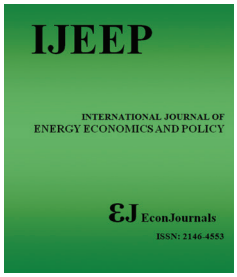

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Financing Renewable Energy in Namibia - A Fundamental Key Challenge to the Sustainable Development Goal 7: Ensuring Access to Affordable, Reliable, Sustainable and Modern Energy for All

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ABSTRACT

Renewable energy (RE) has been a "hot topic" subsequently the increased awareness and understanding of the severe and serious effects of climate change. Like many developing countries across the globe and Africa in particular, Namibia is prone to such climate changes and, thus, should be more familiarized with the impacts of fossil fuel generation on the environment. Successful significant financial and technological investments in RE in Namibia needs a comprehensive understanding of the correlation among diverse categories of investors and their enthusiasm to finance RE. Contrariwise, using the Sustainable Development Goal 7: Ensure access to affordable, reliable, sustainable and modern energy for all, as a measure for a wide-ranging and sustainable growth we recognize the interaction values that comes with RE. We studied the asset portfolios of diverse RE technologies supported or subsidized by various financial actors in Namibia. We also related the performance of public and private types of investments and then discrete further with various financial actors (e.g. public banks, private banks, international climate finance) and the categories of RE technologies that are financed in (e.g. different types of energy production from wind, biomass or solar radiation). We then use these preliminary results to draw conclusion and suggestions on how investment impact the directionality of novelty, and the impacts on RE policy in Namibia. This study establishes that notwithstanding the apparent regulatory and economic challenges, Namibia can incorporate and use a blend of (restructured) energy price security structures, cross subsidizations and environmental taxes in-order to encourage initiatives intended at supplementary the country's progress of RE sources and hence ultimately support the UN Sustainable Energy for All Initiative.

Keywords: Renewable Energy Finance, Financial Actors, Climate Finance, Energy Access, Renewable Energy Policy
JEL Classifications: Q2, Q54

1. INTRODUCTION

The Sustainable Energy for All Initiative is a universal initiative driven by the United Nations Secretary-General in 2012 with an objective of providing worldwide and all-inclusive access to modern energy services by 2030. In order to attain this specific target, a considerable financial and technological support will be essential at a degree far surpassing historical levels. The Sub-Saharan Africa region has an electrification rate of 30.5% and policy transformation concerns to increase electrification have been inadequately executed, thus causing uncertainty with regard to whether the region will be able to attain 100% accessibility to energy for all by the year 2030 (Chirambo, 2016).

Presently, the consumption and the advancement of RE has become an essential measure to maintain energy security, intensifying environmental preservation, and confront climate change globally. Because of fast social and economic development,

Namibia's energy requirement continues to increase over a specific prolonged period of time. Also, energy resources and environmental problems are gradually becoming prominent in Namibia's energy sector. Consequently, developing and using RE have tremendously become a significant approach for Namibia to resolve the progressively serious environmental and energy related issues (Rämä et al., 2013). Whereas on the other hand, assembling money for financing and innovation in low-carbon energy is another fundamental key challenge to the mitigations of climate change (Stern, 2015; Grubb, 2014; Dangerman and Schellnhuber, 2013). However, investments in fossil fuel persist to dwarf investments into RE. In 2013 alone, there was less than USD 260 billions invested in RE, representing merely 16% of the USD 1.6 trillion of overall investments in energy sector. To this end, financing of fossil fuels in energy sector, where they contend right with electricity from renewable energy (RE) sources, increased by 7% from 2013 to 2014 (UNEP and BNEF, 2015). It is also an evident that, fossil fuels still lead energy investments; thus, a key concern in the shift to low-carbon energy supply, specifically on how to achieve satisfactory funding to pilot investments towards RE direction (Lau et al., 2012 and Chirambo, 2016).

