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Mainstreaming the Nationally Appropriate Mitigation Actions (NAMAs) into long-term development plans; Its impact on sustainable development in Non-Annex I Party states

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Abstract. Though the importance of the Nationally Appropriate Mitigation Action (NAMA) in mitigating Global emissions have been covered extensively by the literature, however, there has been little effort by researchers to find out the connections between the successful implementation of the NAMAs of respective Parties and sustainable development in the long run. This paper, based on the results from expert interviews via Skype and telephone with the NAMA focal persons of Ethiopia, Indonesia, and Georgia seeks to fill this gap in the literature by finding out how NAMAs, when implemented can lead to the attainment of overall economic growth and sustainable development in the long run. The paper covers seven NAMAs, with three seeking support for preparation and the other four seeking support for implementation as shown in table 1 below. The findings of this paper have shown significant connections between the NAMAs of the countries under study and overall economic growth based on their impact on the performance of other sectors of their respective economies when successfully implemented. This will contribute significantly to the achievement of sustainable development goals by poorer countries. There is, therefore, the need for developed countries to intensify their support in the areas of capacity building, financial, and technical support to poorer countries to enable them successfully implement their NAMAs as recommended by the Cancun agreement.

Keywords. Sustainable development, mainstreaming, Nationally Appropriate Mitigation Action, economic growth

1. Introduction:

The direct impact of climate change on sustainable development efforts in countries of the Global South has necessitated the linking of climate change policies with the long-term development plans of these countries. The Bali Action Plan in 2007 saw the birth of the term NAMAs as all Parties to the UNFCCC charter accepts to commence negotiations on the so-called “Nationally Appropriate Mitigation Actions” by poorer members of the Global South (UNFCCC, 2009). These NAMAs which should be in the context of sustainable development shall receive financial, technical, and technological support from rich and developed countries and donor agencies to ensure their success (Kojwang & Larwanou, 2015; Schmidt et al., 2015a). Mainstreaming, in this context, connotes integrating policies, measures, and information aimed at tackling climate change into current development plans and decisions (see also Klein

et al., 2005). Most of the available literature emphasized the mainstreaming of adaptation policies into long-term development plans with so far not much attention on mitigation policies. This paper seeks to fill this knowledge gap by focusing on the mainstreaming of a climate change mitigation policy, the NAMAs for that matter into a long-term development plan, and its impacts on sustainable development in the three non-Annex I Parties. The main research question that this paper seeks to answer is; How can the integration of NAMAs into long-term development policies help boost overall development and achieve the goals of sustainable development in the long run? The major setbacks to the successful implementation of the NAMAs since their inception include the lack of or insufficient funding, complicated funding mechanisms, fringe conditions that are attached to donor support for NAMAs, lack of expertise, lack of awareness on NAMAs-related issues by the general public, protocol or policy issues, and the lack of stakeholder cooperation for NAMAs (Issaka, 2021; Schmidt et al., 2015). It has therefore been argued that to find solutions to the challenges facing the successful implementation of NAMAs for the realization of sustainable development goals, there is a need for them to be integrated into the long-term development plans of poorer countries of the Global South (Issaka, 2021).

