DIASPORA FINANCING, DEVELOPING A STRONG SOLAR COOKING INDUSTRY IN THE REGION

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Abstract

Having resources is a key element in achieving a successful deployment of renewable energy resources and by extension a strong Solar Cooking industry. This move translates into a significant improvement in the quality of life of the population, however, reaching this milestone can be challenging.

The contributions by the Diaspora population are very often overlooked, notwithstanding, the remittances as a form of funding can represent a significant supply of Foreign Direct Investment to local economies.

The funding is usually utilized in many ways, for example: to close deficits, to build infrastructure, in the construction of homes and to provide services for urban and rural areas.

Tapping into these resources, requires that governments and other agencies become aware of their importance as a supply of Foreign Direct Investment, as this allows the deployment of measures for the improvement in the population's quality of life.

Purpose

The purpose of this paper is to present an alternative to the traditional financial instruments and mechanisms employed by Banks, Credit Unions (Savings and Loans) and other institutions who seek to provide services in this industry.

The methodology consists in the securization of remittances repatriated by the country's Diaspora and using these funds to provide soft financing to the parties interested in purchasing the systems.

There is a long list of financial instruments that can be employed to bridge the gap, however, one that has become very popular among countries and has been in existence since the 1930s is what are known as Diaspora Bonds.

These financial tools are issued by the respective governments to finance in most cases infrastructural projects or imbalances in their balance of payments, but they also constitute a major source of Foreign Direct Investment.

Keywords: Diaspora Bonds, Foreign Direct Investment (FDI), Gross Domestic Product (GDP) per Capita.

1. Introduction

In order to understand our research, we must start by identifying the reason why renewable energy systems have had a late start in most of financially challenged regions of the world.

Over the years, we have seen the deployment of renewable energy systems in its many forms; this growth has come in countries with high GDP per capita.

Research shows that for the development of a solid renewable energy industry there are three elements that must be present:

- High GDP per Capita,
- Tariff and / or financial instruments that can support the penetration of these renewable energy technologies,
- A legal framework balanced enough that will allow all players in the industry to share the space.

However, governments in developing nations due to the nature of their commodity govern economies, and their performance in areas such as: tax collection. They have found it difficult, to engage in programs to alleviate poverty levels through the use of renewable energy systems.

The reports from many multilateral organizations, have expressed that governments in developing nations faced with the challenges in the allocation of their resources, in competing sectors of the economy, such as: agriculture, energy, health, education, transportation and housing.

Resort to policies, such as those expressed by Finn E. Kydland and Edward C. Prescott in their Nobel Prize in Economics work; they amount to the application of time inconsistent policies, while delaying the application of time consistent policies.

By definition, **"Time inconsistent policies are policies that only serve the needs of the population in the short term but miss out on the benefits of long term goals."** It is believed Governments facing the urgent and immediate needs feel compelled to implement such policies.

So how can India and governments in financially challenged nations of the region plan for long term growth, serve the population needs in the short term and deal with limited resources?

The Solar Energy industry, over the years has devised very creative solutions. Among these alternatives we have: Community Solar Initiatives, Solar Power Purchase Agreements, amongst others. However, these solutions are designed under the assumption that some form of funding is in place. Also, they require securitization from the developer or the entity seeking to finance the project.

So we ask ourselves, where is the funding coming from, if the availability of resources is limited to governments in developing countries. One possible alternative comes in the form of Diaspora Financing or Diaspora Bonds.

First, we need to define the meaning of Diaspora. This term as Sheffer described it in 1969, is as follows:

"Ethnic minority groups of migrant origin, residing and acting in host countries but maintaining strong sentimental and material links with their countries of origin or their homelands.[1]

There are many types of Diasporas; we will point first to those that have come from some form of exile, then those that have evolved as a result of trade, and those that can be classified as cultural. What is it important to remember is that there are key elements that characterize these migratory waves; one element is their collective sentiment and memories of the countries of origin, and a strong sense of identity.

Furthermore, and due to the nature of their ties with their native countries, and sense of patriotism, these groups engage in the transferring of funds to their motherland, hence they constitute a large source of Foreign Direct Investment (FDI).

Table1. Shows outflows from the European Union Nations, The United States and Canada with Diaspora populations.

Migrant remittance outflows (US$ million)	2012	2013	2014
Austria	2,520	3,896	4,037
Belgium	4,239	4,482	4,497
Canada	5,630	5,612	5,393
Denmark	2,949	3,060	3,152
France	12,566	13,318	13,835
Germany	15,533	19,870	20,836
Italy	11,826	11,629	11,154
Luxembourg	11,269	12,262	12,700
Netherlands	9,576	9,807	9,945
Norway	5,100	5,779	5,822
Switzerland	21,966	23,289	24,693
United Kingdom	10,077	10,528	11,569
United States	52,652	55,469	56,311

Table 1. Remittances from OECD
The amounts indicated in Table 1 are expressed in millions of US Dollars.
Source: World Bank (Remittances Matrix)

On Table 2, we show what percentages these remittances represent of India's Gross Domestic Product (GDP).