Despite providing affordable modern energy and energy services which are favourably considered as inspiration for economic development, enhancing peoples' livelihoods, and encouraging sustainable development, it has been noticed that many developing countries are having minimal access to modern energy and energy services. To this effect, an estimated of 1.3 billion people (Suberu et al., 2013), which is nearly a fifth of the world's population, have a shortage and minimum access to electricity at home, with majority of these people living in rural areas of South Asia and Sub-Saharan Africa (SSA) (Yadoo, and Cruickshank, 2012; Wicke et al., 2011; Glemarec, 2012). Energy sector programmes, initiatives, and reforms designed to expand people's access to affordable modern-day energy and energy services are not a new experience. But nevertheless, the realization of these programmes, initiatives and reforms has not always been promising. Significant issues such as inadequate capital investment, policy transformations (IPCC, 2011 and Uddin and Taplin, 2009), shortage of technological knowledge, limited power generation development and low rates of electrification (UNECA, 2007 and Suberu et al., 2013; Poize and Rudinger, 2014) are still a challenge for development in energy sectors.

In relation to the present work, there have been several studies attempting to assess and address the challenge of financing RE gap in Africa to foster universal energy access, yet there has not been any study on financing RE in Namibia, in order to determine the key challenges to the sustainable development goal 7, which is to ensuring access to affordable, reliable, sustainable and modern energy for all. Thus, our research work examines the considerable efforts on financing RE in Namibia. Moreover, we also conduct a comprehensive inquiry of a potential leverage points, accessible instruments and involved actors which demonstrates that there remains an enormous further prospective for RE in Namibia. We examined the asset portfolios of distinctive RE technologies sponsored by diverse financial actors in Namibia and then broaden further along with various financial actors (e.g. public banks, private banks, etc.) and the nature of RE technologies that are financed.

2. NAMIBIA'S RE SECTOR: BACKGROUND

2.1. RE in Namibia

Namibia has plenty of RE resources such as wind, solar, bioenergy and a well-established electricity supply industry. At the present moment, RE (besides large hydro), yet, only accounts for small amount of the installed capacity in the country. Figure 1 presents a summary of the installed capacity in the country.

Moreover, electricity imports account for over half of Namibia's energy supply as presented in Table 1. The weighted tariffs for these imports depend on the contract terms but tend be equally costly in relation to the cost of the prevailing and new generation opportunities.

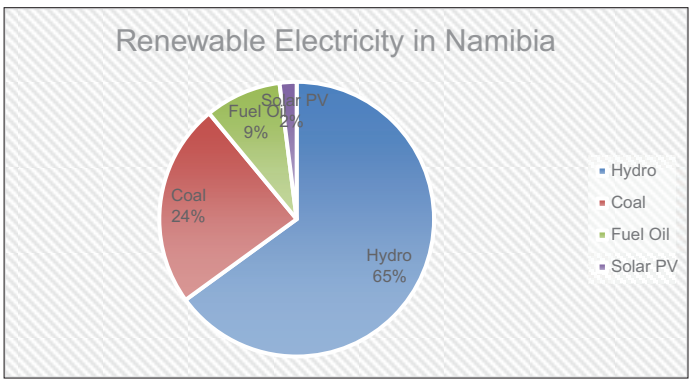
According to (National Integrated Resource Plan [NIRP], 2016), there are new power projects at different phases of development comprising of various RE projects. The future procurement of power or electricity from RE sources would be facilitated by the most recent development of Namibia's NIRP. This will afford an opportunity for this RE Policy to ensure more direction for the RE sector and encourage a supporting and conducive environment to take advantage Namibia's plentiful RE resources (Rämä et al., 2013).

3. FINANCE AND ENERGY INNOVATION

3.1. Financial Actors and Innovation Directions

In the preceding literatures, Joseph Schumpeter positioned finance at the heart of his concept of innovation, as availing funds essential for the entrepreneur to transform into action. But nevertheless, he emphasised on single type of funding: Banks (Mazzucato and Semieniuk, 2018), and thus failed to clarify on the issue of whether different characteristics of financial actors may influence what innovation is to be funded, and therefore creating directions. The Miller-Modigliani hypothesis, which argues that financial sources (equity or debt funding from any actor) is not a major concern to companies and therefore do not impact the definite economy (Shimada, 2017) which has further draw consideration away from differentiating among categories of financing of

Figure 1: Namibia's installed capacity as of January 2016 (~500MW)



Source: (National Integrated Resource Plan, 2016)

Table 1: Summary of Namibia's power import sources

Supplier	Maximum supply (MW)	Capacity factor (%)	Expiry date
ESKOM - Suplemental	200	20	Annual
ESKOM -Off-peak Bilateral	300	50	March 31, 2017
ZESCO - Zambia	50	100	December 31, 2020
ZPC - Zimbabwe	80	50	March 31, 2025
Aggrek - Mozambique	110	N/A	December 31, 2015
Total	740		

Source: (NIRP, 2016)

innovation. In the succeeding literature, the only kinds of actors characteristically singled out were "government" and "venture capitalists" (Mazzucato, and Penna, 2016).

