



Policy Paper

On

TRANSITION TO GREEN GROWTH: Policy Options

By

National Planning Authority



August 2017

TABLE OF CONTENTS

TABLE OF CONTENTS	ii
LIST OF FIGURES	iv
LIST OF TABLES	v
1.0 INTRODUCTION	1
1.1 Background	1
1.2 Problem Statement	2
1.3 Objectives of the Paper	3
1.4 Why Green Growth?	4
1.5 Methodology	5
2.0 GREEN GROWTH IN UGANDA’S CONTEXT	7
2.1 Understanding Green Growth	7
2.1.1 Principles of Green Growth	7
2.1.2 Conceptualization of Green Growth	8
2.2 Status of Green Growth in Uganda	8
2.2.1 Overview of ongoing Green Growth Initiatives.....	9
3.0 EMPIRICAL ANALYSIS OF GREEN GROWTH POLICY OPTIONS	12
3.1 Policy Scenarios	12
3.1.1 Scenario 1: The Business as Usual (BAU) / Reference Scenario	12
3.1.2 Scenario 2: The Planned Green Growth Scenario.....	12
3.2 Findings and Policy Recommendations	13
4.0 PRIORITY POLICY OPTIONS FOR TRANSITION TO A GREEN ECONOMY.....	14
4.1 Sustainable agriculture production and value chains	14
4.2 Natural Capital Management and Development	16
4.2.1 Tourism Development.....	16
4.2.2 Sustainable Forestry Management	16
4.2.3 Sustainable Wetlands	17
4.2.4 Optimal Water Resources Management.....	17
4.3 Planned Green Cities.....	18
4.4 Sustainable Transport.....	18
4.5 Energy for Green Growth.....	19
5.0 CONCLUSION AND RECOMMENDATIONS	20
5.1 Conclusion	20

5.2	Summary Recommendations	20
-----	-------------------------------	----

LIST OF FIGURES

FIGURE 1: CONCEPTUAL FRAMEWORK FOR THE UGANDA GREEN GROWTH DEVELOPMENT STRATEGY	8
---	---

LIST OF TABLES

TABLE 1: GDP SECTOR SHARES 2020 AND 2040.....	12
---	----

1.0 INTRODUCTION

1.1 Background

Over the last two decades, Uganda has registered remarkable improvements in its development outcomes majorly driven by the extensive agriculture, expansion of unsustainable industrialization (mining, construction and highly emissive processing practices) and growth in services particularly a highly emissive transport sector and a biomass dependent hotel industry. The 2014 Population Census report indicated that between 1991 and 2014, life expectancy rose from 48.1 to 63.3 years; literacy levels rose from 54 percent to 72.2 percent; income poverty declined from 56 to 19 percent; access to electricity increased from 5.6 percent to 20.4 percent while the proportion of the national budget that is funded from domestic sources increased from 64.7 percent in the FY 1991/92 to 82 percent (FY 2014/15).

Nevertheless, these developments have come at the expense of the environment and natural capital which is the engine for sustainable development. In particular, there has been massive natural resource degradation demonstrated by declining land productivity, the falling forest and wetland coverage as a percentage of the total land area with forestry coverage declining from 24 percent in 1990 to 10 percent in 2015 (MWE, 2016), loss of biodiversity and rising pollution levels. The situation has been worsened by the country's high vulnerability to the adverse impacts of climate change such as droughts. Consequently, Uganda is facing declining levels of growth from an average of 5.5 percent over the NDPI to a low average of 3.9 percent for the first two years of the NDPII and is likely to face a "low income or a low middle income trap". In addition, there are currently high levels of income inequalities, regional imbalances with the eastern and northern regions lagging behind, and a very high population growth.

Adopting a green growth development model therefore presents the most desirable alternative for assured sustainable and inclusive development for Uganda. This model simultaneously generates economic, environment and social development outcomes in a sustainable manner without leaving anyone behind including the future generations. The model has been successfully applied by countries such as South Korea that have simultaneously attained inclusive economic growth and environment sustainability. Countries that have adopted the alternative "develop first and clean up later" model have incurred high/prohibitive environmental costs and irreversible damages.

