Global Determinants of Sustainability Linked Financial Markets

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Abstract
This study explored the global determinants of sustainability linked financial markets. The research further examined the hypothesis, whether there is significant association between sustainability linked financial markets and fossil carbon dioxide emission. A panel logit model was applied from the period 2009 to 2018 on the data derived from the global data base of GHG emission of all countries. The results of the logit regression model positively revealed that, at 99% level of significance, the issuance of sustainability linked finance are influenced positively by higher levels of fossil CO_2 total and fossil CO_2 per capita by country. It was further observed that fossil CO_2 per GDP and GHG per GDP by country have a negative association with the issuance of sustainability linked finance. GHG per capita was noted in the logit regression as not having any influence over the issuance of sustainability linked finance at 99% level of confidence. Therefore, the study recommends countries in all the markets that have high emission levels of fossil CO_2 per capita and total fossil emissions by country to issue sustainability linked finance to comply with COP21 climatic change agreement of limiting global warming levels to below 1.5 degree Celsius and of reducing GHG emissions to zero by 2050. The study observed the presence of blended finance, sustainable and green bonds, guarantees and insurance cover for green projects as the vital tools needed for the success of sustainability linked financial markets. The major impediment to the success of the sustainability linked financial markets was the increasing inequalities of accessing finance that was created by the drive to sustainability.
Key words: A panel logit model, Fossil carbon dioxide emission and sustainability linked financial markets
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1. Introduction
The study focused on the examination of the determinants of sustainability linked derivatives and bonds markets around the globe. Many innovative financial market products including derivatives and bonds have been inverted all over the globe in any effort directed towards primarily turning the existing markets into sustainability linked markets in alignment to United Nations Sustainability Development Goals and the Paris Accord, of limiting global warming to well below two or preferably to 1.5 degrees Celsius as compared to pre-industrial levels. The study focused on both sustainability linked derivatives and bonds market because the pricing of derivative products is inextricable linked to the underlying bonds market.

1.1 The Paris Agreement
United Nations (UN) climate change regarded the Paris agreement as a legally binding international treaty on climate change adopted by 196 parties at COP 21 in Paris on 12 December 2015 and came into force on 4 November 2016. UN climate change asserted that the implementation of the Paris agreement required economic and social transformation. UN climate change required countries to submit their national determined contributions (NDCs) by the year 2020, communicating actions they will take in reducing Green House Gas Emissions (GHGE) to reach the goals of the Paris Accord. The paper focused more on how the financial markets can play a role in their transformation to sustainability linked markets in-order to achieve the Paris agreement and the next section explores briefly into the taxonomy of sustainability finance taxonomies.

1.2 Sustainable Finance Taxonomies
Torsten et al., (2021) asserted that sustainable finance taxonomies can play an important role in scaling up sustainable finance and subsequently resulting in the achievement of high level goals of the United Nation

Sustainability Development Goals (UNDG) and Paris Accord.

Torsten et al., (2021) described four main characteristics of sustainability finance taxonomies by which they may be classified namely: i) objective, ii) scope, iii) target and iv) output. Torsten et al., (2021) further stressed that these characteristics of the sustainability finance taxonomies enable comparison of the sustainable finance taxonomies. The taxonomy of objective relates to the alignment of a taxonomy with high level policy goals, in that an effective taxonomy facilitate investors to channel money into assets that support the national long term sustainability objective agenda.