Further latest work has positioned more importance on diverse kinds of financial actors as well as how they might influence the features and qualities of the firms and technologies to be financed. Therefore, financial support by the public sector also afar from the research and development phase (Mazzucato, and Penna, 2016) in sectors like low carbon technology, health and space, has caused the establishment of entire new sectors, regularly over mission-oriented ventures that were enthusiastically agreed upon by those who provide the funding (Shimada, 2017 and Foray et al., 2012). In several countries, financial support has been availed through innovation companies and/or mechanisms for supporting companies via procurement, similarly as the SBIR4 in the USA. In countries like China, Japan, Brazil, Germany, and in the European Union (EU), significant financial actors were public banks, offering patient finance for projects that intends to tackle massive challenges such as climate change mitigation and adaptions (Griffith-Jones and Cozzi, 2016; Mazzucato and Penna, 2016) and encouraging some industries (Shimada, 2017; Griffith-Jones and Cozzi, 2016) together, through a setup of further public organisations (Shimada, 2017).

3.2. Financial Actors and RE Direction

The available literature on financing RE, both modeling and empirical, has previously highlighted to a satisfactory investment in research and development than to downstream financing of distribution of RE (Mazzucato and Penna, 2016). However, a key gap acknowledged in RE lately is the shortage of funding of downstream capital-intensive high-risk projects (European Commission, 2013), stimulating an increasing literature that reports on actors in the implementation of RE technologies. Ghosh and Nanda (2010) have discussed that the capital needed for asset finance of the capital demanding RE power plants is characteristically an order of scale bigger than that which project capitalists have been keen to avail technology progress and too risky for banks (Mazzucato and Penna, 2016).

Another component emphasis on the effect of public procedures and standards on exclusive disposition finance. Different kinds of strategies are more favorable to finance RE innovation than others and might encourage fluctuating amounts of projects capital investments into RE businesses (Criscuolo and Menon, 2015). Furthermore, Rodríguez et al. (2014) indicated that uninterrupted public ventures are happening aimed at those technologies, where other public procedures had minimal impact on mobilizing private funding (Polzin et al., 2015). With reference to directions, the literature on directionality has deliberated on the energy sector but concentrated on the relationship of agency and structure and the effect of power exclusive of segregating finance (Criscuolo and Menon, 2015 and Shimada, 2017).

3.3. Financing Sustainable RE Projects

Financial institutions such as banks are predominantly vigilant about the financing of shared projects in the start-up stage, projects whose governance is a joint and not nationalized (Harrison, 2015; Ottinger and Bowie, 2015; Abolhosseini and Heshmati, 2014). In the energy sector, from common barriers to the major infiltration of RE is the challenge of financing the high initial cost of the equipment (Harrison, 2015 and Bocken, 2015) even if the lifespan cost of the installation normally is very competitive. Hence, new formula for funding these investments are promptly emerging in the RE sector (Glemarec, 2012). Developing literature highlighted new sources to finance sustainable RE projects. Bocken (2015) examined in what way venture capital can encourage the development of sustainable projects so as to create a progressive environmental and social impacts.

