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# Anchoring the Blended Finance Structuring Approach on the Local Context in Sub-Saharan Africa (SSA): A System Dynamics Approach

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## Abstract

*Framed as a tool to strategically mobilise private sector capital, it is widely acknowledged that the Blended Finance Structuring Approach (BFSA) holds promise. However, connection to the local dimension is the most significant challenge for financial actors. In addition, anchoring the mechanism on the local context in developing economies is a major challenge. Therefore, to explore the local context in a systemic and holistic manner, the research, anchored on critical realism as its philosophical approach and Systems Theory/Collaborative Model as its theoretical /conceptual framework, proposed the adoption of the Systems Thinking/System Dynamics methodology. It argues that the problems under exploration is not only complicated and trans-disciplinary in nature but also non-linear with feedback loops, two-way interconnections and interrelationships. Thus, the research, by proactively and systematically identifying potential sensitive intervention points (SIPs) within the BFSA architecture in SSA, will advance our understanding of intervention points of maximum influence that could possibly provide possible future finance flow pathways for clean energy investments in SSA.*

## 1. Introduction

Central to the concept of Sustainable Energy Development (SED) is the analysis of consumption, production, degree of self-sufficiency, and emissions [1]. In recent years, there has been an increasing interest in the long-term energy situation of countries in SSA, principally due to the projected increases in energy demand and population. Indeed, the region's energy demand will likely quadruple by 2040, and its population growth is estimated to double in 33 years [2]. Although its contribution to global CO<sub>2</sub> emissions is currently very low, the region is "one of the most vulnerable to the impacts of climate change" [3] and thus projected to experience severe impacts [4]. In fact, in the global distribution of the climate change vulnerability index (see Figure 1), many countries in SSA are not only significantly vulnerable but are also susceptible [5]. Thus, since most countries in the region are resource dependent and are expected to generate growth from fossil fuels and coal in the short term, this research argues that it

is crucial for the States in the region to adopt climate mitigation measures to prevent a future situation in which the energy system becomes carbon-locked.

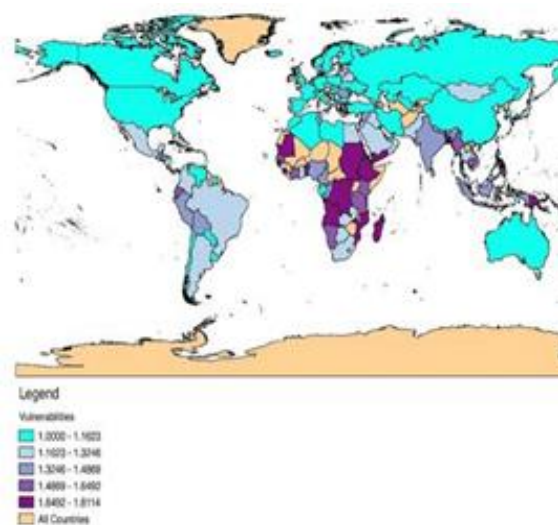


Figure 1. Climate change vulnerability index

In SSA, limited institutional capacity, unfavourable politics, poorly functioning financial institutions, illiquid stock markets, currency fluctuations, lack of access to finance, and high initial costs, transaction fees associated with project management, lending rates, and financial structuring makes it challenging to mobilise capital for mitigation projects [6]. Thus, BF, framed as a concept to strategically use development finance and philanthropic funds to mobilise private capital, has the potential to provide a de-risking component and enable the mobilisation of private resources from "billions to trillions," thereby catalysing the flow of additional funding and financing into development projects and most especially clean energy and infrastructure projects in SSA.

## 2. Literature Review

An analysis of the Intended Nationally Determined Contributions (INDCs) revealed the critical role of finance and capacity building in achieving undertakings. As a result, investments in climate energy must be massively and rapidly scaled

up [7]. The pivotal role of private sector actors as a means of closing the financial gap is well documented in literature. Institutional investors provide the greatest opportunity to unlock finance for clean energy investment because they manage US\$ 112.1 trillion in global assets as at 2020 [8]. However, questions have been raised about the best strategies to scale-up the participation of institutional investors and other private actors so as to mobilise large-scale capital for clean energy projects in SSA. This is important due to the specific risks peculiar to SSA including high initial costs, small ticket sizes, political and country risks, poor financial structuring, tax, and currency risks [6].

One of the most significant discussions on anchoring BF on the local context is the one provided by the OECD/DAC Principles (see Figure 2). It set a policy tone for all financial stakeholders providing development financing, including but not limited to donor governments, development cooperation agencies, philanthropies, local capital structures, and concerned stakeholders. [9]. The debate about anchoring BF on the local context has gained fresh prominence, with many arguing that interventions from Development Finance Institutions (DFIs) and Multi-Lateral Development Banks (MDBs) should contribute to fostering local institutions. However, the local dimension remains the most significant challenge for financial actors.