Also, the green growth model presents additional opportunities in the form of employment creation (green jobs), export oriented industrialization, fiscal revenue expansion, improved health and social outcomes. Implementation of green growth strategies has the potential to generate 4 million jobs and to spur economic growth by an additional 10% above the Business as Usual scenario and reducing future greenhouse emissions by 28% (equivalent to 30.4 million tons

of emissions) by 2040, which is far above the Nationally Determined Contribution (NDC) target of 22 percent. Indeed, Uganda is experiencing high levels of jobless growth amidst high unemployment levels estimated at 9.4 percent (UBOS 2012/13) and 38 percent¹ (NPA, 2016) for youth. For every 1 percent increase in GDP, Uganda has generated only 400 additional jobs instead of the expected 10,000 jobs. Therefore, taking advantage of the opportunities that come with green jobs is likely to address Uganda's jobless growth phenomenon.

The 2030 Agenda for Sustainable Development (SDGs), Africa Agenda 2063 and Uganda Vision 2040 further provide the context for green growth. The SDGs emphasize global pursuit of the tenets of Green Growth to accelerate inclusive growth and sustainable economic, social as well as environmental outcomes through the five principles of; the *Planet, People, Prosperity, Peace and Partnership*. Other guiding contexts of green growth include the 2015 Paris Agreement on climate Change and the African Agenda 2063. The Uganda Vision 2040 provides the context for green growth. The vision emphasizes that a green economy will contribute to eradicating poverty as well as sustaining economic growth, enhancing social inclusion, improving human welfare and creating opportunities for employment and decent work for all, while maintaining the healthy functioning of the ecosystems.

This paper is informed by the Uganda Green Growth Development Strategy that was developed through a multi-sectoral consultative process and highlights the key actions for Uganda's transition towards inclusive, sustainable and transformative development.

1.2 Problem Statement

Uganda is a natural resource based economy where the majority of the population highly depends on natural resources for their livelihoods. Also, much of the country's growth has been majorly driven by natural resources with agriculture (of which 95 per cent is rain fed) contributing about 23 percent of GDP, 40% export earnings and 66 percent of employment. In particular, the agriculture share to growth has been majorly driven by extensive farming, declining forest cover as well as other unsustainable agronomic practices such wetland encroachment and degradation, over cultivation, deforestation among others. Additionally, majority of the population (about 95%) depend on biomass as a source of energy for livelihood.

The dependence on biomass and the extensive agriculture have greatly contributed to the declining forest cover from 24 percent in 1990 to 11 percent in 2015. If this trend is not addressed, Uganda is likely not to have any forest cover by 2040. Indeed, the declining forest cover has come with adverse environment and climate change effects such; frequent and prolonged droughts, declining soil fertility, unpredictable and poorly distributed rainfall patterns among

¹ This adjusts youth unemployment by considering unpaid family workers and volunteers as unemployed since these are not in gainful employment.

others with their immediate impact being rising food insecurity, declining agriculture production and productivity, low and slow economic growth rates.

Also, Uganda has registered impressive growth rates driven by investments in infrastructure, structural transformation due to industrial development and expansion of services among others. None the less, these developments have come with high costs to environment sustainability. In particular, most of the road networks has replaced wetlands and have led to an increase in congestion and traffic hence promoting pollution, most industries especially small scale use unsustainable power sources such as thermal generators and highly emissive technology. It is important to note that rising levels of pollution are associated with high negative health effects in the form of: chronic obstructive pulmonary diseases, lung cancer, ischemic heart disease and stroke that come with high costs in terms productivity and government expenditure on health. Additionally, most industrial parks are have replaced natural habitats / ecosystems as these present low short-term location costs yet with the highest medium to long term social, economic and environment costs whose impacts transcend generations. While these may present short term benefits, the associated costs are not only irreversible but also require very high future abatement costs.

Therefore, Uganda needs to adopt a green growth development model that simultaneously attains inclusive economic growth and environmental sustainability. This is because the conventional growth model (develop first and clean up later) not only generates unsustainable growth but also raises environment risks and constraints on future generations' ability to meet their development needs. With the increasing demand for energy, food, water, high level of population and urbanization and climate change vagaries, a green growth path is a must rather than an alternative for Uganda.

Whereas the green growth development agenda is well mainstreamed in the medium to long term development frameworks including; the 2030 Agenda, Africa Agenda 2063, the Uganda Vision 2040 and the NDPII 2015/16-2019/20, there are still implementation gaps. This paper therefore presents highlights of the key actions for Uganda's transition towards inclusive, sustainable and transformative development.

1.3 Objectives of the Paper

The overall objective of this paper is to present key implementable policy actions for Uganda's transition to a green economy that is inclusive, sustainable and transformative for PEC's consideration.