Another methods of financing have developed, based on the involvement of the greatest number (crowdfunding), but also bringing citizens into the governance of new companies. This new approach means the formation of a range of legal structures allowing the citizens of a territory to regroup themselves and invest on projects that encourage the energy transition (Harrison, 2015; Yildiz, 2014; Tyl and Lizarralde, 2017). Huhtala (2003) recognized several business models (customer owned, third party and community shares) stressing the significance of the purpose of finance in endorsing cleaner production and sustainability in businesses more broadly. Customer-oriented solutions refer to a prototypical where specific households or companies invest in RE technology (e.g. solar panel) and own it independently (Wainstein and Bumpus, 2016). Whereas the third-party solutions suggest financing systems by a different party than the one consuming the energy produced, eliminating therefore the high preliminary investment barricade and appealing to new customer sectors such as those with constricted budgets. Finally, in the community share model, investors buy shares in joint or local projects. These models are motivating to those without fitting circumstances for the installation (e.g. rental house for solar VP placement) or with less money accessible for investment (Harrison, 2015 and Bocken, 2015).

4. RE CONSUMPTION IN NAMIBIA

Figure 2 shows primary energy consumption of Namibia. Clearly, economic drivers and increasing mining industry upsurge energy

utilisation considerably in Namibia. Similarly, change from imported electricity to domestic electricity production impacts primary energy utilisation progressively.

Figure 3 indicates the Namibian electricity utilization, allotted into main sectors. It is apparent that results of high scenario are considerably boosted electricity utilisation in excess of folded utilisation estimated by the year 2030. One of the core reasons for this growth is huge mining activity in Namibia. Similarly, energy utilisation of other industry sectors expands remarkably. Costs are higher in Kudu situations in 2030, as natural gas-based electricity is distributed to neighboring countries (Rämä et al., 2013).

Figure 4 displays electricity production in Namibia divided by production types, comprising of import and export. With Kudu scenarios production combination varies significantly from non-Kudu scenarios, because in Kudu scenarios financing of 800 MW natural gas fired power plant is secured (Namibia Power Corporation [NamPower], 2017). Thus, it is apparent that in lack of deployment of Kudu gas, funding on coal-based energy production mixed with wind power from year 2020 is ideal in consistent with the model. Utilization tariffs of natural gas power plant is not at a peak level during years 2020-2025 in low and medium scenarios, since domestic utilisation is at comparatively low-level in comparison to the production volume and cost-effectiveness of natural gas-based electricity which is great sufficient to be exported in bulky volumes (NamPower, 2017 and Rämä et al., 2013).

5. REVIEW OF RELEVANT STUDIES

Different categories of financiers remained more expected than others to offer the capital-intensive, patient finance, high-risk, among others, desirable to attain innovation. So, there is insight

Figure 2: Primary energy consumption in scenarios in years 2008-2030

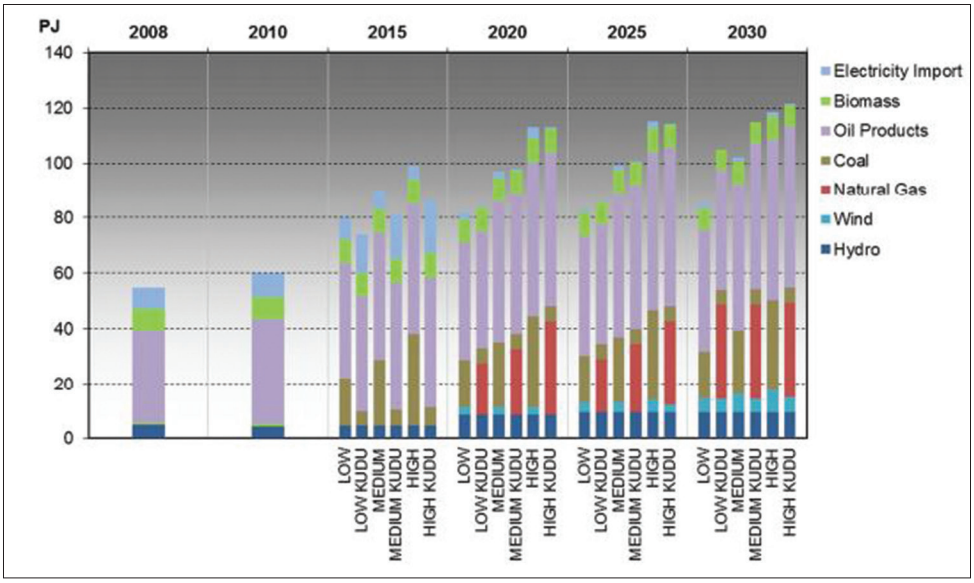


Figure 3: Electricity consumption in scenarios in years 2008-2030 divided by sectors