Torsten et al., (2021) acclaimed five principles of designing effective sustainability finance taxonomies notably: i) Alignment with high-level policy objectives and measurable interim targets, ii) Focus on one single objective ("One taxonomy, one objective"),iii) Outcome-based using simple and disclosed key performance indicators (KPIs), iv) Incorporation of entity-based information whenever possible v) Sufficient granularity, covering both high and low sustainability performance. These mentioned principles are further expanded below.

i)   Alignment with high-level policy objectives and measurable interim targets

Torsten et al., (2021) proclaimed that a sustainable finance taxonomy that is not aligned to high level policy goals is unlikely to itself to be of sustainable value, as high-level policy goals determine the direction of policy development. It is further alluded that lack of alignment will cause any labelled asset to face regulatory scrutiny. It is concluded that any unaligned taxonomies will become the subject of transition risk and become unsustainable. Torsten et al., (2021) asserted that realistic and measurable interim targets should be used that match with the investment horizon of the investors if policy objectives extend far into the future. It is further stressed that the interim targets should provide clarity on what exactly the target is and how it can be measured.

ii)   Focus on one single objective ("One taxonomy, one objective")

Torsten et al., (2021) declared that a direct link of the taxonomy is needed with the underlying objective in-order for taxonomies to provide a clear signal to investors. Torsten et al., (2021) further observed that the mixing of several objectives will naturally reduce information value dubbed as "aggregate confusion" (Berg et al., 2020) and as a result opening opportunities for greenwashing where poor performance in one area is offset by better performance in other areas. Torsten et al., (2021) also observed that several current taxonomies are based on the " do no significant harm (DNSH)" principle meaning that if a taxonomy supports one objective it should at the same time should not be harmful in terms of other objectives.

iii)   Outcome-based using simple and disclosed key performance indicators (KPIs)

Torsten et al., (2021) propounded that a taxonomy based on measurable outcome provided clarity to the investors on the non-financial benefits to be obtained from the use of the asset, entity or activity. Further Torsten et al., (2012) acclaimed that simple and disclosed Key Performance Indicators (KPI) afford the investors to assess the sustainability performance of the asset and permits a granular assessment that can be linked to an underlying sustainability objective.

iv)   Incorporation of entity-based information

Torsten et al.,(2021) further deduced that a taxonomy that lacked entity based information would lead to greenwashing. Greenwashing is defined as when misleading and unsubstantiated claims about environmental performance is made by business or investment funds about their products or activities (HM Government, 2021). Ehlers and Packer (2020) alluded that it is essential that taxonomies are effective and affect incentives on the level of the firm at which most investment decisions are made.

v)   Sufficient granularity, covering both high and low sustainability performance.

Torsten et al., (2021) declared that in-order for a taxonomy to provide useful decision-making signal it needed to provide the investors with a certain level of granularity to allow investors to assess whether an asset fit into their investment strategy. It is reiterated that a taxonomy needed to focus both on the improvement of firms with low environmental performance and firms with good environmental performance as it is essential to achieve sustainability goals at the global level(ibid).

1.3 Sustainability linked derivatives (SLDs)

International Swaps and Derivatives Association (ISDA) (2022) regarded SLDs as highly customizable transactions that use Key Performance Indicators (KPIs) to set sustainability targets. It further reiterated that sustainability linked derivatives have a key role to play in a transition to a more sustainable economy and in facilitating the flow of private capital to meet environmental, social and governance (ESG) objectives.

ISDA (2022) affirmed that the first SLD was executed in August 2019 between SBM offshore and ING to hedge against SBM's interest rate risk of $1 billion five year floating revolving rate credit facility. Further ISDA (2022) alluded that SLD are an evolving product that can be structured in many ways meaning that currently there is no agreed definition of SLD and market standard documentation.

1.4 The Regulatory Framework for SLDs

ISDA (2022) classified an SLD as an over-the-counter (OTC) derivative which imply that the existing

regulations that apply to OTC derivatives are to considered in dealing with SLDs. The following reforms were agreed and implemented by the G-20 leading economies in the OTC derivatives markets to achieve central clearance, reporting OTC derivatives to trade repositories, higher capital and margin requirements for non-centrally cleared OTC derivatives and exchange or electronic trading of standardized OTC derivatives(ibid). Further concerns about greenwashing can be combated by the implementation of robust regulations in all different jurisdictions and followed by standardization of ESG overlay on SLDs to support the integrity and credibility of the ENG products as the SLDs market grows.