Figure 2. OECD/DAC Principles

Moreover, the ability of DFIs/MDBs to comprehend the local context in a more systemic and holistic manner is limited. [13]. As a result, anchoring BF to the local context is expected to improve locally available capital structures for delivering bankable projects, catalyse private sector capital and contribute to closing the huge financial gap that exist in climate finance.

The local dimension is also incorporated into the shared value system on BF under the OECD-promoted Tri Hita Karana Roadmap for BF, which includes the development rationale, anchoring BF to the Sustainable Development Goals, and structuring BF to build inclusive markets.

According to the roadmap, BF should help accelerate the development of inclusive, sustainable

markets, including the local financial market, for instance. Encourage engagement and ownership at the local level.

### 3. Methodology

Climate change research necessitates complex thinking and collaboration across law, economics, politics, public policy, science, and engineering sectors. Moreover, structuring finance through blended vehicles is complicated and time-consuming, with legal, cultural, and tax issues. The prevalence of autonomous actors with different mandates further complicates the domain. Therefore, anchored on critical realism as its philosophical approach and Systems Theory as its theoretical framework, this research proposed adopting the Systems Thinking/System Dynamics methodology. It argues that the problems under exploration are complicated, trans-disciplinary, and non-linear, with feedback loops, two-way interconnections, and interrelationships. The conceptual framework of applied Systems Thinking focuses on the structure of functional units.

The process begins with problem identification and finishes with a discussion of potential remedies and expectations. The system model is designed to forecast the outcomes of intended activities and, by identifying the feedback, will aid in recognising the interconnectedness between and amongst stakeholders.

Our study aims to figure out what changes could and should be made by proactively and methodically finding potential sensitive intervention points (SIPs) in the BF architecture in SSA. By understanding the relationships between the variables and the system, it is possible to identify the leverage points that can be used to bridge the gap between the local dimension and BF. These leverage points underpin the analysis of the disconnection between the local dimension and BF. The resulting model would investigate the influence of external factors on the investment network and the resulting decisions. Ultimately, this would provide insight into the source of the misalignment between BF and the local context, as well as the most effective means of addressing it. While the systems approach makes taking advantage of potential co-benefits easier and encourages open discussions about how well market-shaping policies work [14], more data is needed to make the methodological framework more certain.

### 4. Analysis of Findings

Polarity or direction of change between cause and effect pairs is implied by a causal relationship. Two scenarios exist:

- i. Both variables change in the same direction (+)

- on the arrow.
- ii. They shift in opposite directions (-) on the arrow.

Thus, polarity is "+" when two variables move up or down together, "-" when one variable is up while the other is down, and vice versa. Initial findings from the literature reveal some variables of interest. These include locally available capacity-building measures, SDGs, available capital, support for enabling environment reform, locally available capital structures, etc.

The Figure 3, the qualitative conceptual tool, was drawn with the VENSIM software and developed based on review of Literature. Policy is the core part of the Causal Loop Diagram (CLD):

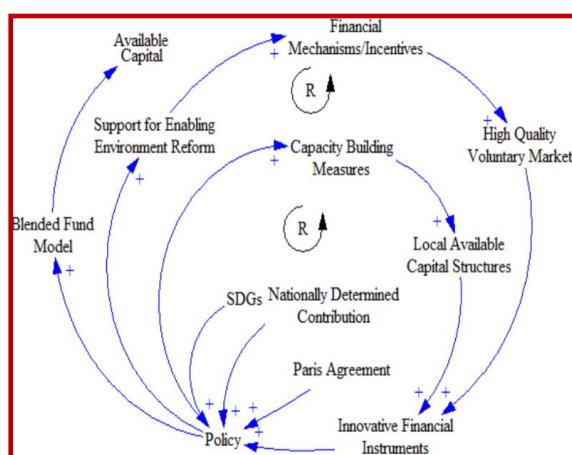


Figure 3. Qualitative conceptual tool – CLD

The CLD shows the causal relationships between some factors. For example, in the correlation between local available capital sources and innovative financial instruments. When the rate of the former increases the latter increases at the same rate. The first R loop demonstrates that capacity-building policies can likely lead to the development of locally available capital structures.

### 5. Projected Results

On the question of investigating the disconnection between the local dimension and BF, this study found that a thorough analysis of stocks and flows, components of the BF system, will most likely reveal leverage points and potential areas of intervention to improve outcomes for all stakeholders.

Internal variables such as the level of trust between local stakeholders and BF providers, the level of understanding of BF among local stakeholders, and the level of collaboration between local stakeholders and BF providers, can help to identify the points of disconnection between the local

dimension and BF.

External variables such as the availability of resources, the level of economic development, the level of political stability, and the level of access to technology, are also factors that can shape the relationship between the local dimension and BF.

Financial variables such as the amount of capital available for investment, the cost of capital, the rate of return on investment, and the risk associated with investing in local businesses and organizations, can further help to identify disconnections between the local dimension and BF.

Economic variables such as the level of economic development, the level of access to technology, the level of economic inequality, and the level of access to financial services, can also be used to analyse the relationship between the local dimension and BF.

