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# FINAL REPORT

**Development of First Cost Reduction Strategies  
For Renewable Energy Products and Services**

Prepared by:

SK Holdings (PTY) Ltd.  
26 Garten Street  
Windhoek Central  
Tel; 061-230459  
Fax: 061-230907



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**Submitted by: SK Holdings (Pty) Ltd.**

26 Garten Street  
Windhoek Central  
Tel. 061 - 230459  
Fax. 061 - 230907  
Cell: 081 129 1515  
Email: [skh@mweb.com.na](mailto:skh@mweb.com.na)

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## **List of Abbreviations**

DBN            Development Bank of Namibia

RETs           Renewable Energy Technologies

SRF            Solar Revolving Fund

## **Disclaimer**

The opinions presented are those of the authors and should not be regarded as those of the Ministry of Mines and Energy or UNDP.

## **Executive Summary**

The Namibia Renewable Energy Programme has appointed SK. Holdings to do this study on the Development of First Cost Reduction Strategies for Renewable Energy Products and Services.

The study TORs were to: determine the current sourcing network of RETs products in Namibia; formulate recommendations on how to in future source and/or avail these products to the end of the supplier chain; develop an implementation strategy and action plan for first cost reduction and incorporate stake holder's input through consultations and a workshop. The study was done through a combination of field study and desk study.

The Ministry of Mines and Energy (MME) currently have in place a Solar Revolving Fund, which finance solar system – this fund is administered by Konga Investment (PTY) Ltd. MME is also in the process to create another financing scheme at a local commercial bank. The solar *products* available in Namibia are mainly sourced internationally with the main suppliers being Australia, China, Germany, the Netherlands, South Africa, and the United States of America.

The results of the study are in line with the worldwide assertion that RETs products are expensive to acquire due to the high upfront cost. One option would be for the Government to consider further subsidization of the renewable energy sector. Currently, most solar equipments are subject duties and taxes. The second option would be to consider whether sufficient demand exists in the Southern African region to warrant the establishment of a manufacturing plant for such equipment local and thereby reduce first costs Other options identified includes the design of a strategy and action plan for the economical sourcing of Renewable Energy Technology products and the subsequent distribution thereof, at affordable rates.

The proposed strategy should take cognisance of the following cost-related aspects: accessibility and adequate supply of equipment, reliability and efficiency of equipment, financing, cost effectiveness, complementary service delivery with respect to the maintenance of products, information dissemination techniques, long-term infrastructural needs and issues pertaining to sustainability. The efficiency-related aspects should include: the augmentation of public awareness, the decentralisation of the administrative functions of the Solar Revolving Fund and the decentralisation of stock availability and/or bulk procurement mechanisms.

The recommendations highlighted above pose some options for both the Government and Suppliers/technicians to consider – perhaps in partnership with other regional stakeholders in order to work towards achieving the macro objectives of reducing prices of renewable energy prices and services to ensure affordability.

## Introduction

The energy sector plays an essential role in the Namibian economy, serving the nation both at the firm as well as the household levels. Developments in the country in recent years have seen the energy sector gaining prominence within the local economy. With accelerated development comes an increased demand for energy, which in turn necessitates the use of alternative energy sources such as Renewable Energy Techniques (RETs) to release pressure on natural resources and to promote the concept of sustainable development.

The Government of the Republic of Namibia has committed itself to the promotion of the use of RETs on an equal footing as other forms of energy. This commitment is pronounced in various policy documents such as the Second National Development Plan and the Energy Policy.

The use of RETs as an alternative to the electricity grid system has been encouraged the world over, due to the socio-economic benefits, the environmental friendly nature of the techniques as well as other efficiencies associated with the use of renewable energy sources. There is great potential for the increased use of solar energy in Namibia as the country is said to have one of the highest solar radiation regimes in the world. The benefits of using RETs in Namibia can therefore surpass those of other countries and contribute towards more sustainable development.