1.5 Documentation

ISDA (2022) asserted that accurate and clear documentation of SLDs is key. There are two categories of SLDs from a documentation perspective namely, a type-one SLD and type-SLD. A type-one SLD is one in which the ESG related terms, including KPIs are set out in the confirmation documenting the transaction. A type-two SLD is where the ESG terms are set out in a separate agreement or confirmation that reference the transaction [ISDA, 2021].

1.5.1 KPI Disclosure and Verification

ISDA (2022) stressed that sufficient disclosure and verification of KPIs is fundamental to the efficacy of SLDs. Further ISDA (2022) suggested that KPIs should be verifiable and transparent. Disclosure being the process of providing information relating to the performance of a relevant entity against a KPI. Verification being the process of using that disclosed information to check whether that entity has satisfied the relevant ESG target.

1.5.2 Data Management

ISDA (2022) alluded that collection, storage and dissemination of data plays an important role in management of portfolios containing derivatives. For SLDs in the long term any data strategies adopted in the long term should be discussed at a market wide level so that firms can collaborate in achieving a common data goal.

1.6 Sustainability Linked Bonds (SLBs)

The International Capital Association (ICMA) (2020) defined SLBs as any type of bond instrument for which the financial and structural characteristics can vary depending on whether the issuer achieves predefined sustainability or ESG objectives. It is further stressed that issuers are committed explicitly to future improvement in sustainability outcome within a predetermined timeline and it that sense SLBs are regarded as forward-looking-performance based instruments. It is noted that the proceeds of SLBs can be used for general purpose.

1.6.1 Sustainability Linked Bond Principles (SLBPs)

ICMA (2020) regarded SLBP as guidelines that outline best practice for financial instruments incorporating forward looking ESG outcomes and promote integrity in the development of SLB by clarifying the approach for the issuance of the SLB.

The Sustainability Linked Bond Principles have five core components as listed below;
    i)   Selection of Key Performance Indicators (KPIs)
    ii)   Calibration of Sustainability Performance Targets (SPTs)
    iii)   Bond Characteristics
    iv)   Reporting
    v)   Verification

1.7 Sustainability Bonds

ICMA (2021) defined Sustainability Bonds as a type of bond instrument where the proceeds or an equivalent amount will be exclusively applied to finance or refinance a combination of both green and social projects.

The sustainability bonds have four components listed below
    i)   Use of proceeds
    ii)   Process for project evaluation and selection
    iii)   Management of proceeds
    iv)   Reporting

1.8 Green Bonds

ICMA (2015) differentiated from a regular bond by being "labelled green" by issuer or another entity whereby a commitment is made to use the proceeds of the green bond in a transparent manner and exclusively to finance and refinance "green" projects, assets or business activities with an environmental benefit. Green bonds are regarded to have four components as listed above for sustainability bonds. OECD (2015) noted that annual issuance of green bonds tripled in 2014 to reach US36.6 billion and the issuance grew further in 2015 with US40 billion issued by November 2015.

1.9 Research Objectives

1. To characterise the global sustainability linked financial markets.
2. To determine whether global sustainability linked financial markets can influence Co2 Emissions.
3. To identify the conditions necessary for global sustainability linked financial markets.
4. To determine factors that determine the establishment of global sustainability linked derivatives and bonds markets.
5. To identify possible impediments to the establishment of global sustainability linked derivatives and bonds markets.

1.10 Research Questions

1. What are the characteristics of global sustainability linked financial markets?

2. How can sustainability linked financial markets influence global Carbon dioxide (Co2) or GHG emission?

3. What are the conditions necessary for the growth of global sustainability linked financial markets?

4. What are the factors that determine the establishment of sustainability linked derivatives and bonds financial markets?

5. What are the possible impediments to the establishment of sustainability linked derivatives and bonds markets?

1.11 Research Hypothesis

H0 : There is no association between sustainability linked financial markets and fossil Co2 emission.
H1: There is a link between sustainability linked financial markets and fossil Co2 emission.

