesses. However, only 9 of the 87 former employees took advantage of this opportunity. It is through this study that the former Kuyasa site manager now owns a registered business named Kuyasa Energy Services and Projects. Zuko's business involves the repairing and maintenance of the solar water heaters and electric wiring. The business has an empire now expanded to Education Tourism. Education-Tourism with joint relationships with Coffee Beans Company in the Central Business District of Cape Town, South Africa. Thabo and Dunza now own a carpentry project. Sandile is now into plumbing. The other respondents are now involved in the transport business. The respondents further highlighted that other former employees secured jobs in the Cape Town Municipality and other better organizations as a result of the skills they acquired from the Kuyasa project.

All the respondents acknowledged that there was no government funding to aid them in starting their businesses. At least all respondents expressed neutrality that their businesses are doing well. Two of the respondents expressed that they were awarded a contract to do maintenance work by SouthSouthNorth. The maintenance exercise has since stopped three months ago in May 2017, and this study was conducted in August 2017.

The study found out that the 6 respondents were satisfied in being business owners as compared to being employed. They all expressed autonomy. There are however business challenges but the fact of being a business owner is satisfactory according to the 6 former

Kuyasa employees. Kuyasa energy company owner said that his business is registered, honors tax payment and has 7 employees. Thabo and Dunza are into partnership. The other entrepreneurs are sole traders. It is through this study that these entrepreneurs are strategically networked. They operate implementing the systems thinking approach for example The Kuyasa energy company hires transport for the other entrepreneurs and for plumbing services from the other entrepreneurs. These businesses and their strategic alliances need to be formalized.

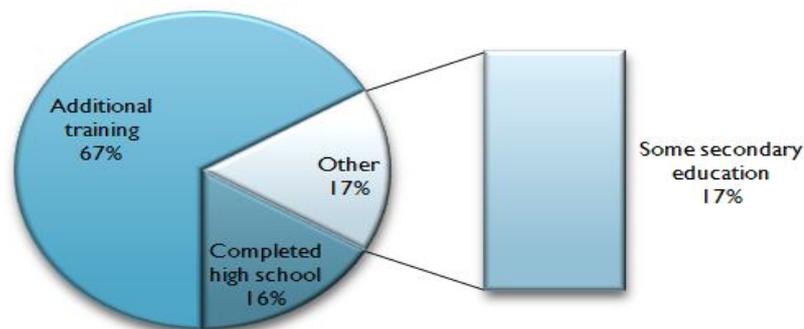
At least 3 of the participants expressed also the need for a constant salary. This follows their response to the question on whether they preferred being employed for example with the City of Cape Town Municipality. However, 3 respondents expressed deep rooting themselves in business ownership. The study found out that 4 of the respondents expressed that their finances are better off compared to receiving a salary under employment. 2 of the respondents were neutral in their answers. The entrepreneurs brought out that their businesses are positively contributing towards South Africa economic growth. They cited that through their businesses they are able to employ committee members, taxes payment, business innovation, and diverting to tourism and hospitality activities.

#### SOCIAL IMPACT

The questionnaire had 4 questions related to social impact. The questions probed the entrepreneurs on how they are contributing towards social development in their communities. Social development makes up one of the three pillars to sustainability. The first question asked the entrepreneurs whether their business had a training or youth mentorship policy. Findings of the study reviewed that at-least 3 respondents cemented implementing a training or youth mentorship policy. The other 3 respondents brought out that they do not have a youth mentorship policy.

Despite the entrepreneurs level of education as highlighted by pie chart 1 below. All respondents agreed to provision of internships or voluntary youth skills development in their businesses for example the Kuyasa energy services and projects.

### Level of education



#### Pie chart 1; level of education

Kuyasa energy services and projects provide internships in solar water geyser repairs. The respondents acknowledged a transfer of skills to the youth as a way of appreciating practical skills learnt from the project. At least all respondents highlighted that the Kuyasa project taught them non-practical skills for example good communication skills, teamwork and zeal to continuously improve on skills learnt. The respondents who were involved in administrative issues of the Kuyasa project acknowledged gaining computer skills, project management, and how to look and select the better quotation of either a product or service they need.