Specifically, this paper seeks to:

- (i) highlight current status and context of green growth in Uganda
- (ii) discuss the opportunities and challenges for green growth in Uganda

- (iii) propose policy actions for operationalization of Uganda's Green growth development strategy;
- (iv) present the institutional and financing framework for implementation of the green growth development strategy;
- (v) Seek stakeholder support for adoption of the green growth development model.

1.4 Why Green Growth?

Uganda is a developing country with development aspirations and as such, there are ongoing attempts to identify the critical path that can accelerate the achievement of the envisaged development goals and targets. The reason to embark on a green growth development pathway has been informed by global and local issues discussed subsequently hereto.

Uganda made a commitment to implement the 2030 Agenda whose actualization highly hinges on adoption of a green growth approach to development.

Operationalization of green growth principles as espoused in the 2030 Agenda on Sustainable Development Goals, Africa Agenda 2063, Uganda Vision 2040 and NDP II is a key motivating factor for adopting a green growth development model through the Uganda Green Growth Development Strategy. The 2030 Agenda on sustainable development presents an opportunity for Uganda to review national sustainable development challenges and renew its commitment to sustainable development. Having been at the helm of discussions that shaped and adopted the 2030 Agenda for sustainable development, it is imperative to identify local implementation tools to operationalize the Agenda.

In addition, the need to achieve the aspirations of the Uganda Vision 2040 and the National Development Plans in a sustainable way is another key motivation for pursuit of green growth. Over the Uganda The Uganda Vision 2040 period, indicates that over the vision period, Ugandans aspire to have world class infrastructure and services, modern technology to improve production and productivity and production, access to clean, affordable and reliable energy to facilitate industrialization, planned settlements and a green economy with a clean environment where the ecosystem is sustainably managed and the living conditions of urban systems greatly improved. To realize these aspirations, Uganda has no option but to embark on a green growth path that ensures that all of these goals are achieved in a sustainable manner without leaving anyone behind.

Also, there is need to incorporate natural resources extraction in national accounts as a requirement for an environmentally conscious and sustainable development process. Despite the impressive growth rates averaging to 6 percent in the last two decades, Uganda continues to face unprecedented rates of environmental degradation that are likely to reverse the attained gains. In particular, the is another motivation for pursuit of a green growth development approach. While

Uganda has registered an impressive growth rate of about 6 percent over the last two decades, the coverage of forests and wetlands as percentages of total land areas have also dwindled over the same period. Forestry coverage has fallen has reduced from from 24 percent in 1990 to 119 percent in 2015. to date raising concerns on whether the economic growth was a result of environmental degradation. No wonder there has been a recent stagnation in growth occasioned by among others, adverse climate change effects. Incorporation of natural resource depletion into national accounting systems is required for an area worth exploring for simultaneous achievement of environment sustainability and economic prosperity for all.

As already noted, adopting a green growth model presents the country with additional opportunities for; creation of gainful employment (green jobs), export oriented industrialization, fiscal revenue expansion, improved health and social outcomes. Implementation of green growth strategies has the potential to generate 4 million jobs and to spur economic growth by an additional 10 percent above the Business as Usual scenario and reducing future greenhouse emissions by 28 percent by 2040, which is far above the NDC target of 22 percent.

In addition, attainment of development goals, objectives and targets within the specified timeframes may be impeded by development challenges such as climate change that is increasing in severity. Other issues including high population growth rate and environmental degradation aggravate this challenge which necessitates adoption of a development model that accelerates the achievement of these targets. For instance, achieving the electricity access target of 80 percent by 2040 and electricity consumption from 75 kWh per capita to 3668 kWh per capita by 2040 can only materialize by creating a green energy mix that is affordable and meets the various energy needs of different sections of society.

Regionally, countries such as Rwanda, Kenya and Ethiopia have already developed green growth strategies which also couple as resource mobilization tools.

1.5 Methodology

The identification of the green growth priority areas was informed by an empirical macroeconomic analysis to identify; sectors with the highest green growth multiplier potential, the estimated benefits and costs associated with the transition to green growth.

The MAMs model was used to analyze and compare three scenarios:

- (i) A **business as usual (BAU)** or reference scenario indicating what is likely to happen if green growth interventions are not prioritized or implemented;
- (ii) A **“planned policy”** showing predicted results if the proposed green growth options in the current NDPII are delivered; and

- (iii) A **green growth or “new policy”** highlighting the impact of new and additional green growth project and policy interventions not currently in Uganda’s development policy framework (enhanced NDPII or green growth pathway).