The provision of affordable and reliable energy remains a challenge in the context of developing countries. Namibia is no exception. The prevailing poverty rate in the country does not support the efficient use of RETs given the relatively high upfront cost associated with RET equipment. The pricing of RETs has to some extent placed the use of renewable energy at a disadvantage as compared to the electricity grid system. Alternative pricing mechanisms therefore need to be devised in order to cater for the needs of all individuals in need of the service. It is against this background that the UNDP in conjunction with the Ministry of Mines and Energy has commissioned a study to assess the current sourcing network of RETs products in Namibia and to bring forth recommendations on the pricing of such equipment to ensure affordability of RET products and efficiency within the energy sector.

## **2. Objectives**

The principle aim of the study is to:

- (a) determine the current sourcing network of RETs products in Namibia by distributors, suppliers, installers and end-users, in particular solar energy products.
- (b) formulate recommendations on how to in future source and/or avail these products to the end of the supply chain (that is end-users) at the most affordable prices.
- (c) develop an implementation strategy and action plan for the recommendations in b) on first cost reduction.
- (d) incorporate stakeholders input through consultations and a workshop.

## **3. Methodology**

The study was designed to take the form of a combination of desk research and interviews with relevant stakeholders within the energy sector, particularly those that deal with solar energy. Different types of questionnaires were designed to cater for the demand and supply sides of RETs.

The targeted respondents for the supply side were suppliers and technicians, while the demand side was represented by end-users.

The survey covered all regions in the country. All suppliers and technicians were consulted, while end-users were sampled per region (between 5 and 10 end-users were interviewed per region).

#### 4. Financing of RETs Products

The availability of Renewable Energy Technologies (RETs) creates an alternative, user-friendly form of energy for individuals to explore. RETs are associated with high start up costs however they have low maintenance costs in the long run compared to the cost of utilising energy from the electricity grid system. In the long-run it is therefore both economical and environmentally friendly to consider option of RETs.

While the Government of the Republic of Namibia is pursuing and promoting the use of renewable energy in Namibia, there are some impediments arising from the prevailing economic conditions in the country. The rural poor who could be ideal beneficiaries of the RETs are often not in a position to finance the solar products.

The following sections highlight some perspectives on financing RETs from an international and local point of view as well as lessons that can be learnt from other experiences.

##### **4.1 Financing RETs – A methodological overview**

Economic development processes require increased energy usage. This puts increased pressure on the natural environment, hence the promotion of more environmentally friendly methods such as RETs. The provision of affordable and reliable energy however remains a challenge in the context of developing countries. In many countries, financing schemes are designed to ensure a wider usage of RETs. In Namibia, Konga Investments (Pty) Ltd is currently administering the Solar Revolving Fund. This function was previously assigned to Premier Electric (Pty) Ltd and the Namibia Development Corporation (NDC).

*“Financing energy investments is particularly challenging because of limited domestic capacity, which has led to the dominance of foreign financing and continued influence by donors and multilateral institutions” [Science in Africa: Available Online].*

## **4.2 The Solar Revolving Fund**

The Solar Revolving Fund, currently administered by Konga Investments (Pty) Ltd manages donor funds intended for the financing of solar equipment purchasing and installation. The Fund is a Government initiative established with the aim of providing an affordable option to those who are willing to buy solar products but cannot afford to pay cash. Individuals who qualify to utilise these funds approach Konga Investments for administrative procedures relating to loan acquisitions. The procedure is that the potential customer must first identify the type of system they need then contact their preferred but registered supplier/ technician. The client has to complete application, which is obtainable either from Konga or suppliers/technicians or Regional Council offices.

A completed form is submitted to Konga accompanied by a pay slip or a proof of income (a three month bank statement) and the quotation. If the application is successful, a client is expected to pay 5% of the total cost upfront and thereafter a purchase order is issued to the supplier/ technician. Repayments are done in monthly instalments for five years at an annual interest rate of 5%.

## **5. Survey Results and Discussion**

Overall, the market for RETs has potential for growth in Namibia given that demand for the products especially solar products, has been on the increase. The introduction of the Solar Revolving Fund has contributed greatly to the accessibility of this technology. While this initiative has been welcomed, a number of challenges affecting the efficient use of the technology still exist. Some of these issues are discussed in the following sections.