2. The concept of sustainable development and its major dimensions

There are varied definitions of the concept of sustainable development due to the vagueness of the concept that makes its definitions vary across disciplines (Keiner & Marco, 2005). For instance, and within the context of environmental science, the definition of the concept can be traced to the report of the Brundtland Commission (1987) entitled 'Our Common Future' that tries to link issues of economic development with environmental stability (Emas, 2015; McNeill & Lichtenstein, 2003). This report gave birth to the definition of the term sustainable development as "*development that meets the needs of the present without compromising the ability of future generations to meet their own needs*" (WCED, 1987, p43). The concept has again been defined by the Rio de Janeiro Declaration on the Environment and Development as "*long-term continuous development of the society aimed at the satisfaction of humanity's need at present and in the future via rational usage and replenishment of natural resources, preserving the Earth for future generations*" (The Rio Declaration on Environment and Development, 1992). (Goodland & Ledec, (1987) also defined sustainable development as an economic or developmental transformation that optimizes both social and economic benefits derived at the present without any jeopardization of the abilities of future generations to archive such possibilities. In economics, sustainable development is regarded as the type of development that ensures that the per capita income of the present generation is not more than or above the future generation's per capita income, a continuous increase in production of an economy for short (Ahmed, 2010; Ciegis et al., 2009). In sociology, the concept refers to the type of development that can preserve our community and maintain social relations that are close to our communities; and in ecology, sustainable development is regarded as the type of development that can preserve the amount of diversity that exists among biological species, ecological processes, and essential ecosystems (Ciegis et al., 2009; Nocenzi & Sannella, 2020). In short, and based on the above definitions, one can conclude that all the above definitions have certain key similarities about the concept of sustainable development i.e.; it must be continuous, environmentally friendly, and does not jeopardize the abilities of future generations to live a better life (see also McNeill & Lichtenstein, 2003). These are all summarized by Munasinghe & Reid (2005), who came out with their widely known triangle of sustainable development that contains three key elements or dimensions; economic, social, and

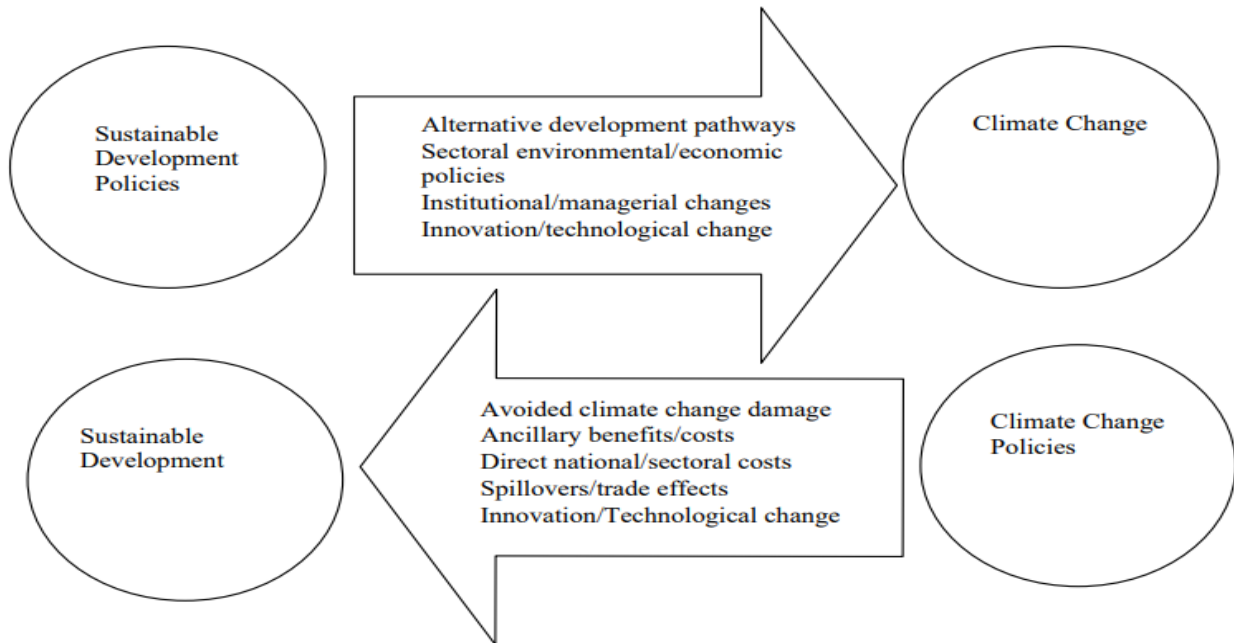
environmental dimensions. Munasinghe & Reid (2005) have argued that there is a high degree of interconnections between these three dimensions or domains of sustainable development. For instance, changes in the environment such as the production of food, purification of water, and ecosystem services exert both short and long-term influences on the institutions, economic growth, and culture of a place. Also, changes in both the social values and the behavior of a group of people have a great amount of influence on both the rate of growth in the economy and the management of the environment of that particular area. Finally, the growth of the economy coupled with the manner in which wealth is been distributed and managed also has an influence on both the ecological and social domains of that geographical area.