The environmental variables such as the availability of natural resources, the level of environmental degradation, the level of access to clean water and sanitation, and the level of access to renewable energy sources, can all be used to investigate the disconnection between the local dimension and BF. By understanding these variables, it is possible to identify the points of disconnection between the local dimension and BF, and to develop strategies to bridge the gap.

### 6. Discussions

The discussion of the study focuses on the implications of the literature review and the findings of the study. The literature review revealed that local context is an important factor in the successful implementation of BF in SSA. In particular, it was found that the local context must be taken into account when structuring BF projects, as local actors and institutions are likely to have different objectives and preferences.

The present study was designed to anchor the BF structuring approach on the local context in SSA using a System Dynamics approach. Prior studies have noted that BF has the ability to provide a risk-mitigation component, mobilise private capital, and accelerate the flow of climate funding to low-carbon, climate-resilient projects. Moreover, a strong relationship has been reported on the importance of BF to contribute to the acceleration of the development of inclusive, sustainable markets, such as the local financial market; promote participation and ownership at the local level. However, to ensure the success of BF, the literature advocates that the approach should be supported by efforts that foster a healthy investment climate and a favourable environment. To attract investors, it is necessary to address perceived risks such as low returns, economic lock-in and path dependence, currency risk, political instability, and underdeveloped capital markets. In addition, local institutional investors

must be incorporated into blended structures, while aid programmes must be restructured to foster resilience and resist climate change.

The literature review has identified several barriers to the widespread deployment of BF, such as the exclusion of local investors in blended structures, as well as proposed solutions to overcome these obstacles, such as the inclusion of local investors in blended structures and the redesign of aid schemes. In addition, the literature offers a systems view that can be utilised to examine the role of economic instruments and interactions between actors. These considerations must be considered in order to effectively anchor the BF structuring method to the local context in SSA.

Literature has also highlighted the need for a paradigm change away from "financial gains and resource exploitation and market short-termism" and toward sustainability. This change away from old economic models and toward a sustainable approach is vital for the BF structuring method to achieve its goal of mobilising private capital to fill the financing gap in SSA.

This literature also revealed the need for more research to build a System Dynamics method for anchoring the BF structuring approach to the local context in SSA. This research should concentrate on understanding the impact of economic tools and inter-actor interactions, incorporating local investors into blended frameworks, and planning and implementing aid programmes to build resilience and battle climate change. Our research should ultimately provide a framework for evaluating and enhancing the effectiveness of BF structures in SSA.

## 7. Future Directions

In order to advance towards a more sustainable and efficient usage of BF structuring methodologies in SSA, future research should focus on understanding the local environment of the SSA countries. This could be done through a comparative analysis of the various ways utilised to structure BF in SSA nations. This might be done to obtain insight into the effectiveness of the approaches. It is essential to analyse the impact of the BF structuring strategy on the broader economic and social framework of SSA nations. This could be accomplished by doing a cost-benefit analysis to analyse the approach's effects on various stakeholders. Additionally, future study should look into the impact of government policies in encouraging or preventing the successful deployment of BF structuring approaches in SSA countries. This knowledge could be used to inform the development of more effective and sustainable strategies.

## 8. Conclusion

The lack of connection between financial actors and the local financial sector is a major obstacle hindering the impact of BFSA in SSA. This paper therefore explores the systems approach to advance our knowledge of the systems-oriented stakeholder perspective for sense-making and the identification of higher-order patterns through which additional private sector capital can be unlocked.

In conclusion, the research on anchoring the BFSA on the local context in SSA using a System Dynamics approach has revealed useful insights into this strategy's potential. It emphasises the need to consider the socioeconomic and cultural backdrop of SSA while constructing the framework of BF projects. In addition, the research also demonstrated that a System Dynamics approach is flexible and can be tailored to the particularities of the local context.

In addition, the investigation found a variety of potential obstacles to the success of the projects, such as the need to ensure equitable access to resources and to design suitable financial structures. The research also revealed the significance of establishing a rigorous monitoring and evaluation structure to guarantee the project's success. The research revealed that the success of the projects is contingent upon the adoption of a complete development framework and the competence of the local stakeholders to properly manage and implement the initiatives.

Overall, this research has showed that a System Dynamics approach can be a useful tool for anchoring the BF structuring approach inside the local context of SSA. In addition, it has highlighted the necessity to consider the socioeconomic and cultural environment when creating the structure of projects, as well as the need to ensure access to resources and the development of suitable financial instruments. It has demonstrated the significance of a comprehensive development framework and capacity building in ensuring the success of the initiatives.

In conclusion, this research has provided useful insights into the viability of employing a System Dynamics method to anchor the BF structure approach in the local context of SSA. It has proved that this technique may be customised to the specifics of the local setting and that socioeconomic, economic environmental and cultural contexts must be considered when building the structure of projects. In addition, the research has highlighted the importance of ensuring access to resources and the development of appropriate financial instruments, as well as the need to develop an all-encompassing development framework and the capacity of the local stakeholders to successfully manage and implement the projects.

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