## 5.1 Sourcing Network

The survey conducted revealed that the Namibian RETs market has been in existence for the past ten to twenty years on average. The products are sourced internationally with the main suppliers being Australia, China, Germany, the Netherlands, South Africa, and the United States of America. In some instances, suppliers source products from other local suppliers. The installers in turn source their products from local suppliers (Windhoek based).

The study has established four supply chains currently in operation, as illustrated in the diagram below.

### **Chain 1:**

**(Manufacturer – to - Supplier – to – Technician – to – End-user)**

In the first instance suppliers supply technicians who in turn supply end-users.

### **Chain 2:**

**(Manufacturer – to - Supplier – to – Supplier – to - Technician – to – End-user)**

**+ (Manufacturer – to - Supplier – to – Technician – to – End-user)**

In the second instance, suppliers supply each other with certain products, in addition to supplying technicians, who in turn supply end-users.

### **Chain 3:**

**(Manufacturer – to – Technician – to – End-user)**

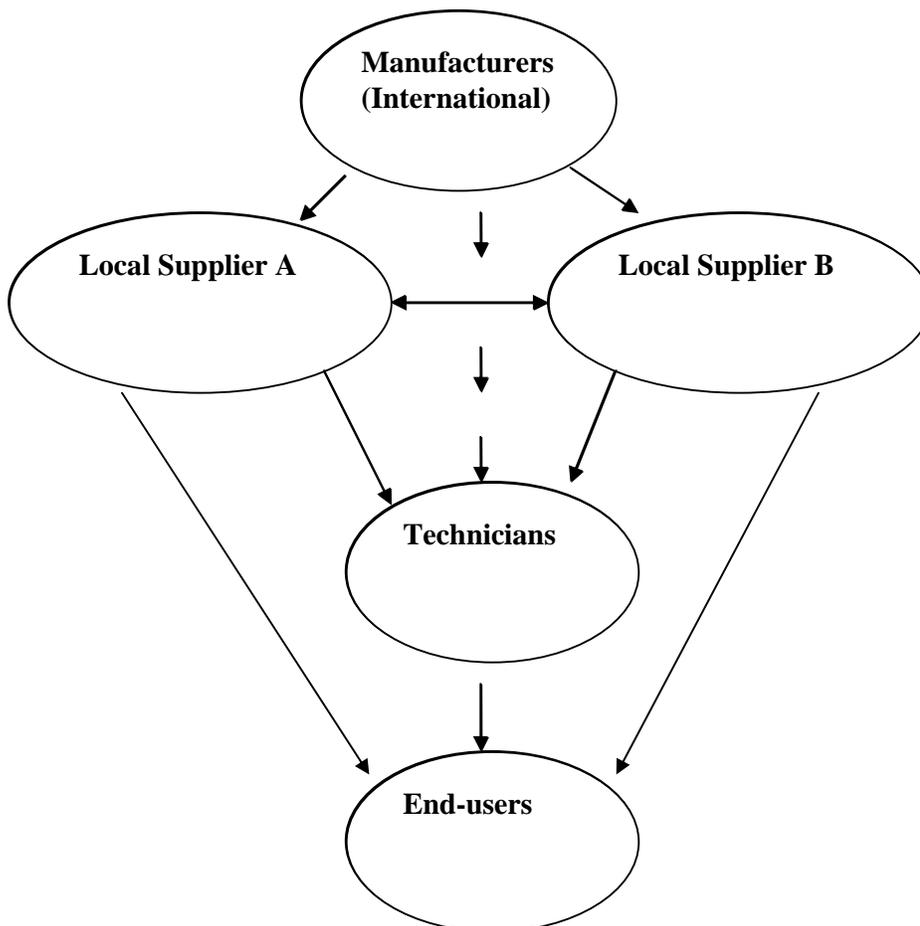
There is currently no direct sourcing of products from manufacturers to technicians, except in one exceptional case where a technician sources his own products from certain manufacturers in order to supply end-users

**Chain 4:**

**(Manufacturer – to - Supplier – to – End-user)**

In the fourth instance, an isolated case of an end-user who sourced products directly from a supplier was found.

Of the four options, the most cost effective one would be the chain that excludes middle men. This would be either Chain 3 (Manufacturer – to – Technician – to End-user) or Chain four (Manufacturer – to – Supplier – to – End-user). Considerable savings can be realised from the chain cuts – to the benefit of the end-user.