3. Mainstreaming climate change and climate change mitigation into sustainable development

The proponents of integrating climate change into sustainable development argued this will not only be providing new developmental opportunities but also serves as a necessity for achieving developmental goals at the local, national, and even global levels (Swart et al., 2003; Swart & Raes, 2007). It has also been argued that mainstreaming climate change policies into development policies leads to the efficient, effective, and more sustainable utilization of already scarce resources as compared to the designing and implementation of climate change policies separately from overall developmental ones (Ayers et al., 2014). Huq & Reid (2004) also added that mainstreaming climate change policies into long-term development policies will solve the problem of conflicts of policies thereby leading to greater efficiency. The processes of the United Nations Framework Convention on Climate Change (UNFCCC) have given full recognition to the concept of sustainable development and article 3.4 of the UNFCCC convention has clearly stated that “Parties have a right to, and should promote, sustainable development” (Spalding-Fecher et al., 2005). In this regard, policies, actions, and measures geared towards protecting the climatic systems from human-induced interference should be conducive to the specific or local conditions, or situation of the country in question and also need to be integrated with the development policies or programs of that country while taking notice of the fact that economic development is certainly necessary for the survival of all these policies and measures (Spalding-Fecher et al., 2005). As a result, the UNFCCC has since laid much emphasis on setting emission targets as compared to sustainable development, however, recent literature has given much cognizance of the linkages that exist between the two (Spalding-Fecher et al., 2005; van der Grijp, 2010). In this section, we shall take a look at the connections in-between climate change and sustainable development on the other hand and the implications of these inter-linkages in the achievement of development goals. Van der Grijp (2010) has noted that there is a need for the world to start considering possible linkages between climate change together with policies for climate change and development in the sense that different developmental pathways have varied effects on climate change just as varied climate change policies also have different implications on developmental trajectories. According to Beg et al., (2002), for the world to become successful in limiting global climate change to safe levels, it may require linkages between both global and local climate change policies to policies geared toward the achievement of sustainable development both in the developed and the developing world. Van der Grijp (2010) again added that climate change has the potential of undermining the sustainability of livelihoods and the resource base needed for development as well. In this regard, the framing of the concept of climate change in global politics has changed significantly over the decades from a purely environmental problem into a developmental one (ibid). This paradigm shift in the framing of issues concerning climate change issue is probably

because different actors both from the scientific and non-scientific world are now joining the heated debate on the topic of climate change. This development has witnessed the focus of climate change scientists gradually drifting from the proximate causes of climate change to that of systemic analysis, and the political atmosphere focused on the achievement of the Millennium Development Goals (Van der Grijp, 2010). The framework from Swart et al., (2003) below explores the linkages in-between climate change and sustainable development coupled with some examples.

Fig. 1. Linkages between climate change and sustainable development



Source: Swart et al., (2003).

(i). The avoidance of damages resulting from climate change: This, it has been argued will reduce greenhouse gas concentrations and further promote mitigation. It will reduce the rate of how vulnerable people are to climate change which will also lead to a reduction in adaptation measures. This, therefore, reduces the amount of frustration on policies intended at achieving sustainable development goals and thus makes them easy to achieve.

(ii). The provision of ancillary benefits: The integration of climate change into sustainable development will also provide certain ancillary benefits. For instance, this could derive certain benefits such as the conservation of biological diversity, and reduced air pollution, alongside the provision of job opportunities.

(iii). The imposition of direct cost in relation to mitigation and adaptation measures: The imposition and implementation of these costs need to be backed by very strict measures in order to obtain the desired effect. These costs could also be negative or positive.

(iv). The causation of either negative or positive spill-over effects: this implies that the climate change measures of a particular country can have a positive or otherwise impacts on another country. For example, the falling prices of crude oil due to the lack of demand for crude oil in the international market will certainly have a negative impact on countries in which oil is the sole backbone of their economy.