Migrant remittance inflows	2012	2013	2014	2015	% of GDP
India	68,821.00	69,970.00	70,389.00	68,910.00	3.40%

Table 2. Remittances as a % of GDP
Source: World Bank (Remittances Matrix)

As indicated by Table 2, although percentage wise, it might seem significant the remittances from India's Diaspora represents (3.4%) percent of the country's total GDP.

So how can the government, financial institutions and NGOs tap into these resources, to bridge the gap for renewable energy systems, whether in form of solar

[1] Piyaasiri Wichramasekara (2009), "Diasporas and Development: Perspective on Definition and Contributions, International Migration Programme, Perspectives on Labour Migration No.9 Ibid Pg. 12

cookers or otherwise, needed to improve the living conditions of those financially challenged.

Governments around the world have addressed this issue by appealing to their members living overseas through the emissions of financial instruments such as Diaspora Bonds.

With the largest Diaspora population spread around the world, these contributions amass a total of US$ 68 Billion. Through various mechanisms these resources can be utilized to secure financing for solar cooker programs.

Our Table 3, shows India's skilled Diaspora currently living in North America.

Country	High-skilled emigrant stock (thousand)	High-skilled emigrant stock (% of population)	Emigrant stock (% of population)
India	1,038	0.10%	0.17

Table 3. Segments of India's Skilled Diaspora Population in the U.S.
Source: High-skilled migrants abroad in high-income OECD countries as of 2000 from Docquier and Marfouk (2004); and total migrants abroad in 2005 from Ratha and Shaw (2007).

So what are Diaspora Bonds? As the name implies, "these are debt instruments to raise financing from the overseas Diaspora."[2]

Diaspora Financing has been in use since the early 1930's, and has been effectively used by countries such as Japan and China, followed by the Jewish Republic of Israel in the 1950's and later India. What is important to understand is that although these debt instruments are not widely used, through remittances from the Diaspora living overseas, they constitute an important source of FDI.

The India has the largest Diaspora population in the western hemisphere; World Bank figures show that the India Diaspora is Sixteen Million strong.

In a concerted effort, the government of India together with the rest of the players in the industry; should focus in tapping this resource, which will make a world of difference for the securitization, financing and deployment of solar cooker projects.

2. Methodology

Financial Markets are very competitive; new products are constantly being launched and investors are always outweighing the risk versus the rewards. Bonds in all its formats are not excluded from this process.

Over time, with the negative events that have taken place in the different stock markets including the Mortgage Crisis which triggered a meltdown in most stock exchanges around the world, Less Develop and Developing countries have been finding it very difficult to secure financing.

Adding other elements such as their Country Rating, Country Risk, problems with their economies and the mere fact that Foreign Direct Investment and Official Development Aid is becoming scarce, creates and environment where Less Developed and Developing Nations will have problems in putting infrastructure projects in place to generate growth and prosperity for their citizens.

There are two paradigms, should Less Developed and Developing Nations, finance their growth through mechanism such as printing money, and expose their respective populations to high inflationary forces or should they look to more creative ways to allow these infrastructure projects to materialize through the issuing of more debt?

The answer is complicated in nature, however, in finding solutions to these problems, some countries have placed their efforts in nurturing a relationship with their Diaspora.

Diaspora financing and/or Diaspora bonds are a very creative way to structure a deal for any country with a not so favourable credit rating, or macroeconomic structural problems and other hurdles that governments of the region may face and will obviously hamper their position in securing a loan or financing.

However, putting together a Bond issue is a difficult task, notwithstanding, the first step that a government or a private entity should look at is what percent of their Diaspora can and will invest. Then, other important aspects that should be given careful consideration is what percent of GDP do remittances coming from the Diaspora represent.

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2 Diaspora Bonds - Dilip Ratha
www.dilipratha.com/index_files/DiasporaBonds-JICEP.pdf

Successful Diaspora Bond Issues have relied on the two factors above mentioned together with the sense of patriotism to secure the level of commitment needed to have their bond issue fully subscribed.

Infrastructure project financing requires other aspects to given careful consideration. In the case of deploying solar cookers in a large scale, the coupon paid by the bond will be subject to:

- The Retail or Wholesale of the system.
- Value Chain.
- Internal Rate of Return for the Project from the Investor side and Project Development side.
- True Cost of the project.

Ethiopia, India and Israel provide good examples of the challenges that countries must deal with when launching Diaspora Bonds.

During the offering process of Ethiopia's "Millennium Corporate Bond" the bond coupon was very attractive, foreign investors, did not show interest. This behaviour was triggered by the country's inability to service the debt, securitization issues and overall political climate.