## **5.2 Pricing**

The results of the study are in line with the worldwide assertion that RETs products are expensive to acquire due to the high upfront cost. Two extreme views on the pricing of RETs products emerged. On the supply side, prices were generally rated to be reasonable whereas the end-users maintain that current prices are out of their reach. This could be explained by the local market structure of RETs, which shows characteristics of an Oligopoly structure. The behaviour of a firm depends on the features of the market in which it sells its products. These features include the number and relative sizes of sellers and buyers, the degree of product differentiation, the availability of information and the barriers to entry and exit.

### **Characteristics of the Namibian RETs market**

- The Namibian RETs market is well represented in terms of suppliers – relative to the population size, however, from an economic perspective, the suppliers are few such that each firm has to consider the others' actions and reactions.
- Entry into the RETs market is relatively restricted through a licensing process.
- The products offered in this market are relatively homogeneous.
- Firms have limited control over the prices of products as the products are sourced from abroad – in a sense, they are price-takers.
- Long-run economic profits generated from the RETs sector can be positive.

The study further identified some key components affecting the pricing of RETs products. These include transport costs, duties applied to certain RETs – related products, exchange rates as well as the cost prices of the equipments. The effects of the high pricing of these components are felt at both the supply and demand sides, however the costs are inevitably pushed through the system to the end-user. The end-users are further faced with the issue of variations in the prices of similar replacement parts. Insufficient information on alternative outlets to purchase parts therefore leads end-users to purchase over-priced items without their knowledge.

### **5.3 Other complementary aspects**

#### **Konga administrative procedures**

The study has highlighted a concern regarding the administrative procedures of Konga Investments (Pty) Ltd as the current administrator of the Solar Revolving Fund. The key problem area articulated relates to the long processing times of the applications.

#### **Performance of solar systems and maintenance services**

Isolated cases of poor performances of solar systems were found. In some cases it was found that the poor performances were directly related to the incorrect usage of the systems (i.e. overloading). This highlights the importance of disseminating information on the correct usage and capacities of different systems.

Poor maintenance ratings were given in instances where installers either failed to show up to do the maintenance work or where poor installation work was done resulting in recurring problems.

### **5.4 Limitations of the study**

While all efforts were made to sensitize the respondents on the importance of the study and to reassure them of the confidentiality with which the information would be handled, key information regarding 'prices' was not forthcoming. This has to a large extent hampered the exercise, a major part of which was to establish how to lower RETs product costs. A revelation of market prices (cost prices and selling prices) would have highlighted the cost components where some degree of flexibility can be exercised with respect to the pricing of RETs products and services. Secondly, knowledge of market prices would have helped to better explain the different sentiments held on the rating of current prices of RETs. This could have been established by an analysis of product costs and other variable costs.

## **6. Alternatives for the provision of RETs products**

This study generally argues for ‘subsidisation with limitations’ in the time-frame (i.e. on a medium-term basis) to allow the sector to develop further. The reason for this stance being that the Namibian renewable energy sector can be classified as an infant industry given that it is still relatively an emerging sector and therefore requires the necessary support to ensure that it develops to its full potential.

Two alternative options for the provision of RETs products are outlined below to give an idea of the possible impacts.

### **Option 1: Further Product Subsidisation**

One option would be for the Government to consider further subsidization of the renewable energy sector. Currently, solar equipments are exempted from duties, however some solar-related products such as solar refrigerators (often considered as luxuries) do attract duties. Considerations to fully exempt the renewable energy sector from taxes would have a positive impact on the pricing of some of the products.

### **Option 2: Subsidization through Manufacturing**

The second option would be to consider whether sufficient demand exists in the Southern African region to warrant the establishment of a manufacturing plant for such equipment. Other considerations would of course include the location of such a plant that would service the entire region. Such an alternative would have to greatly rely on a comprehensive feasibility study of the region in order to justify the cost of setting up the factory (in Namibia).

The setting up of the necessary infrastructure for the manufacturing activities implies huge investments in the energy sector. Financing for this type of investment can be secured from the Development Bank of Namibia (DBN) through its Public Sector financing facility.