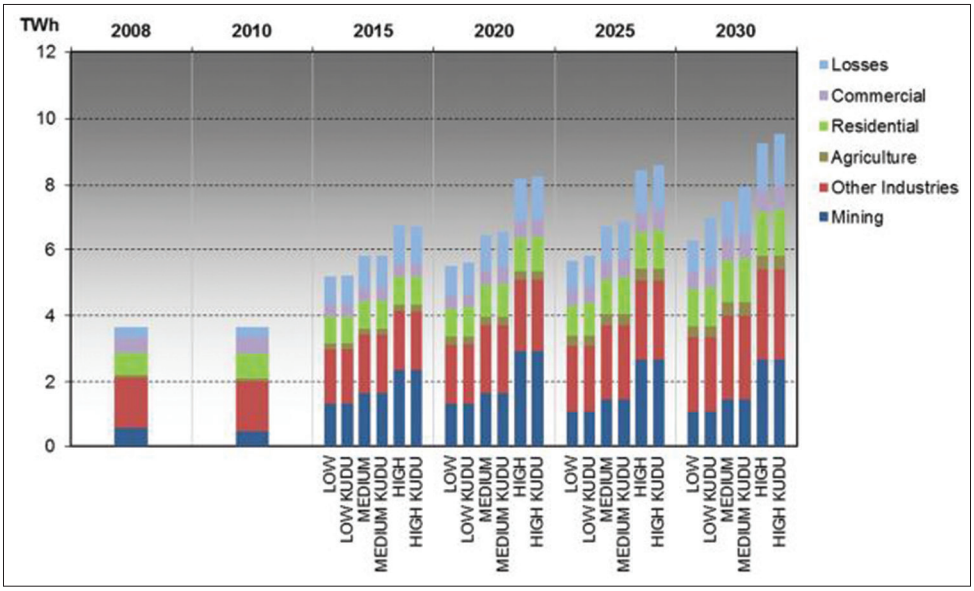
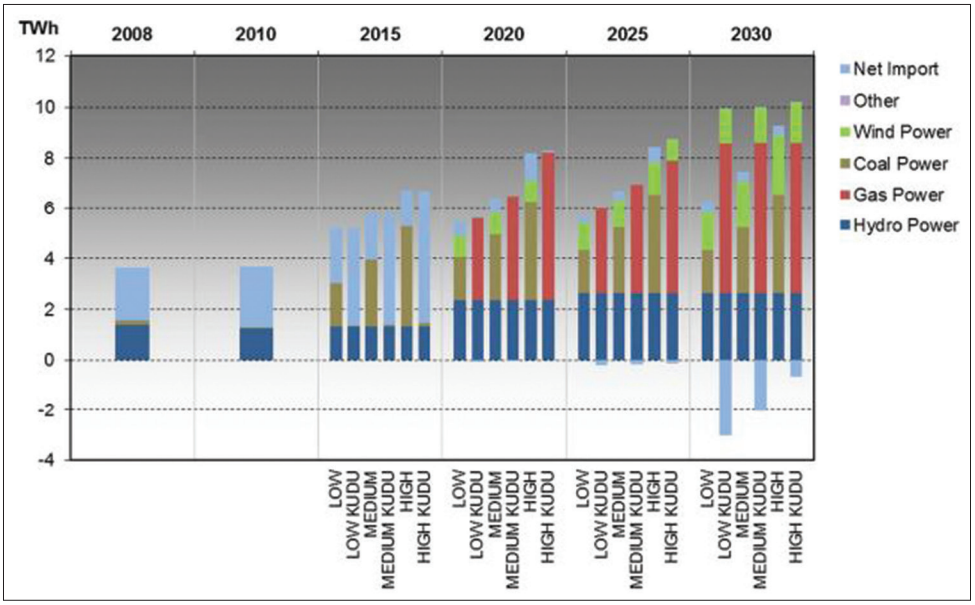


Figure 4: Electricity production in scenarios in years 2008-2030 divided by production technologies including import



into variances with private and public performers. Though the provisions of funding in disposition as to who funds, and what, for RE technologies are yet to be well-understood. While there are theoretical opinions concerning why various financial actors might show varying performance, and for why some sectors or technologies could be funded more than others (Mazzucato, and Penna, 2016), but we know less much about their obligation and in what way this might impact the direction of the development of RE. As for technology directions, while there is no advanced model farther the private/public boundary about how financial actors should vary in preferring specific areas (Ghosh and Nanda, 2010), crowdfunding prototypes, which can be customized to a series of project ranges (Shimada, 2017), have benefits afar their apparent competence to tap little contribution amounts from merchandising financiers.