Over the years a lot of experience has been gained from the Diaspora Bond issues, however, successful Diaspora Bonds issues need to go through a series of steps in order to achieve the level of subscription expected.

The first step is to consider the proposed budget for the project, or evaluating the supply side, (Fisher and Easterly, 1990):

$$\text{Expenditure} = \text{Tax Income} + \text{Deficit}$$

This is the formula for a government, however, for a project, the formula is slightly different:

$$\text{Projected Budget} = \text{Contributions from the Partners} + \text{Loan / Bond Issue}$$

Additionally, consideration must be given to the demand side of the equation. Having said this, the Bond issuer, must look at the number of subscribers, the type of subscribers, corporate or individual. Should the bond issue be directed to individuals or in this instance the Diaspora, then elements such as the interest rates paid and patriotism play an important role. The Government or agency would want to appeal to this sector by offering a premium also known as the patriotism effect to the instrument.

Notwithstanding, it is a common practice when determining the coupon to use the U.S. Treasury Bills interest rate as the benchmark. Other important factors to consider are:

- Currency to be used when making interest payments,
- Trading the instruments in the secondary markets,
- Currency in which the Bonds will be redeemed,

Table 4, shows the successful India's Bond issues:

Bond Type	Amount	Year	Maturity	Minimum	Coupon
Indian Development Bond	US$ 1.6 Billion	1991	5 years	Not Available	
US$					9.50%
GBP					13.25%
Resurgent Indian Bond	US$ 4.2 Billion	1998	5 years		
US$				2,000.00	7.75%
GBP				1,000.00	8.00%
				3,000.00	8.25%
Indian Millenium Deposit	US$ 5.5 Billion	2000	5 years		
US$				2,000.00	8.50%
GBP				2,000.00	7.85%
EUR				2,000.00	8.85%

Table 4.
Source: State Bank of India

The Bond issue has had a successful subscription; the question now is how do we deploy resources to have the greatest impact? Within the industry there are many schools of thoughts, on the deployment of solar cookers, however, these systems traditionally have been distributed through Non Governmental Organizations (NGO).

The current distribution format has had a lot of success; it will come to the decision makers, in determining the appropriate policies going forward. In an environment lacking adequate infrastructure, the best alternative is Direct Distribution to the Communities. It avoids investing in a developing a value chain and distribution network, especially for rural areas.

When the decision has been to deploy the investment under a Direct Distribution format. One must ask, how will the funds be spent and the investment controlled so that it meets bond holder's expectations?

In such a case, the entity should have a counter guarantee or a financial institution to ensure proper disbursement of the funds. In this regard, technology plays an important role.

India displays a high percentage of mobile phone users, hence, WiFi capability already exits. By employing this technological platform, Cooperative (Savings & Loans), NGOs and Banks can seek clients in remote areas utilising traditional and mobile money financing options and offer a facility under favourable conditions.

The user is in a position to secure a loan, and the equipment delivered and put to work. Terms of payment can be structured with a fix rate over a 5-year period in addition; reduction of CO2 emissions can also be monitored.

As part of the government's National Solar Cooker Distribution Project, the program should be qualified under the United Nations Framework Convention on Climate Change (UNFCC) the resulting carbon credits generated, can be used as revenues streams for the repayment process.

Another option is to involve communities, whereby, they execute the deployment of the equipment and charge a lease with an option to buy. An arrangement such as the proposed with an enhanced revolving fund will prove very valuable.

The choices available in which Diaspora Funds can be used, are infinite, however, what must be remembered is that the payments of the solar cookers, must be in line with the cost Propane Gas and / or fire wood and the bond interest repayment.

This translates for most Less Developed and Developing Nations of Internal Rates of Return in the high teens (15% - 18%). This means that financing of these items must be tailored in such a manner as to allow the rural communities to access them.

3. Conclusions

In the case of India, the amount is US Currency that remittances represent, the idea of tapping into these resources, can provide the necessary FDI that NGOs and financial institutions need to deploy solar cookers nationwide successfully adding to the mix the possibility of the inclusion of Certificates of Emission Reduction and the industry would have gained that element of subsidy that has hurt penetration in the past.

These instruments can also prescribe a recipe for the establishment of a microcredit industry that can very well be engine to provide the level of penetration needed for other renewable energy industries.

Implications for Solar Cooking industry in India

The Solar Cooking industry in India has been grappling with issue of how to achieve larger levels of penetration and make solar cooking after the elimination of its subsidy, a reality for a good part of the population.

The thought of securitizing these remittances into bond issues, is not new, however, this element compounded with creative financing, such as an enhanced revolving fund which will add can allow rural communities to access solar cookers.

The Indian Diaspora is extremely large and offers a world of possibilities for the financing of microcredit projects.

This financial instrument properly deployed can become a very effective tool in the generation of growth poles for the industry and the region.

One important element to keep in mind is that the deployment of these resources must be aligned with the interest payment and the redeeming of the bond principal.

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