## Financial Considerations

Keeping both options in mind and without inserting calculations some of the major costs for the current scenario and the two options can be rated as follows:

	Current Scenario	Option 1 Further Subsidisation	Option 2 Manufacturing
<b>Major Costs</b>			
Transport Costs	Very high	Medium	Medium
Duties payable (certain renewable energy products)	High	Medium	Medium to Low
Cost of Purchases (finished products and/or raw materials)	High	Medium	Medium to Low
Cost of equipment and installation of manufacturing plant	N/A	N/A	Very High
Maintenance cost of manufacturing plant	N/A	N/A	High
Production costs	N/A	N/A	High
Recruitment costs	Medium to Low	Medium to Low	High
Marketing costs	Low	Medium to Low	Initially High
<b>Additional Benefits</b>			
Savings (on Imports)	N/A	Medium	Medium to High

## Possible results from the two options

Option 1: Further Subsidisation	Option 2: Manufacturing
Modest to high demand of renewable energy products	Potential for increased demand for renewable energy products
Potential for slight price reductions (renewable energy products)	Reduction of renewable energy product prices (due to local production)
Sub-optimal use of renewable energy products	Potential for the optimal use of renewable energy products

## 7. Strategy and Action Plan

One of the main objectives of this study was to design a strategy and action plan for the economical sourcing of Renewable Energy Technology products and the subsequent distribution thereof, at affordable rates.

The following sub-sections outline the need, the basis and the structure of the proposed strategy.

## 7.1 Rationale for a National Renewable Energy Strategy and Action Plan

The Renewable Energy sector in its current form requires some policy interventions to ensure the further growth of the sector. This includes enhancing regulations in the Renewable Energy sector. A strategy for implementing the wider use of Renewable Energy in Namibia is justified by a number of factors:

### (i) High dependency on conventional electricity

Namibia's demand for conventional electricity has been rising over the years as illustrated in table 1 below, however given the local geographic set-up (i.e. geographic dispersion), it is challenging and to a certain extent impractical to avail grid electricity to everyone, given resource constraints.

The country has been largely dependent on South Africa for the supply of additional electricity as illustrated in table 2 below. The rise in energy demand by the South African firms and households in recent years may however result in the rationing of power supply to neighbouring countries by Eskom. Curtailing this dependence borders on the development of the Renewable Energy sector of Namibia.

### Annual Maximum Demand (1998 – 2004)

Local demand has been stable in relation to the total demand by the Southern African Power Pool, but has nevertheless been increasing over the years.

Table 1 Annual Maximum Demand (MW) (1998 – 2004)

Annual Maximum Demand (MW)			
	Namibia	Total SAPP	Namibia % of Total SAPP
1998	292	33,466	0.87
1999	314	33,676	0.93
2000	320	35,110	0.91
2001	335	36,749	0.91
2002	362	38,021	0.95
2003	371	38,577	0.96
2004	393	40,839	0.96

Source: Nampower Annual Reports (2003 - 2005)

### Units into the System (kWh) (2001 – 2005)

Namibia sources additional power mainly from Eskom over the years. Other suppliers have provided negligible amounts relative to Eskom's supply.

**Table 2 Units into System kWh (Million) (2001 – 2005)**

Units into System kWh (Million)					
	2005	2004	2003	2002	2001
<b>Nampower</b>	1,660	1,379	1,421	1,429	1,211
<b>Zesco</b>	23	9	21	21	21
<b>Eskom</b>	1,514	1,423	988	921	1,045
<b>Zesa</b>	158	87	-	0	-
<b>STEM</b>	8	47	36	0	0
<b>Total</b>	<b>3,363</b>	<b>2,945</b>	<b>2,466</b>	<b>2,371</b>	<b>2,277</b>

Source: SAPP Annual Reports (2004 – 2005)

**Table 3 Annual Energy Sent Out GWh (1998 – 2004)**

Annual Energy Sent Out (GWh)			
	Namibia	SAPP	Namibia % of Total SAPP
<b>1998</b>	1,881	214,907	0.88
<b>1999</b>	1,676	219,319	0.76
<b>2000</b>	1,978	225,206	0.88
<b>2001</b>	2,016	231,055	0.87
<b>2002</b>	2,136	242,479	0.88
<b>2003</b>	1,421	253,372	0.56
<b>2004</b>	1,379	262,553	0.53

Source: SAPP Annual Reports (2004 – 2005)

### (ii) Escalating electricity prices

Urban residents have seen grid electricity prices soaring over the years. This has resulted in users having to divert resources away from other productive uses to offset these additional costs.