#### ENVIRONMENTAL SUSTAINABILITY

The second research question of the study involved the entrepreneurs' contribution towards sustainability in the communities they operate their business ventures. Environmental sustainability makes up one of the pillars of sustainability. It is through environmental sustainability that measures to reduce greenhouse gas are put in place or implemented. The measures must be sponsored and supported by entrepreneurs. The study through its questionnaire required the sample to respond to the question; whether their businesses are contributing towards environmental



safeguarding in the communities they operate? At least all respondents acknowledged planting a tree in the communities they live and operate their businesses.

The study probed the respondents whether they would come up with new renewable energy technologies as a means of continuously safeguard the environment. Respondents highlighted planning more advanced solar panels which would solve lighting. They reiterated also by bringing out that they intend to introduce to clean cooking stoves, and jelly fuelled clean cooking stoves. It is through this study that the respondents highlighted the intention to bring about innovate rain harvesting mechanisms and encourage greening. Rain harvesting mechanisms would also benefit the Cape Town Municipality in saving water since the city experiences some crisis.

The sample highlighted introducing to their community solar energized traffic lights, and street lights. At least 2 of the respondents brought out the need for a micro financing business.

The micro finance business would be for offering loans with favorable interest rates to aspiring entrepreneurs and those already entrepreneurs who want to expand their businesses. One of the respondents suggested expanding his business to being a labor agent. The respondent brought out that a data-base of plumbers, electricians and those involved in steel work from the Kuyasa project needed to be created. Those in the database would have their skills marketed with the objective of securing tenders, contracts and / or better jobs.

The last qualitative question required for information pertaining to; whether the entrepreneurs businesses are contributing towards the reduction of purchasing paraffin, firewood or coal? All respondents agreed to their businesses contributing towards a reduction in the purchase of traditional energy fuels.

## CONCLUSIONS

In this section the researcher makes inferences and conclusion of the research using the information obtained from the findings as discussed in the previous section. Appropriate reference will be made to sections of this paper in support of the conclusions drawn. The researcher will also make recommendations based on the findings and areas of further study will also be given in the next section.

## Discussion

The major objective that shaped the study was to find out what entrepreneurship ventures have been embarked upon since the Kuyasa project completion in 2010 to date. The objective was addressed as follows:

The first objective and research question of the study sought to find out what entrepreneurship ventures have been embarked upon since the Kuyasa project completion in 2010 to date by its former 87 employees. This research question was responded to by mixed feelings and views. At least between 6 and 9 former Kuyasa employees are now entrepreneurs as discussed in section 5 under the heading of economic impact. The other employees secured jobs in the Cape Town Municipality, and other companies. Other former Kuyasa employees might be jobless.

Findings from section 5 revealed that few of the former 87 employees are now entrepreneurs besides gaining practical skills in the field of plumbing, carpentry, steelwork and electrical wiring. The assumption or hypothesis that motivated the study was that: A gold class certified project which impacted community members with new skills must produce a significant number of entrepreneurs upon its completion. To some extent the hypothesis can be accepted. The Kuyasa project did produce entrepreneurs. The number of entrepreneurs produced by the gold class project might not be satisfactory. The hypothesis of the study assumed that at-least half of the former 87 employees would be involved in legalized entrepreneurship activities. Deeper into the research it turned out that those who are embarking into entrepreneurial activities are contributing significantly towards sustainability though a systematic thinking approach. The study found out that upon project completion the former employees were given the tools they were using. These entrepreneurs pose some unique characteristics that are different from those who are not enterprising.

The study found out that those who are enterprising are:

Risk takers;

Ambitious;

Possess personal commitment;

Enjoy responsibility;

Want to do better for their families;



Want to bring change in their communities;  
Self motivated;  
Self driven; and  
Never want to turn-back.