2.0 Literature Review

Raquel de la Orden and Ignacio de Calonje (2022) affirmed that sustainability linked finance is designed to incentivize the borrower's achievement of environmental, social or governance targets through pricing incentives. It is further reiterated that these financial instruments incentivize the pursuit of sustainability targets by tying pricing or interest rates to their achievement. It is further alluded that the underlying financial instruments can be any financial product including bonds, corporate bonds, project finance loans, corporate loans, derivatives, revolving finance facilities and others(ibid).

Raquel de la Orden and Ignacio de Calonje (2022) deduced that pricing structures are expected to evolve as the market for sustainability linked finance matures and further asserted that Corporate, Environmental and Governance metrics are the most popular sustainability indicators. It was also observed that early debt issuers used carbon emission reduction metrics, but social and environmental metrics were noted to be surging.

Werner et al., (2022) proposed four central conditions for measuring financial sustainability namely a real growth of the firm that prevents shrinkage or liquidation over time, a significant probability of a firm's survival, an adequate level of risk exposure by the firm and an attractive risk return profile for the owners. Further based on their empirical capital market research findings Werner et al., (2022) derived the hypothesis that companies with high financial sustainability generate risk adjusted excess returns.

Alex (2021) observed sustainability investment strategies as either negative or exclusionary or positive or integrated. Negative sustainability investment strategies were regarded as risk screened against a range of non-financial performance metrics across the Environmental, Social and Governance (ESG) categories that lead to the recalibration of the long-term risk profiles of the high carbon intensity companies. It is further alluded that the strategic screening would result in avoidance or reduction of ESG high risk investments. In addition, positive sustainability investment strategies were viewed as typically aiming to achieve a "double delta' of impact by providing both new, additional, capital and focusing on high potential start ups or high growth potential impact companies. Further it was postulated that positive sustainability finance was often aligned with making an additional contribution towards one or more of the 17 United nations Sustainability Development Goals (UNSDG).

Caldecott (2020) deduced two conditions upon which sustainability linked finance must satisfy in order to contribute to the transition of the real economy to environmental sustainability; the economic activities that the instrument is advocating for should be compatible with the goal of the Paris agreement of limiting global warming to well below 2°C or preferably to 1.5°C and the instrument must demonstrate a clear measurable difference in the real economy through helping borrowers in managing climate related risks, aligning their practices to zero emissions in the future and reducing the cost of capital for activities that are aligned to the Paris agreement.

Gregor et al., (2022) recognize three factors which the sustainability linked financial markets depends upon in order to decarbonize the real economy to limit global warming to the stipulated 2°C or preferably to 1.5°C; players in the sustainability linked markets need to have a common understanding of economic activities that have a material contribution to climate change; science based targets should be used as best practice indicators of climate related performance in sustainability linked financial markets and that the extent to which sustainability

linked financial markets offers a lower cost of capital to transition their activities is dependent upon investors' perceptions and preferences.

Beatrice et al., (2021) acclaimed the main primary challenge of sustainability linked financial markets as most financial markets consider social and environmental impact of financial decisions as immaterial. It is further reiterated that the financial services industry is reluctant to change and that they are impediments and lock-ins that reduce the opportunity for identifying system level benefits that can be exploited by new firms.

3.0 Research Methodology and Design

The paper is based on mixed method research. For the qualitative part of study documentary analysis on the conditions necessary for sustainability linked financial markets and impediments to sustainability linked financial markets was performed on the material obtained from the World Economic Forum of September 2020 and May 2022 annual meeting. Panel logit regression model was run on the time series data from 2009 to 2018. The data was obtained from a sample of 70 countries comprising thirty-two countries that were drawn randomly chosen from Africa and thirty-eight countries that issued green bonds by the year 2021 in the rest of the world (refer to table 1 below).