### **(iii) An emerging Renewable Energy sector in Namibia**

The use of Renewable Energy is gaining momentum in Namibia. This creates favourable circumstances for the maximisation of the use of Renewable Energy Technologies.

## **7.2 Devising the Strategy**

As with any other strategy, the viability and potential for successful implementation is highly correlated to its foundation. For the strategy to materialise, a thorough assessment of the needs and priorities of the intended or target users is required. This will ensure that the strategy is well targeted. Secondly, the strategy design and implementation should adopt a participatory approach i.e. it should be mindful of the views of all stakeholders concerned.

The proposed strategy should take cognisance of the following aspects, i.e. it should be inclusive of, but not limited to the following aspects:

- Accessibility and adequate supply of equipment
- Reliability and efficiency of equipment
- Financing
- Cost effectiveness
- Complementary service delivery with respect to the maintenance of products
- Information dissemination techniques
- Long-term infrastructural needs
- Issues pertaining to sustainability

## **7.3 Proposed Strategy**

The issues raised by respondents to the survey, point to some presumed inefficiencies within the Renewable Energy market. The strategy outlined below classifies

components of the strategy and action plan into cost-related and efficiency-related components.

### **7.3.1 Cost-related components**

The cost-related components include:

- market regulation
- the empowerment of technicians
- revision of Solar Revolving Fund repayment terms
- the tax exemption of all solar-related products
- the establishment of a manufacturing plant

#### **7.3.1.1 Market Regulation**

Market regulation entails the regulation of the RETs market to ensure a structured form of pricing for RETs products to the benefit of the end-users, especially those systems financed through the Ministry of Mines and Energy (MME) financing schemes. A mechanism (e.g. MME/Konga SRF Committee) to oversee price regulation should be put in place by MME and the financing schemes administrators. In particular, price ranges could be set depending on the system capacity. Additionally, the charges for transport and installation varies too much per technician/supplier and limits or fixed rates need to be introduced for these. The financing administrators can then ensure the enforcement of these price regulations by ensuring that excessively charged quotations outside the approved ranges are not approved for financing. The introduction of these price regulations would be one of the fastest options to cut down on costs, especially those financed through the MME schemes. The suppliers/technicians should also be consulted to charge reasonable mark ups on their products as this is also varying a lot from one technician/supplier to the other and such overcharging will be damaging to the RE market as a too expensive solar products perception will lead to less end-user adoption of these technologies.

In addition, the RE suppliers/technicians should also be capacitated so as to be in a position to offer the appropriate size of systems and components for the potential end-users energy needs and avoid offering oversized system and non-essential components that would make the system unnecessarily expensive.

#### **7.3.1.1.1 Proposed functions of the RETs Market Regulation Mechanism(Committee)**

The Committee should have the overall responsibility of regulating the RETs market. Specific functions should include but not be limited to the following:

- Review the current prices of RETs products
- Set the price ceilings for RETs products
- Continuously monitor prices on a regular basis (e.g. Quarterly)
- Review price ranges should circumstances warrant a revision
- Compile and disseminate information relating to prices of RETs products including information on reasonable sourcing networks to suppliers/technicians
- 

#### **7.3.1.2 Empowerment of Technicians**

This component should involve the empowerment of technicians as a strategy to reduce costs of RETs products through an extension of the Solar Revolving Fund programme to include technicians financing. This entails the provision of loans and grants to facilitate the direct purchasing of RETs products from manufacturers.

It is recommended that large suppliers should offer their products to technicians at dealer prices - so as to ensure that when technicians mark ups are added to the product price to the end-user – the final price is still reasonable. Technicians should also co-ordinate themselves into consortia and order materials in bulk - so as to ensure the efficient sourcing of materials at cheaper unit prices and easier market access to RETs products. This can facilitate the higher availability of stock in the country and the

cheaper sourcing of products, which can possibly result in lower prices being offered to end-users.