5.1. Government Involvement?

All levels of government are expected to do more in terms of financing or supporting RE. At the national level, efforts supported (for instance), by the full credit of the U.S. government must not be disproportionately troublesome. If national obligation were essential to encourage the installations of RE, the U.S. government profits from exceedingly low borrowing charges (U.S. Department of the Treasury, 2016; Liberal Party of Canada, 2015) that would accept RE infrastructure to be categorized for government financing would be an economically sensible quest.

Another exceptional commencing point for any developing country like Namibia would be to simply get away with fossil fuel energy subsidies (U.S. Department of the Treasury, 2014; IEA, 2013) and re-allocate this money to RE distribution or innovation. Further possibilities involve changes to tax regulations (particularly the closing of tax gaps or charging carbon taxes) or financial measures (e.g., rising tax and/or the use of government deficit) Harrison (2015) contends that most of the major tax subsidizations for fossil fuels should be revised to incorporate RE, with a remarkably attracting preference being financial aid that boost the installation of RE in challenging environments. The Namibian Ministry of Mines and Energy (MME) is the solitary commissioner of the Solar Revolving Fund (SRF). The SRF is a credit facility created by MME to encourage demand for the deployment of RE technologies specifically for populations living in off-grid zones, plus to urban customers (NamPower, 2017 and NIRP, 2016). The initiative is exclusively financed and subsidized by government and offers its customers 5-year loans at a 5% fixed lending charges per annum. These loans cater for low to medium income households, the SRF has approved and financed 3414 solar system across the country between year 2011 and 2017 (NIRP, 2016 and Environmental Investment Fund [EIF], 2016).

5.2. Namibia RE Policy

Namibia is profoundly dependent at present on electricity imports from the Southern African Power Pool, which is gradually under pressure from raising demand in the region. Over and above, pursuing greater energy security by increasing power generation from renewables, the Namibian government was also concerned with aspect of harnessing low-carbon energy as a means to fulfill its international climate change obligations. Although the country has immeasurable RE prospective (particularly solar), and developers have been strong to invest in this sector, the nonexistence of a rational policy and strictly articulated commitment, supplemented by the indispensable institutional provisions to encourage RE development had hindered the progression of renewables in Namibia (Ministry of Environment and Tourism [MET], 2015 and NIRP, 2016).

Delivering on the promise of RE entails an empowering policy, regulatory, and financial environment (in addition to available technology). To modernize this environment in Namibia, a call for harmonizing the country's interest in pursuing an ambitious goal of preserving stability and integrity of current electricity infrastructure is of paramount. The determination to craft an applicable, tailor-made RE policy for Namibia also traversed the fine line between catalyzing low-carbon energy growth and considerably re-structuring the country's overall power sector. This

was much easier to strike this balance, with a strong RE policy that locates Namibia as a leader in this field, while safeguarding cost-effectiveness, local economic development, and energy security are taken into consideration. The policy signifies a momentum for the transformation of Namibia's energy sector is projected to kick-off with rapid development in Namibia's RE industry (MET, 2015).

6. DATA AND METHODS

The present study was carried out using meta-analysis and content analysis of publicly available information and data, including the national reports, publications, policy documents and industry-specific information, of both Namibia and international origin. The data sets were provided by the Namibian MME, reports, newspaper articles, industry-specific publications, and company reports, in consistent with the methodology outlined by Barnett-Page and Thomas (2009). This study collected secondary data through comprehensive analysis about various aspects such as national reports on RE from the Namibian MME, workshops, document analysis/review or desktop study, official statistics, technical reports, scholarly journals, literature review articles, trade journals, reference books, government documents, research institutions, universities, libraries, inter alias, in order to obtain relevant secondary data from the Namibian MME which is the main custodian of energy supply in Namibia and its affiliated institutions (NIRP, 2016). The measuring instrument for this study was determined after a thoroughly literature review of related studies has been carried out.