For each sustainable market, information was sought on the country's use of green bonds, social bonds, sustainability bonds, sustainability linked bond and sustainability linked derivatives, as well as the proposed explanatory variables; Fossil Co2 per capita by country, Fossil Co2 per GDP by country, Fossil Co2 total by country, GHG per capita by country and GHG per GDP by country. The data was derived from the global data base of GHG emission of all countries (Crippa et al., 2021).

To determine the Co2 and GHG emissions that are associated with the usage of sustainability financial products a panel data logistic model is run from 2009 to 2018 as a short wide analysis manifested in the following equation (1).

$USE_{it} = \alpha_i + \beta_1$ **Fossil Co2 per capita by country**$_{it}$ $+ \beta_2$ **Fossil Co2 per GDP by country** $_{it}+ \beta_3$ **GHG per capita by country**$_{it} + \beta_4$ **GHG per GDP by country**$_{it} + \beta_5$ *Co2 total by country*$_{it} + \upsilon_{it}$ *(1)*

where, it is the subscript for the country sustainability financial market i in year t of the country Co2 and GHG emission annual report (2009- 2018);

USE_{it} for country sustainability financial market i in year t takes the value of 1 if the country had a sustainability financial market in the report for that year, and is otherwise zero;

β_1-Fossil Co2 per capita by country relates to values in fossil of Co2 per capita by country sheet expressed in tonnes of Co2 per capita per year.

β_2- Fossil Co2 per GDP by country are values in fossil_CO2_per_GDP_by_country sheet are expressed in t CO2/kUSD/yr

β_3-GHG per capita by country are values in fossil_GHG_per_capita_by_country sheet expressed in t CO2eq/cap/yr

β_4- GHG per GDP by country are values in fossil_GHG_per_capita_by_country sheet expressed in t CO2eq/cap/yr

β_5-Fossil Co2 total by country are values in fossil_CO2_totals_by_country sheet are expressed in Mt CO2/yr.

υ_{it} is the error term.

4. Presentation and Discussions of Research Findings

This part discusses the impediments to sustainability linked financial markets in section 4.1, section 4.2 outlays the conditions necessary for sustainability linked financial markets and section 4.3 sets the outcome of the logistic regression model applied in the study.

Table 1-4) summarizes the number and market value of sustainability instruments products traded in the markets for the ended 2019 to 2020. Table 4 and Table 4 show the proportion of green bonds, social bonds and sustainable bonds that were issued globally by year 2019 and 2020. Table 2 shows that USA, China and German are the three biggest green bonds issuing markets in 2021. Table 3 also reflect that supranational organizations dominate in the issuance of social bonds and sustainability bonds in 2020 whilst financial institutions and corporate bonds dominated the issuance of green bonds both in the year 2020 and 2021 as manifested in table 3 and 4.

Table 1 – Value breakdown of bonds by total market size and volume

Type of Bond	2020 (Volume)	2020 (Market size)-US$ Billions
Green bond	1,382	295,851
Social Bond	159	164,874
Sustainability Bond	187	139,294
Sustainability Linked Bond	16	8,781
Total		

Source: www.bonddata.org

Table 2 of Global Green bonds Market Value by 2021

Country	Value of Green Bonds Issued (billions US$)
USA	81.9
CHINA	68.1
GERMAN	63.2
FRANCE	36.3
UNITED KINGDOM	33.9
NETHERLANDS	23.4
SPAIN	22
ITALY	19.6
SWEDEN	16.2
SOUTH KOREA	12.5
NORWAY	12
JAPAN	11.5
CANADA	10.6
HONG KONG	9.3
SINGAPORE	8.1
INDIA	6.8
AUSTRALIA	5.2
CHILE	4.2
DENMARK	3.9
FINLAND	3.8
IRELAND	3.7
AUSTRIA	3.1
SWITZERLAND	2.8
PORTUGAL	2.7
BELGIUM	2.5
BRAZIL	2.2
ISRAEL	1.8
POLAND	1.6
RUSSIA	1.6
NEW ZEALAND	1.3
GREECE	1.2
ICELAND	1.1
TOTAL	478.1