Those who are not enterprising might be contented to work for a salary or deprived of the opportunity to become entrepreneurs besides being given their tools by SSN. Those that are enterprising are embarking on entrepreneurship activities such as solar water heater repairs, and ceiling maintenance for example the Kuyasa Energy Services and Projects company. Kuyasa company is also involved in township tourism and hospitality activities. The other former employees are offering their services in the field of carpentry, plumbing, transport, steel works and electrical wiring as a result of the Kuyasa project.

#### Entrepreneurs contribution towards the three pillars of sustainability

The questionnaire of the study sought to solicit information on the former Kuyasa employees' contribution towards the three pillars of sustainability. The three pillars of sustainability are economic growth, environmental conservation and social development. The main objective of this second research question was to find out whether these entrepreneurs are contributing positively towards sustainability in the community they offer their services. The positive findings were aimed to encourage renewable energy related entrepreneurship activities.

#### Economic growth

Rio Carmenado et al (2016:2) highlights that the entrepreneurial spirit contributes to an improvement in competitiveness in the area, generating economic growth and contributing to the development of the local community. Conclusion draw from the findings of the study through qualitative questions is that the entrepreneurs are contributing positively towards economic growth. The entrepreneurs are engaging in varies economic activities for example employing community members into their businesses. Kuyasa energy services and projects is a registered company comprised of 7 employees. Thabo and Dunza hire extra manpower into their carpentry business. Sandile a former Kuyasa employee who is involved in plumbing hires extra manpower into his business when the work load is too much.

Entrepreneurship opportunities that have been created through the Kuyasa project include also, among others; transportation, education-tourism, electrical wiring, repairing and maintenance of solar water heaters.

#### Social development

It can be concluded that the entrepreneurs are contributing positively towards social development in the communities they offer their services. Most of the entrepreneurs highlighted that they offer youth mentorship services. The youth mentorship program involves training and impacting practical skills to the youth on how to repair and maintain the renewable energy technologies.

#### Hypothesis of the study

Conclusions were drawn on the study's objectives and research questions. The hypothesis of the study was noted as; The Gold standard project combined with its skills training initiatives would result in entrepreneurship ventures by its former employees. The study 'Accepts' the hypothesis. The findings of the study brought out that at-least 7 – 9 Kuyasa former employees are now entrepreneurs. These entrepreneurs because of the skills they learnt from the Kuyasa project are embarking in entrepreneurships businesses for example solar water heater repairs, electrical wiring, ceiling repairs, tree planting, and some entrepreneurs expand into education-tourism.

#### RECOMMENDATIONS

From the foregoing, in light of the afore-mentioned conclusions in the above section the recommendations of the study would be proposed as follows: Entrepreneurship is often cited as a crucial tool that facilitates the transformation of a country's economy from a developing one to a developed one. It achieves this by facilitating the structural transformation of countries from low-income, factor driven societies, into high-income technology based societies (Naudè, 2008). Thus, through the application of existing technologies in innovative ways or launching new technology, entrepreneurs not only increase competition in the market, but also create positive market externalities



(Cassim et al 2014:30). The study thus proposes crucial interventions from the 5 main project participants as a means of encouraging sustainable entrepreneurship activities.

#### **4.2 Interventions from various influential institutions**

Because the renewable energy project under study operates as an open system it was prone to investigation as proposed by the Systems thinking approach. The Systems thinking approach allows for various agents to interlink or communicate openly in order to solve the problem at hand. It is by this study that the researcher proposes that the agents involved in solution finding for the Kuyasa entrepreneurship challenge are Department of Energy, SouthSouthNorth, Cape Town Municipality, Community members, and Institutes of Higher learning. These agents need to support the former Kuyasa employees with financial and non-financial resources. Each agent contributes differently but for the sole purpose of encouraging entrepreneurship activities.