7. CLIMATE FINANCE AND RE IN NAMIBIA

Namibia is making a meaningful progress towards strategizing its national climate change response. It has also been effective in international climate finance developments and acknowledged a number of significant areas on which a complementary attempt could serve to reinforce its capacity on this response, predominantly tackling climate finance promptness requirements for which advocated encouraging activities could be determined (Deutsche Gesellschaft für Internationale Zusammenarbeit [GIZ], 2013). The majority of financial support for climate change in Namibia is from international sources and it has been intended for mitigation programs, predominantly in the energy sector. For instance, Namibia has acquired financing from the GEF for various RE and energy efficiency projects (as indicated Table 2). Majority of international climate finance comes outside of national budget systems, while the National Planning Commission (NPC) is watchfully engaged and committed in consulting financing agreements with benefactors and supervising international funding for government agencies. Whereas line ministries can negotiate agreements straight with development partners then ought first to inquire authorization from the NPC for all funding allocations and technical cooperation. With regards to loans and budget support, consent of the Ministry of Finance is also essential, and this financial support is contested via the Ministry of Finance (MET, 2015 and EIF, 2016).

Whereas Namibia has received $55.9 million in grants for 25 projects, from the GEF (Table 2), the most of this financial support has been granted for biodiversity and land degradation focal areas, and only US$8.9 million was granted for seven projects focusing on climate change (Table 3).

Namibia has also accessed a number of small grants totaling to an amount of US$2.9 million and this was executed through civil societies and community-based organisations in the areas of biodiversity, waters, land degradation, international ozone depletion and climate change through the GEF's small grants programme (GEF, 2012). These ventures had all acquired co-finance and altogether, Namibia had acquired an approximate of US$9.2 million from committed international climate change funds, of which US$7.25 million has been spent. The amount is possibly and substantially higher when bilateral initiatives are to be considered (World Bank, 2018; van Rooij et al., 2013; EIF, 2016; MET, 2015). Different bilateral development agencies have been administering capitalisation for climate-related undertakings in Namibia, comprising of Finland, Germany, Denmark, Sweden, and the European Commission, mostly for energy sector intercessions (GIZ, 2013; Climate Funds Update, 2012; GEF, 2012).

The majority, if not all, of climate funding acquired in Namibia is mainly in the form of grants. Namibia has shown a robust unwillingness to borrow from the multilateral development banks or the International Monetary Fund because of the worrying conditionalities accompanying to such credits and the fact that the country is capable to access commercial finance at low-cost tariffs. It was eminent that concessional loans might be boosted to Namibia's advantage if premeditated purposefully. Specifically, lends could become essential for great climate resilient infrastructure developments or in the energy sector to reduce carbon alternatives.

Whereas the EUs to Namibia, has a collaboration framework lapsing in 2020, and the EU has already dedicated €68 million ($84 million) to inspire several ventures and programmes in the country (Heinrich Boll Stiftung, 2015). This action render support to the Namibian government's determinations to minimize the susceptibility of the rural population to unfavorable ramification of climate change by developing, examining and propagating solutions and practices, applying cutting-edge technologies for climate change variations and mitigation in rural areas.

7.1. Innovative RE Projects Financing in Local Currency

To finance RE projects in Namibia, the climate fund investment vehicle worked well with RMB Namibia, a subsidiary to the

Table 2: Total GEF-financing in Namibia (in US$)

Project type	No. of Projects	Total GEF Financing	Total co-Financing
National projects	25	58,881,900	303,726,790
Regional and global projects	20	139,910,412	323,885,407
GEF small grants programme	19	2,973,475	3,788,996

Table 3: Multilateral climate finance for Namibia (in US$)