(v). Encouraging the production and spreading of technology: technological innovations which are been influenced by climate change policies can have enormous impacts

on the reduction of greenhouse emissions. It also reduces the level of vulnerability of both lives and property to climate. Some of these technologies are also more likely to be adopted and used by some countries due to their environmental friendliness.

Again, according to Swart et al., (2003), there are also some developmental projects which affect climate change and our response to changing climatic conditions. This is also indicated in the framework below;

(i). the pursuance of alternative pathways for development: The underlying socio-economic developmental pathways coupled with technological development are important determinants for the emission of greenhouse gases and climate change for that matter. For instance, embarking on developmental projects characterized by the release of high volumes of greenhouse gases into the atmosphere will certainly lead to climate change. Alternatively, developmental pathways whereby the structure of the economy is changed to that of a service economy or any changes in behavior geared towards sustainable development will reduce the emission of greenhouse gasses into the atmospheric system which will help reduce climate change.

(ii). Specific socio-economic and environmental policies with side effects on the climate system: Certain socio-economic or environmental policy formulations have a side effect on the climate system either by worsening the climate change problem or helping in mitigating climate change via reductions in the emission of greenhouse gas into the earth's atmosphere. A program in Brazil known as the biofuel program which never had any intention of contributing to climate change mitigation finally contributed to the mitigation of climate change. Also, the side effect of a nature conservation program aimed at protecting biological diversity and boosting ecological tourism as well will be carbon storage.

(iii). Pursuing institutional changes: Countries can also embark on the setting up of the appropriate institutions that will help address the current environmental together with socio-economic problems and enhance the creation of social capital as well. This will indirectly help build a climate-friendly environment.

(iv). The stimulation of innovations in technology coupled with technological change: Technological innovation and technological change can be stimulated and directed in a manner that will be climate-friendly though not mitigate climate change. This could be done with different aims but could eventually contribute to mitigating climate change.

According to Sathaye et al., (2006), the issue of climate change is among the many setbacks to sustainable development, thus, for the effectiveness of climate policies, there is a need for these policies to be merged into, or embedded into much broader policies that are geared toward ensuring the sustainability of developmental pathways. It has again been noted that the ability of countries to achieve the goals of sustainable development will in one way or the other be affected to an extent or influenced by climate change or its variability, the response to climate change, with the related socio-economic developmental programs or projects, and on another direction, the pursuance of these goals for sustainable development will also undermine the success of certain climate change policies and projects (Sathaye et al., 2006). This is true in the sense that certain developmental pathways are characterized by the use of certain technologies and approaches which has a significant impact on the emission of greenhouse gasses into the atmosphere which also has a direct impact on the changing climatic variables and conditions, all of which are direct determinants of our ability to mitigate, adapt to, and be resilient to changing climatic conditions (Sathaye et al., 2006). The fourth assessment report of the Inter-Governmental Panel on Climate Change has indicated that the mitigation of climate change might bring supplementary benefits for sustainable development, and also,

developmental pathways with features of sustainable development can provide the conditions needed for the promotion of climate change mitigation (IPCC-2003 as cited in van der Grijp, 2010). And if climate change concerns are appropriately mainstreamed into the preparation and implementation of developmental policies with the consent and support of the relevant stakeholders, then there is a greater likelihood that the desired goals of sustainable development will be achieved (van der Grijp, 2010).