In addition, a **highly stakeholder consultative process was used**. Since, green growth issues are interlinked and cut across all sectors of the economy, a multi-sectoral task force was formed comprising of representatives from selected Ministries, Departments, Agencies, CSOs, the Private Sector and Development Partners (UNDP and GGGI). Consultative meetings bringing together a wider spectrum of stakeholders including local governments were also held.

Desk Review of; existing literature, ongoing projects and programmes was also undertaken to identify gaps and country best practices. All these informed drafting processes and formulation of recommendations of this paper.

2.0 GREEN GROWTH IN UGANDA'S CONTEXT

2.1 Understanding Green Growth

Green growth is not a substitute for sustainable development but rather an approach for accelerating the achievement of sustainable development. Whereas there is no globally agreed definition on green growth, there is consensus on its core principles. It is important to note that Green growth is the pathway/process whose outcome is a green economy. Countries define green growth in light of their domestic development needs, national context and green growth core principles. For Uganda, the nationally agreed² definition for green growth is *“an inclusive low emissions economic growth process that emphasizes effective and efficient use of the country’s natural, human, and physical capital while ensuring that natural assets continue to provide for present and future generations”*

2.1.1 Principles of Green Growth

Green Growth is governed by several principles whose pursuit is envisaged to generate outcomes that reconcile the environment, social and economic aspects of development. The principles that are relevant to Uganda are:

- (i) Sustained economic growth that ensures poverty reduction and wealth creation;
- (ii) Resource use efficiency that eliminate wastage and frees resources for other uses
- (iii) Climate change response through adaptation and mitigation;
- (iv) Decent green and gainful jobs generated in green sectors such waste management, renewable energy and planned green cities;
- (v) Social inclusiveness and equity characterised by holistic growth and development in sectors that employ the majority, the most vulnerable and the minorities that are at the risk of being left behind;
- (vi) Environmental sustainability through pursuit of national economic growth and development within planetary limits.

The above principles are the most salient for Uganda’s transition to a green growth path in light of the country’s development needs, goals and targets. These principles reinforce and catalyse the achievement of existing development goals espoused in the Uganda Vision 2040 and the second National Development Plan (NDPII).

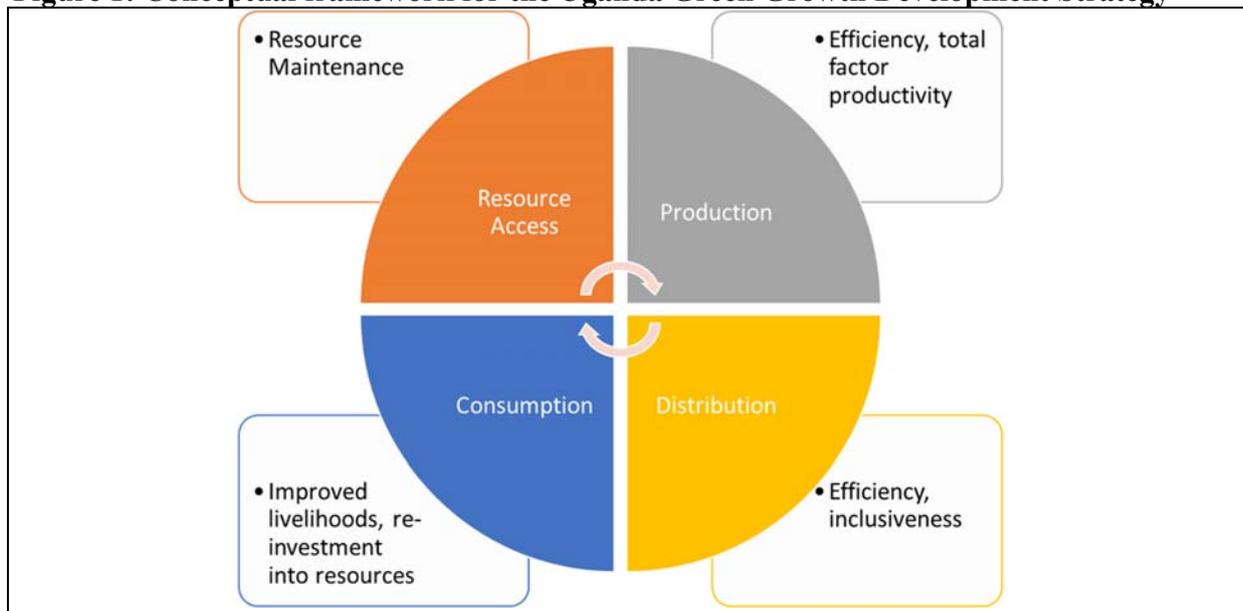
² Agreed definition by the National Task Force for development of the Uganda Green Growth Development Strategy.