Projects	Funder	Year approved	Amount approved	Amount disbursed
Enabling activities for the preparation of initial communication related to UNFCCC	GEF	2001	0.13	0.13
Climate change enabling activity (additional financing for capacity building in priority areas)	GEF	2003	0.1	0.1
Adapting to climate change through the improvement of traditional crops and livestock farming	GEF	2012	0.96	0.96
Barrier removal to namibian renewable energy programme (NAMREP), Phase I	GEF	2012	2.6	2.6
Barrier removal to namibian renewable energy programme (NAMREP), Phase II	GEF	2011	2.6	2.6
Concentrating solar power technology transfer for electricity generation in namibia (NAM CSP TT)	GEF	2011	1.72	0
Developing a national energy action plan	Germany's ICI	2010	0.233	0
Namibia energy efficiency programme (NEEP) in buildings	GEF	2010	0.86	0.86
Total			9.203	7.25

Source: Climate Funds Update: http://www.climatefundsupdate.org/data and GEF: http://www.thegef.org/gef/gef_projects_funding. This table does not capture contributions outside of dedicated climate funds and initiatives. All GEF projects were implemented through UNDP

investment bank, the First National Bank of Namibia Limited. The agreement structure that they put in place permitted the projects to be subsidized in local currency. The financing solution is tremendously complicated and the structure gave a greenlight to implement effective long-term nonrecourse projects financing in a booming solar sector. The project is 30% owned by previously disadvantaged Namibians and will benefit development of the local community by creating job opportunities and encouraging the transfer of knowledge (Heinrich Boll Stiftung, 2015 and MET, 2015).

EIF financial support is mainly aimed at NGOs and Small and Medium Size Enterprises (SMEs), although it can also support proposals or initiatives by local governments. While it is not prohibited from "adding value" to government enterprises through non-government partners, the EIF's mandate prevents it from providing financial support to initiatives from national government. To date, the EIF has only appropriating funding in the form of grants. The EIF has lately begun its fiduciary standards and operational manual and made application to the Namibia Financial Institutions Supervisory Authority for authorization to lend soft loans. The EIF has also equally launched a green soft loans funding strategy, in collaborations with the newly founded SME Bank of Namibia which will function as a financial intermediate (EIF, 2016). The mechanism will grant small concessional loans to households of up to N$100,000 (US$10,000) for climate and environmental interrelated undertakings (household solar lighting, water efficiency equipment, solar water geysers, solar water pumps for farmers, etc.). This facility is value at N$ 5 million (US$0.5 million) and will be recapitalised with an additional N$ 8 million (US$0.8 million). The EIF can also administer larger concessional loans straight to households and SMEs for comparable kinds of financing, by a maximum amount to each project of N$5 million (US$0.5 million). In 2013, EIF has devoted N$ 30 million (US$3 million) in such facility.

8. DISCUSSION AND CONCLUDING REMARKS

There is a significant relationship between financial development and economic growth found in the available well-documented body of literature. A viable economic progression depends on the development of RE sectors (UNECA, 2007). This study examines whether financial market development encourages the distribution of RE in Namibia. Explicitly, we maintained that countries with a balanced financial markets experience advancement in the RE sector due to comfortable access to external financial supporting sources. Using a unique cross-sector data on RE in Namibia from the MME, this study gives a cross-country proof of financial market development's impact on RE distribution in Namibia. Our pragmatic results demonstrate that RE sectors that greatly depend on external financial support and grow enigmatically quicker in a country with advanced financial markets. In this case, solar PV is a leading example. As the sector that is mostly depend on external financing, it shows an excellent distribution level in more advanced financial markets.

Our findings reveal that advancement in financial sectors are a noteworthy determinant factor of RE disposition in Namibia. This has a fundamental implication to the policy makers, who should strategize on institutional mechanisms with easy access to financial supporting sources for firms in the RE sectors in Namibia. Furthermore, our findings substantiate the views in the literature, which established that financial development has the potential, and it can lead to CO_2 emissions reduction by resolving the significant role that financial sectors play in implementing RE.

This study has presented a summation of the existing landscape of financing RE and climate financing enthusiasm in Namibia and identified a number of promptness requests and particular undertakings that might be reinforced by promptness financial backings. Equally, it should be notable that this signifies an early effort to establish key gaps and needs that the government of Namibia will be required to foster on deliberation and resolve how to prioritise with the identified needs.

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