4. Research methods and details of NAMAs under study

There were Expert interviews via Skype and telephone with the NAMA focal persons, the contact persons for NAMAs of the respective Parties who registered their NAMAs on the NAMA-registry of the UNFCCC. An expert interview as a qualitative method of data collection entails an interview with a person who has specific knowledge on a particular issue, situation, or development (Soest, 2022). Using expert interviews has the advantage of enabling researchers to bridge the gap between a case study and a comparative analysis between several countries based on more universal data which is publicly available (Dorussen et al., 2005). These NAMA officials are expected to have detailed knowledge of their respective NAMAs as they are solely responsible for seeing the progress of their respective NAMAs. Each Party has a NAMA focal point where the NAMA focal persons are situated. The contact details of the NAMA focal person(s) for each Party are registered in the NAMA-registry of the UNFCCC during the entry of the NAMAs. These contacts were used to reach out to the officials for the Skype or telephone interview. The arrangement for the interviews scheduled with the focal persons was first made via email, and the interviews were conducted on the agreed day and time. The subject matter and the purpose of the interviews were stated in the initial email. Each interview lasted for approximately two hours, the interviews were recorded and later on transcribed. Another source of data for this study is the NAMA document of each respective NAMA as submitted to the NAMA-registry of the UNFCCC. The details of all the NAMAs under study are captured in table 1 below. One should, therefore, not be surprised to see some similarities between the findings of this study and the NAMA documents of the respective countries as the NAMA persons who served as the main sources of information for this study are also involved in one way or the other in the drafting of the respective NAMAs.

Table 1. details of NAMAs under study.

Country	NAMA	Status
Ethiopia	<i>NS-167 – Ethiopia Railway’s Adis Ababa Light Rail Transit (LRT) Transit-Oriented Development (TOD) NAMA</i>	Seeking support for preparation
Ethiopia	<i>NS-173 – Ethiopian Railways-Railway Academy NAMA</i>	Seeking support for preparation
Ethiopia	<i>NS-168 – Ethiopia Railways-Establishment of Climate Vulnerability Infrastructure Investment Framework NAMA</i>	Seeking support for preparation
Georgia	<i>NS-229- Efficient use of biomass for equitable, climate-proof, and sustainable rural development</i>	Seeking support for implementation
Georgia	<i>NS-228- Energy Efficient Refurbishment in the Georgian Public Building Sector</i>	Seeking support for implementation

Indonesia	<i>NS-65 – Sustainable Urban Transport Initiative NAMA</i>	Seeking support for implementation
Indonesia	<i>NS-89 – Smart Street Lighting Initiative NAMA</i>	Seeking support for implementation

(i) Source: UNFCCC NAMA-registry (2016).

5.0. How do the NAMAs under study fit into the national policy plans or long-term developmental plans of respective countries (empirical results)

NAMAs as pointed out in the previous sections of this analysis can play crucial roles not only in mitigating climate change but also in the overall development of their respective countries (see for instance Lasco & Pulhin, 2013). Therefore it will be important that countries lay out mechanisms or make provisions to make sure that there is a link between their NAMAs and their long-term developmental agenda. This is the only way in which countries can fully tap the contributions that NAMAs could make toward the overall development and improvement of the lives of their people.

The case of Ethiopia

In terms of Ethiopia, all three NAMAs of Ethiopia under study can be said to have been designed to fit into the Ethiopian government’s long-term developmental goal and policy framework of the Growth and Transformation Plan (GTP). The Growth and Transformation Plan (GTP) of Ethiopia demonstrates the country's ambition of capitalizing on the recorded growth in the country’s economy to invest in an economy that has a higher degree of resilience to climate change and its resulting impacts, and also make advancements in carbon-free strategies. The Growth and Transformation Plan (GTP) of Ethiopia, therefore, lays down the long-term developmental strategy and ambition of attaining middle-income status by 2025. The government of Ethiopia has therefore envisaged that the successful mitigation of climate change in the country will go a long way to help the country achieve this target of becoming a middle-income economy and has therefore in 2011 issued the Climate-Resilient Green Economy (CRGE) strategy. This spells out the desire of the country to obtain a green and carbon-neutral economy by the year 2025. The successful implementation of all these three NAMAs will undoubtedly give a tremendous boost to the transport sector of the country which will contribute massively to reducing unemployment, and improvement in the living conditions and welfare of the ordinary Ethiopian, a boost in the industrial sector coupled with its resulting contribution to GDP growth, and overall development of the country’s economy as a result. The fact that Ethiopia as a country obtained a growth in its GDP of about 8.5% in the year 2012 earned it the status of one of the best-performing economies throughout the continent of Africa and the country’s economy is also expected to become one of the best in the world. There is no doubt that the successful implementation of these NAMAs will contribute enormously to this course (see also *Government of Ethiopia. Second National Communication Report to the UNFCCC, 2015*).