Source:Statista Research Department 2022

Table 3-Issuer of green bonds, social bonds and sustainability bonds (%)-2020

Issuer	Green Bonds (%)	Social Bonds (%)	Sustainability Bonds (%)
Supranational	5	40.7	59
Sovereign	11.7	2.5	1.9
Municipal	6.6	3.2	10
Financial institution	16.9	12.3	9.9
Corporate	42.9	5.2	12.4
Agency	16.9	36	6.9

Source: www.bonddata.org

Table 4-Issuer of green bonds, social bonds and sustainability bonds (%)-2019

Issuer	Green Bonds (%)	Social Bonds (%)	Sustainability Bonds (%)
Supranational	6.4	7.3	11.6
Sovereign	8.3	0	1.2
Municipal	5.9	4.7	19.6
Financial institution	24.1	36	32.5
Corporate	35.5	11.6	22.7
Agency	19.9	40.4	12.4

Source:www.bonddata.org

Table 5 Issuer of sustainability linked bonds as of 31 December 2021

REGION	Number of Sustainability Linked Bonds
Europe	138
North America	38
Asia	37
South America	16
Oceania	8
Africa	4

Source: LGX DataHub, as of 31 December 2021

4.1 The impediments to Sustainability Linked Financial Markets

The following are the major impediments faced by sustainability linked financial markets; the drive for sustainability has magnified global inequalities in accessing finance; Higher demand for sustainability recovery financing and upward pressure on interest rates linked to stimulus packages in High Income countries can affect other countries' capacity to attract capital; divestment from non-sustainable projects or projects not labelled as sustainable could have a major implications for resource allocations and geopolitical equilibrium; persistent barriers to investment and capacity constraints prevent developing countries from harnessing the benefits of the drive for sustainability; the absence of environmental, social and governance (ESG) in most developing countries could hide potential opportunities and add to the income bias in investment decisions; political and commercial priorities could clash with the universality of social development goals (SDGs) and the proliferation of sustainability standards could create additional barriers to finance and investments, adding significant compliance costs in developing countries (Olivier, 2022).

4.2 Conditions necessary for sustainability linked financial markets

For sustainability linked financial markets to be successful the following conditions are required to be present in the financial markets as observed by the world Economic Forum of September 2020;

4.2.1 Blended finance

Blended finance is regarded as a key enabler of accelerating capital towards sustainable energy. Blended finance is regarded as a combination of funding by investors and concessional funding by development partners (Ayla, 2020).

4.2.2 Sustainability and green bonds

Sustainability bonds are financial instruments whose proceeds are applied exclusively to projects that contribute towards sustainability and climate. Hence sustainability bonds and green bonds are an important ingredient for the success of the sustainability linked financial markets (Ayla, 2020).

4.2.3 Guarantee mechanism

It has been stressed that green energy projects must be bankable and that guarantees are required particularly for technologies and markets that are not mature. Sometimes governments and states provide the guarantees for real assets projects (Ayla, 2020). Therefore, guarantees are an important condition that contribute to the growth of sustainability linked financial markets.

4.2.4. Insurance

It was asserted that in the energy transition finance equation insurance companies can play a vital role by hedging project risks and thus creating an easy path for project finance (Ayla, 2020). Therefore, insurance is an important vehicle needed to provide cover in sustainability linked projects.

4.3 Results of the logistic regression model

Descriptive statistics relating to mean, median, standard deviation, maximum and mean are displayed in Table 6 below;

Table 6 descriptive statistics for C02 and GHG emissions from 2009 to 2020 of the 64 countries studied.