2.1.2 Conceptualization of Green Growth

Uganda’s current development model highly emphasizes Gross Domestic Product, per capita income and poverty reduction as measures of progress with minimal or no attention to; resource use efficiency, maintenance and national accounting for natural capital depreciation. The economy is highly reliant on natural resource exploitation through production, consumption and distribution. This coupled with minimal investments in natural resources maintenance and regeneration reduces the base of economic activity and builds up large future costs of restoring the natural systems which are insurmountable. Consequently, there is a slowdown in the attainment of the envisaged socioeconomic transformation.

The recommended green growth approach is envisaged to: improve resource maintenance and regeneration; resource efficiency and total factor productivity; and social inclusiveness as well as improved livelihoods and quality of life for all.

Figure 1: Conceptual framework for the Uganda Green Growth Development Strategy



Source: Uganda Green Growth Development Strategy

2.2 Status of Green Growth in Uganda

Despite the significant progress in mainstreaming green growth in strategic policy and planning instruments, there are still significant implementation gaps. There has been remarkable progress in terms of mainstreaming green growth in the main legal, policy, planning and institutional frameworks. Uganda has also undertaken some green growth initiatives in the areas of renewable energy, waste management, organic agriculture, sustainable land management practices among others. While these efforts are commendable, they have been mainly piecemeal

and insufficient to yield the required inclusive benefits and outcomes to cause the desired transformation. Most of the green growth projects have been scattered across sectors without a clear strategy, direction and guidance and coordination. Consequently, there has been duplication of efforts in some instance and lack of ownership of the concept which has substantially affected effective implementation of the green growth initiatives.

2.2.1 Overview of ongoing Green Growth Initiatives

There are several ongoing projects focusing on resource efficiency, inclusiveness and environment sustainability. However, most of these are small in scope, donor driven, use inefficient technologies and have low adoption levels. Some of these projects are highlighted below:

(i) The Switch Africa Green project

This project is majorly focused on driving resource use efficiency in Small and Medium Enterprises; however, it covers a very small scope and is purely donor dependent. This project is supported by the European Union through United Nations Environment Programme (UNEP) and United Nations Office for Project Services (UNOPS) while the National Environment Management Authority coordinates participating institutions. The project seeks to ensure resource use efficiency in small and medium enterprises by adopting sustainable consumption and production principles. These enterprises are in; agriculture, tourism, waste management, welding and trade. Emphasis is on re-use, recycling and reduction in production inputs to produce more output. However, the project covers a few beneficiaries (six grantees) and faces unsustainable financing challenges.

(ii) Uganda Green Incubation Programme

This is one of government's major attempts on implementing the principle of inclusive green growth and equity although still at the pilot phase whose results are yet to be realized. The programme is aimed at creating green decent employment, enhancing productivity, reducing poverty and ensuring environmental sustainability. The programme is spearheaded by the Ministry of Gender, Labour and Social development with financial support from the United Nations Development Programme (UNDP). Under this programme, Uganda is attempting to domesticate the Songhai model and the pilot area has already been selected in Kampilingisa, Mpigi district.

(iii) Renewable Energy

Government has demonstrated commitment to increase the generation of electricity from renewable sources and distribution of efficient cooking stoves. However, there is still a challenge of availability, access and affordability especially in remote areas. Uganda has the biggest solar plant in East Africa in Soroti which contributes 10MW to the national grid with the potential to triple this production to 30MW at full capacity and several micro hydro power plants,

increasing consumption of Liquefied Petroleum Gas (LPG) albeit on a small scale. In addition, government is taxing kerosene and subsidizing solar panels to promote increased use of renewable energy. Uganda is an energy poor country with per capita electricity consumption estimated at 80kWh/year which is far below Kenya at 155kWh/year, Ghana at 300kWh/year and the Republic of Korea at 8,502kWh/year (MEMD, 2015). Therefore, there is still need to offer more off grid renewable energy options to enhance energy access and availability especially in remote rural areas where on grid energy supply may not make a lot of economic sense.