The case of Georgia

In the case of Georgia, the NAMA on energy refurbishment in a public building of the country is said to be a component of a long-term development plan of the government of Georgia to achieve a developmental strategy characterized by low emissions both at local and international levels. It has also been noted that the successful implementation of this NAMA will contribute massively to the fulfillment of either the Intended Nationally Determined Goals

(INDCs) or the Nationally Determined Goals (NDCs) of the country as a result of the potential of the NAMA in propelling or scaling up the refurbishment of the residential sector of the country. The formulation and successful implementation of this NAMA project is also said to be an integral component of the agreement of association between the government of Georgia and the European Union as responsibility for Georgia per the European Union membership requirements, specifically in the area of the public sector building of Georgia. This NAMA also portrays the ambition of the government of Georgia to chock sustainability in the building sector of the economy. With the residential building sector as its largest final energy consumption across all sectors of the country's economy, this NAMA project is again seen to fit very well into the long-term environmental policy of the country which has the aim of incorporating energy efficiency into development. The proposal of this NAMA project is therefore said to highly match the National Energy Efficiency Action Plan (NEEAP) of Georgia. With regards to the Georgian NAMA for efficient usage of biomass in the country, one attractive aspect of this particular NAMA besides contributing to mitigating climate change is its potential in improving the living conditions of women which is said to be an integral aspect of Georgia's so-called Regional Development Strategy which is under the direct supervision of the Ministry of Infrastructure and Regional Development of the government of Georgia. The NAMA is also said to be contributing to the important developmental plans and policies of the country such as the Low Emission Development Strategy (LEDS), the Climate Action Plan of 2021 to 2030, and the National Energy Efficiency Action Plan (NEEAP). Also, this NAMA project which is expected to cut down the cost of energy between 30 % to 50 % in Georgia is again said to be a key pillar of the National Renewable Energy Action Plan (NREAP) which is under the support of the Clima East project. In addition, the potential of this particular NAMA in drastically reducing deforestation as fewer trees will be cut down for domestic energy purposes following its success is also seen to fit very well and also complements the activities of the National Forestry Management of Georgia which is against deforestation. Commenting on the benefits of this NAMA, the Women in Europe for a Common Future (WECF) noted that, NAMAs that possess this feature of multiple benefits are worth investing more than other NAMAs with a single benefit of only mitigating climate change (see also *Georgia's Third National Communication to the UNFCCC*, 2015; *Georgia's Second National Communication to the UNFCCC Tbilisi*, 2009).

The case of Indonesia

The Sustainable Urban Transport Initiative NAMA of Indonesia is also regarded as a stepping stone towards the transformation of the urban transportation policy of the country via a low-emission development pathway which is characterized by an improvement in public funding of the transport sector of the country. This is expected to bring about increasing budgetary allocations from both the local and national governments into the transportation sector of the country's economy. It is also expected to mobilize private sector investment into the transport sector of the country. This transport NAMA of Indonesia is also said to be in close linkages with the activities of the Ministry of Transportation and the National Planning Authority of Indonesia (see for instance Ministry of Environment and Forestry, 2018).

6.0. Discussion

The main research question that the paper seeks to answer is; How can the integration of NAMAs into long-term development policies help boost overall development and achieve the goals of sustainable development in the long run? The results have shown that besides