Other views suggested the extension of import permits to registered technicians to level the playing field.

Konga Investments – Solar Revolving Fund administrator can also introduce a scheme whereby they can offer material to technicians who have approved orders and debit the cost of these after the installation is done. This process would make it easier for the technicians to acquire material more timely and also enable them to do installations timeously without struggle to acquire material due to lack of finances. Konga can these also arrange to buy solar material in bulk - so as to lower unit prices and also to keep sufficient stock at all times.

#### **7.3.1.3 Extension of Solar Revolving Fund repayment terms**

To reduce financial pressure on end-users, the Solar Revolving Fund Administrators could consider extending repayment terms to allow for more flexibility and affordability. This will accord more end-users the opportunity to acquire Solar Home Systems with higher capacities. This will enable end-users to purchase the systems, which will meet their needs and minimise the risk of abusing solar systems. An initiative of this nature will reduce default rates, which will eventually impact on the functionality of the Fund.

#### **7.3.1.4 Tax exemption of all solar-related products**

To facilitate the further reduction of costs, an up haul of the legislative system is required to cater for the new entrants in the market (suppliers and/or manufacturers). This could be achieved through the introduction of new legislation in the form of tax exemption on all solar-related products.

#### **7.3.1.4 Establishment of a manufacturing plant**

The ultimate solution for a reduction in first costs could come in the form of the establishment of manufacturing facilities to cater for the local production of RETs products. Appropriate legislation to facilitate tax exemptions and other industry-specific incentives would be long-term in nature, however all the other components can be implemented in the short-run. Local manufacturing should not only be limited to solar modules, but also the local production of amongst others battery boxes (sold expensively at the moment in the country but can be manufactured cheaply); local assembly of lighting sets inclusive bulbs (the Polytechnic can for example serve as testing centre on the quality and durability of the lights – LED lights are especially easy to manufacture as determined from other projects in developing countries on this). Charge regulators and status indicators as well as cables can be the other components that can be assessed for local production.

### **7.3.2 Efficiency-related components**

The efficiency-related components include:

- The augmentation of public awareness
- The decentralisation of the administrative functions of the Solar Revolving Fund
- The decentralisation of stock availability

#### **7.3.2.1 The augmentation of public awareness**

The building of public knowledge and the support for a transition to renewable energy cannot be overrated. This can be achieved through the hosting of regular information sessions with existing and potential RETs users in all regions. This could ultimately correct the abuse of solar systems (through overloading) and help to increase the confidence in the solar technology. This activity is best accomplished through a collaborative exercise between the Renewable Energy department and the technicians as installers who are in regular contact with end-users. Broader awareness would lead to increased market demand for the various solar packages and this could contribute

to the lowering of prices due to increased bulk procurements that would emerge when ordering products.

### **7.3.2.2 The decentralisation of the administrative functions of the Solar Revolving Fund**

A decentralisation of the administrative functions of the Solar Revolving Fund would ensure the timeous processing of application leading to the efficient allocation of installation jobs. The Chinese model of decentralised energy services to rural areas is an example of an international best practise. The model entails the establishment of rural energy offices staffed by renewable energy staff (at government level, technicians and outreach staff), whose function is to administer and extend funds to the public as well as to provide technical support services. Replicating this model to the Namibian situation with modifications would most likely yield similar results. Such modifications could involve a gradual decentralisation process starting with the more densely populated regions, which have limited access to grid electricity.

### **7.3.2.3 The decentralisation of stock availability**

This component targets the aspect of stock availability and the increased usage of renewable energy. As a strategy to further improve efficiency within the RETs market, appropriate incentives could be created for new entrants in the RETs supply market, *including solar product distributors to venture into warehousing activities across the country (particularly the Northern regions where the demand for Solar products is highest)*. This will improve delivery and installation times and curtail unnecessary delays with respect to the replacement of parts. The newly formed RE Technicians Association can also work out a mechanism for the bulk procurement of solar products for warehousing for the technicians through the Association.

The proposed strategy and action plan is summarised in the table below.