Item	Mean	Median	Standard Deviation	Maximum	Minimum
Fossil Co2 per capita by country	4.832841	3.433574	4.634232	18.99986	0.035327
Fossil Co2 per GDP by country	0.210319	0.167378	0.144094	0.790375	0.005705
FCO2_TOTAL	436.1699	44.06621	1454.770	11260.01	0.515049
GHG per capita by country	7.109752	6.341776	5.897048	27.15233	0.454884
GHG per GDP by country	0.422713	0.373221	0.282830	2.427433	0.074658

Source: E-Views

Table 7 Sustainability Financial product usage and Determinant Factors

Variable Model	Short-Wide" panel data Logit analysis (June 2009-July 2017)	Short-Wide" panel data Logit analysis (June 2009-July 2017)	Short-Wide" panel data Logit analysis (June 2009-July 2017)
	Coefficient	**p-value**	**z-Statistic**
Constant	-10.31747	0.0501	-1.959495
Fossil Co2 per capita by country	4.404450	0.0046	2.832655
Fossil Co2 per GDP by country	-68.67039	0.0192	-2.340880
FCO2_TOTAL	0.025689	0.0036	2.908968
GHG per capita by country	0.831666	0.0118	2.517085
GHG per GDP by country	-4.688040	0.7162	-0.363567
Cross-section	70		
Number of observations	640		

Source: Logit regression model-Level of confidence@99%.

Seventy countries were availed to the study, comprising of thirty-two countries that were randomly picked for the study and thirty-eight countries that had issued green bonds in the world. The result of the logit regression model is reflected in the above Table 7. The results above reflected in Table 7 manifest the coefficients β1, β2, β3, β4 and β5 of the panel logistic regression equation (1) that were run through e Views student version 12. Sustainability linked financial market was used as the dependent variable and took a value of 1 if a country had issued a green bond, social bond, sustainability bond, sustainability linked bond or sustainability -linked derivative and otherwise zero if a country had not issued a green bond, social bond, sustainability bond, sustainability linked bond or derivative linked derivative. Fossil Co2 per capita by country relates to values in fossil of Co2 per capita by country sheet expressed in tonnes of Co2 per capita per year. Fossil Co2 per GDP by country relates to values in fossil_CO2_per_GDP_by_country sheet expressed in t CO2/kUSD/yr. GHG per capita by country are values in GHG per capita by country sheet expressed in t CO2eq/cap/yr. GHG per GDP by country are values in fossil expressed in t CO2eq/cap/yr. Fossil Co2 total by country are values in fossil_CO2_totals_by_country sheet expressed in Mt CO2/yr.

The study manifested at the 99% level of confidence that, financial markets with higher FCo2 total and a higher Fossil Co2 per capita by country are more likely to have an increasing propensity for issuing sustainability linked finance than those without. However, it was also noted that financial markets with higher Fossil Co2 per GDP by country and GHG per GDP by country have a decreasing propensity for issuing sustainability liked finance at 1% level of significance. The study also uncovered that the level of GHG per capita by country does not have no influence on the issuance of sustainability linked finance at the 99% level of significance.

5. Conclusion and Recommendations

The study acknowledged the increasing importance of sustainability linked finance markets in the developed world and in emerging countries of South America, Oceania and Africa. The study examined countries with the most issuance of green bonds, social bonds, sustainability bond and sustainability linked finance. The study revealed that the most sustainability finance instruments that are likely to be issued in the world are green bonds (49%), social bonds and sustainability bonds (23%). The least to be issued in the world was noted as sustainability linked bonds (1%). The study observed that a positive significant relationship exist between the issuance of sustainability linked finance with higher emission levels of Fossil carbon dioxide total (FCo2 total) and Fossil carbon dioxide per capita (FCo2 per capita) by country at the 99% level of significance.

5.1 Recommendations

The study recommends policy makers in countries with high emission levels of FCo2 total and FCo2 per capita to capitalize on the issuance of sustainability linked finance to promote the achievement of COP 21 Paris climatic change agreement.

The issuance of sustainability linked finance must be supported by insurance cover, guarantees from all the parties of high stake and a strategic blend of development finance and philanthropic funding would encourage capital flows to emerging countries resulting in reduced risks and lower blended costs for such countries (Ayla,

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