#### **Department of Energy**

The government through the Designated National Authority that is the Department of Energy (DoE) must initially aid in legalizing and providing support systems towards entrepreneurship activities of the former Kuyasa employees. This must be in-line with the quality set standards of the 2003 White Paper on Renewable Energy in South Africa and other international or local entrepreneurship policies. However, the primary justification or rationale for government intervention is market failure or market distortions (Audretsch, 2007 in Cassim 2014). While Smallbone (2010) notes that the concept of market failure is inappropriate for developing countries, it is clear that South Africa's history of apartheid caused distortions in the "playing fields" of businesses. The rationale for government intervention in South Africa would therefore be to correct the distortions (race based) and the potential welfare gains to the economy through economic growth and development and increased social inclusion (Smallbone, 2010). The study's recommendation for a need of DoE intervention comes at a time where also literature supports government intervention in encouraging entrepreneurship activities and correcting market distortions. Ahmad and Hoffman, (2008:3) acknowledge that: "Many countries now recognise entrepreneurship policy as a separate discipline and, as a consequence, have taken steps to improve the measurement of entrepreneurship at the national level. At an international level, programs by the World Bank, Eurostat and private organisations such as the Global Entrepreneurship Monitor have also started to develop internationally comparable data". The DoE need to create a database of these employees and their activities. Those in the database opportunities to participate in government tenders must be availed to them. The government through the DoE must allow for special exemptions on importation of technologies these entrepreneurs would want to use in their businesses. DoE must set up a strategic information exchange platform department specifically focusing on entrepreneurship ventures of former renewable energy employees.

#### **SouthSouthNorth**

The study found out that the Kuyasa project implementer SouthSouthNorth besides training and impacting the former employees with practical skills, upon project completion every employee was given back the tool he / she was using. The study would like to acknowledge SSN with such a decision. However, the study recommends that SSN must make a follow-up on how these employees are making use of their tools. Workshops and training sessions need to be held. These face to face workshops and trainings need to prepare these employees to become legalised entrepreneurs.

#### **City of Cape Town Municipality**

Besides SouthSouthNorth being the Kuyasa project implementer, the City of Cape Town municipality is the project owners. Upon project completion the City of Cape Town employed some of the former Kuyasa employees whilst others got to be employed in other organisations. It is by this study that the project owner must motivate and provide these employees with some financial and non-financial incentive to become legalised entrepreneurs. The City of Cape Town as part of the financial and non-financial incentive must provide with land or infrastructure where these entrepreneurs must operate from.

The City of Cape Town municipality form part of the agents that play a crucial role in coming up with policies that encourage entrepreneurship in low-income earning communities. Thus the City of Cape Town must come up at local level with policies that reduce barriers to entry, eliminating obstacles to business and seed capital finance.