mitigating climate change, all three transport NAMAs of Ethiopia are found to possess the potential of contributing to the development of the country in the sense that if these NAMAs are successfully implemented, they will contribute to making the transport sector of the country very affordable and efficient with its corresponding development of other sectors of the country. For example, there will be easy access by workers to their workplaces and also in time, which are all needed to ensure productivity increases. There will also be more money to embark on other developmental projects in the country through the sales of train tickets due to increasing patronage of rail transport. The successful implementation of the NAMAs can also lead to the provisioning of more jobs through the increase in industrial establishments, and an improvement in the general welfare and social conditions of the people. It will also reduce the overdependence on road transport in the country to that of rail which will lead to the reduction of transportation costs due to the availability of options. Less money will be spent importing fossil fuel to feed the road transport sector which will help save already scarce resources and thus improve the balance of payment of the country. The success of these NAMAs also means less money will be spent to maintain roads coupled with a reduction in accident cases. These transport NAMAs when successful are again expected to be imitated by other countries within the continent leading to an improvement of trade between Ethiopia and its neighboring countries which will shoot up GDP growth in the country. The cumulative effect of all this is sustainable development in the long run (see again *Government of Ethiopia. Second National Communication Report to the UNFCCC.*, 2015).

In the case of Georgia, the results have shown how the NAMA on efficient energy refurbishment in the public buildings of the country can contribute to the overall development of the Georgian economy when successfully implemented as it is expected to provide employment coupled with the establishment and growth of industries. One major feature of the Georgian NAMA on the efficient biomass usage to ensure rural development sustainably is its gender sensitivity which is expected to contribute to the empowerment of women in the rural communities of Georgia. Female empowerment through the success of this NAMA will help reduce household poverty and its resulting impact on an improvement in the lives of the people as the NAMA is expected to generate about 135 jobs mostly for women. It is again expected to reduce energy costs from 30 % to 50 % which will enable households to save some income thereby reducing poverty and thus improving the living conditions of the people. All this will contribute to achieving the goals of sustainable development in the long run (see again *Georgia's Third National Communication to the UNFCCC*, 2015).

The SUTRI NAMA of Indonesia has also exhibited the potential of contributing to the overall development of the country's economy when successfully implemented as it has been indicated in the findings of this study. An improvement in urban transport, reduced travel time, and improvement in accessibility as a result of an improvement in the transport sector of the country due to the success of this NAMA will go a long way to boost business transactions and increase productivity which is very essential for the successful growth of any economy. This is certainly important for achieving the goals of sustainable development in the long run. The review of the literature above also pointed out the commitment of NAMAs in contributing to the development and sustainable development in the long run as this has been clarified in the decision of the COP/16 that "*developing country Parties will take NAMAs in the context of sustainable development, supported and enabled by technology, financing, and capacity-building, aimed at achieving a deviation in emissions relative to 'business as usual emissions in 2020'*" (UNFCCC, 2010).

7.0. Conclusion

The main objective of this paper is to find out how the mainstreaming of Nationally Appropriate Mitigation Actions (NAMAs) into the long-term development plans of poorer countries will help in the achievement of sustainable development goals. The results have shown that all the NAMAs under study, when successfully implemented will contribute to the overall development of the respective Parties as they are linked to the improvement of various sectors of their respective economies. In this regard, the fulfillment of the requirements of the Cancun Agreement by developed Parties that calls on them to provide capacity-building needs, financial, and technical support to developing countries to enable them to implement their NAMAs can also be seen as linked to the realization of sustainable development goals. This is because the impacts of climate change have been proven to be directly linked to the development of countries and thus mitigating climate change will also directly alleviate Parties of the setbacks to attaining their development agenda. The impacts of climate-related hazards especially in countries of the Global South are on the increase, with corresponding implications on the development of such countries as scarce resources that could have been channeled into economic growth are used in responding to these hazards. In this regard, the successful implementation of the NAMAs will not only enable poorer countries to fulfill their commitments to reducing global emissions but also alleviate the impacts of climate-related hazards. Covid-19 has had a significant impact on poorer countries of the Global South and disrupted the developmental process of many. It is therefore likely that these countries will not have enough resources channeled into mitigating climate change for some time to come as they are still trying to get back to pre-covid developmental pathways. The Russia-Ukraine war with its associated increase in Global energy costs has come to compound the already bad situation of these countries. There is, therefore, no better time for developed countries to intensify their support for NAMAs of developing countries not only to mitigate Global emissions but also to enable them to bounce back to the path of economic growth and sustainable development in the long run.

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