**Table 4 Proposed Strategies and Action Plan**

<b>Component</b>	<b>Classification</b>	<b>Activity</b>	<b>Time-frame</b>	<b>Indicators</b>
Market regulation	Cost-related	Establish a mechanism/ committee to regulate prices of RETs products	4 – 6 months	Committee established
Empowerment of Technicians	Cost-related	Empower Technicians financially through loans and grants to facilitate direct purchasing from manufacturers through a consortium or Konga SRF material bulk procurement scheme	4 – 6 months	Number of Technicians granted loans/grants
Extension of Solar Revolving Fund financing terms	Cost-related	Revise and extend Solar Revolving Fund credit terms	4 – 6 months	Revised credit terms produced
Tax exemption of all solar-related products	Cost-related	Government to design a policy to exempt all solar-related products	1 – 2 years	A policy on tax exemption is put in place
Establishment of a manufacturing plant	Cost-related	Government to facilitate and create an enabling environment for the establishment of a manufacturing plant through the creation of special incentives relevant to the RETs market.	2 years	1.Policy established 2.Manufacturing plant established
Decentralisation of the administrative functions of the Solar Revolving Fund (SRF)	Efficiency-related	Place SRF administrators in the regions	4 – 6 months	Number of administrators placed in the regions
Augmentation of public awareness	Efficiency-related	Conduct information sessions with potential RETs users to highlight benefits Conduct information sessions with existing users of RETs on the maintenance of products and to supply new information on a bi-annual basis	4 – 6 months	Number of contact sessions held
Decentralisation of stock availability	Efficiency-related	Government to initiate industry specific incentives relevant to the RETs market to facilitate and encourage warehousing activities	6 – 12 months	Policy on incentives put in place

#### **7.4 Proposed Action Plan**

To ensure the implementation of the strategic plan, a detailed action plan is required. The plan should combine the concerted capacities of all stakeholders in the energy industry in order to break the barriers that are limiting the widespread adoption of Renewable Energy Technologies. The role of the government within this framework remains that of a catalyst, creating an enabling environment for the Renewable Energy sector to flourish.

The suggested action plan has taken into account local market conditions and demographic aspects to ensure that the plan conforms to the Namibian situation.

The strategy described above should be carried out over the short to long-term due to the nature of the aspects that need to be addressed.

## **8. Recommendations and Conclusion**

The use of renewable energy is key to the process of sustainable development. Most parts of Africa have the potential (in terms of radiations) to increase the use of renewable energy. Efficient usage of this form of energy has to some extent been hampered by prices of equipment that tend to be too high for the average potential user.

First Cost Reduction for the RETs market is feasible to implement, provided that various complementary mechanisms are devised and implemented in a synchronized manner. This study recommends that certain measures be put in place to directly influence the process of First Cost Reduction for RETs. These include the following activities, which should be implemented in line with the proposed strategic plan as discussed above:

- Market regulation
- Empowerment of Technicians
- Augmentation of public awareness
- Decentralisation of the administrative functions of the Solar Revolving Fund (SRF)
- Extension of Solar Revolving Fund financing terms
- Decentralisation of stock availability
- Tax exemption of all solar-related products
- Establishment of a manufacturing plant

This study generally argues for subsidisation with time limits to ensure that the renewable energy sector develops to its full potential.

In general, it would be a very costly exercise to pursue the manufacturing option unless market conditions adequately support such a move. Some local suppliers have in the past considered the possibility of expanding their businesses to include the

manufacturing of some renewable energy products but had to abandon the idea due to the heavy costs involved.

Further subsidization of the renewable energy sector, on a medium-term basis appears to be a more viable option in the short to medium term. Long-term considerations do however justify the setting up of manufacturing facilities.

To ensure further growth and efficiency of the Renewable Energy sector, the short-term activities relating to the regulation of the sector need to be addressed as a matter of urgency in order to promote the transition to renewable technology usage. The adequate and affordable supply of renewable energy products to areas with the most acute problems of access to energy will ensure the wider usage of renewable energy technologies in the country.

The alternatives discussed above pose some options for both the Government and Suppliers to consider – perhaps in partnership with other regional stakeholders in order to work towards achieving the macro objectives of reducing prices of renewable energy prices to ensure affordability.

## 9. References

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