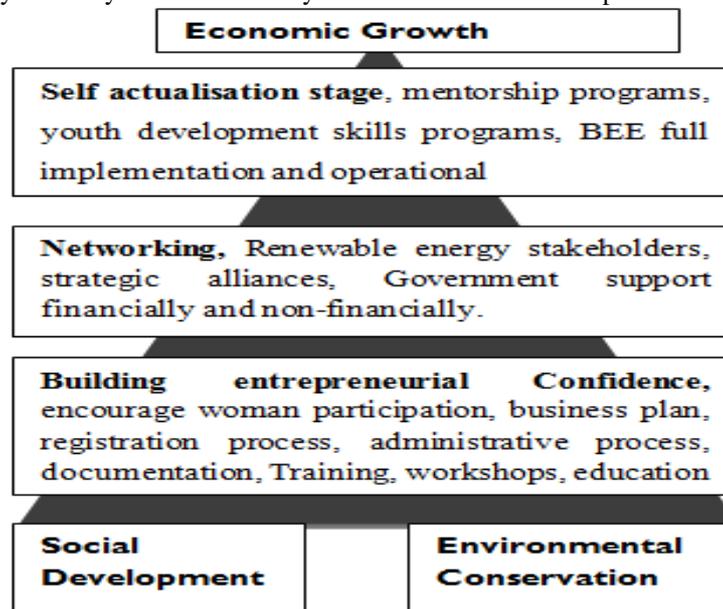
#### **Institutes of higher learning**

The systems thinking approach indicates that in order to properly explain and gain a better understanding of something, the system and its holistic properties had to be analyzed to find the root of problem (Heil, 2017:3). The Kuyasa project is one such example. Institutes of higher learning need to intervene and root out solutions on why these

renewable energy projects produce few entrepreneurs. Institutes of higher learning for example University of the Western Cape must come up with education and training sessions encouraging entrepreneurship. According to Stevenson and Lundstrom (2005:60) entrepreneurship education must be promoted in schools and communities around. These institutes must practically educate these former employees on issues for example how to register and sustain ones business. Tertiary institutes must advice on how to capitalise on gaps or opportunities in the macro-environment. Institutions of higher learning are the engine that motivates entrepreneurs to sustain their business through a systems thinking approach.

**Community member now entrepreneur**

The former Kuyasa employee now entrepreneur plays a vital role as one of the agent of systems thinking approach whose aim is to promote sustainable entrepreneurship ventures in the communities they serve. The study recommends that for the entrepreneur to reach a self actualisation stage according to the Maslow hierarchy of needs whilst embarking in renewable energy entrepreneurial activities there is need to recommend certain issues. Triangle 1 below shows recommendations by the study to the community member who is now entrepreneur.



**Triangle 1; Synchronizes the Maslow hierarchy of needs with the three pillars of the sustainability theory as a means of implementing a systems thinking approach on the entrepreneurs. Male Weaver bird strategy to encourage implementation of recommendations**



**Picture 2: Male weaver bird as a strategy to implement recommendations**

Source: Kalaheo National Park Pictures.



Males break old nests down so that they can build a new green nest in its place and try to attract a female to that (Dieter, 2011). The value of these species for the present study is that it makes a complex and highly organized nest (Elsie et al, 1964). Lesson learnt from this statement can be applied to the former Kuyasa employees who are now entrepreneurs. These entrepreneurs managed to break away from the traditional norm of seeking for employment as a means of survival. The former employees managed to utilize skills learnt from the Kuyasa project into creating entrepreneurship ventures. These entrepreneurs must continuously strive in their business so to attract strategic alliances that would enable their businesses to grow and provide sustainable livelihood opportunities in the communities they serve. As has been observed that in the third week after hatching the male weaver bird begins to lunge towards and attempts to seize the food offered by the parent (Elsie et al, 1964). The male weaver birds are the only birds recorded with the ability to tie knots and their nests are the largest structures built by birds (Eden, 2017). This unique attribute of the male weaver bird is a lesson that must encourage the entrepreneurs to eventually form strategic networks and expand their business emperor. Elsie et al (1964) highlights that as the male weaver bird begins to feed itself the young bird develops a strong exploratory urge, that is, it now picks up and manipulates all sorts of objects with its beak, and spends a good part of its day engaged in such activities. These strategic networks and ability to expand business emperors, as recommended earlier on is possible, provided there is department of energy, institutes of higher learning, project implementer and municipality intentions.

#### **Conditions in which the male weaver bird builds its nest**

According to literature (Nicholas et al, 1962:569) male weaver birds build their nest during abnormal conditions. The nests are most common at the start and at the ending of the breeding season where most bird species have low motivation to build. Entrepreneurs should continue to be motivated to develop upon their business no matter what micro and macro environment are. Most entrepreneurs have hinted on the lack of funding to start up or grow their business ventures because the government or banks do not want to seed-in. Lessons drawn from the male weaver bird highlight that in order to be a successful entrepreneur one need to forego the environmental conditions. One needs to be creative enough to attract funding.

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