(iv) Sustainable Transport

There are a number of initiatives focused on sustainable transport options with many in pilot form, others requiring fast tracking and more to be done for effective implementation. There are also issues of road safety, congestion, emission and poor compliance to traffic regulations. Sustainable transport includes all the inclusive and less emissive transport options such as non-motorized transport, mass rapid transport in form of Bus Rapid Transport and Light Rail Transport. The ongoing efforts include; the construction of the Standard Gauge Railway that will have light rails connecting different divisions of the city, construction of walk ways and investment in water transport and contractual revitalization of a passenger train. Bus transportation is increasing especially on long upcountry routes. However, challenges of poor compliance to traffic regulations, small roads, the increasing number of privately owned small vehicles, highly emissive commuter taxis and bodaboda all of which have compounded traffic jams and greenhouse gas emissions with their associated costs. There are also concerns about road safety with Uganda registering one of the highest number of accidents in the region.

(v) Cities and Urban Development

There are a number of ongoing initiatives for ensuring sustainable urban development some of which have registered visible gains though most are haphazard, unsustainable and are curtailed by the absence of an integrated national physical development plan. Uganda has one of the highest urbanization growth rates in the world with the urban population growth estimated at 5.4 percent annually. Majority of the cities in Uganda have grown in the face of ineffective and inadequate planning giving rise to slums, limited economic opportunities, unplanned inadequate access to water and sanitation services, poor waste management and drainage, settlements and encroachment on environmental resources such as wetlands and forests. The absence of a National physical Plan also continues to drive haphazard urbanization.

A number of green initiatives have been implemented including; construction of street walkways, solar powered street lighting, green belts and amusement parks, improved waste management and drainage systems, express ways and ring roads to reduce congestion and ease mobility, increased taxation on highly emissive old vehicles.

(vi) Sustainable Agriculture

Agriculture plays a key role in Uganda’s transition to a green economy although its potential has not been fully harnessed. Given its high reliance on nature, several initiatives have been implemented in areas of; sustainable land management, organic agriculture, climate smart agriculture and agroforestry among others to ensure sustained production and productivity. However, these initiatives have not yielded the desired outcomes. In particular, there has been low agricultural production and productivity marred with significant crop yield gaps between on-farm yields and those attained at research stations.

Further, less than 30 percent of cultivated land is under Sustainable Land Management (SLM) thus leading to low yields, threatening food and nutritional security as well as aggravating poverty and vulnerability. Therefore, Uganda should adopt green growth strategies in agriculture if it’s to achieve the NDPII targets of increasing agricultural exports to US\$ 4 billion by 2020 from the US\$ 1.3 billion in 2015 and a reduction of the labour force in subsistence production from 6 million to 3 million by 2020.

(vii) Climate Change Actions

Uganda has registered remarkable progress in national climate change response, nonetheless, there are gaps in attracting climate change financing, scaling up of climate change pilot projects, high dependence on donor support, institutional capacity gaps, and limited appreciation of climate change as a development issue. Besides establishing policy and institutional frameworks for national climate change response, the country has implemented several pilot projects of the National Adaptation Program of Action in five ecosystems of the country. Additionally, the country is in the process of seeking accreditation for easy access to existing climate change funds by establishing and strengthening the National Implementing Entity and a National Designated Authority. The failure to move from climate change mainstreaming to implementation has left the country vulnerable to the adverse effects of climate change.

3.0 EMPIRICAL ANALYSIS OF GREEN GROWTH POLICY OPTIONS

This section presents two key policy scenarios for sustainable development through a green pathway that are available for a developing country like Uganda. The scenarios include; the Business as Usual growth scenario and the planned green growth scenario. Under each of these scenarios, the paper presents a summary of expected macroeconomic, social and environmental costs and benefits that are likely to accrue to the economy by adopting any of the scenarios. In analyzing the results of each of these scenarios, the computable general equilibrium model was used within the MAMs framework. These scenarios are further discussed in the subsequent sections.

3.1 Policy Scenarios

3.1.1 Scenario 1: The Business as Usual (BAU) / Reference Scenario

The BAU scenario is based on implementation of the NDPII with disregard to the green growth interventions while maintain the target growth rate of 6.1 percent with the fiscal and monetary policy remaining unchanged until 2040. The scenario estimates GDP compositions in 2020 and 2040 as shown in Table 1.

Table 1: GDP sector shares 2020 and 2040

Sector	2015	2020	2040
Agriculture	28%	26%	17%
Industry	24%	25%	29%
Services	48%	49%	54%

Source: NCE Modelling based on MAMs

The associated GDP per capita in 2040 is US\$1,850. This demonstrates that under BAU, there will be continued structural transformation and a shift in sectoral shares from agriculture to non-agricultural sectors. This includes the development of the oil and gas sectors as well as other important sectors, such as mineral development. **Relative to 2015, this BAU pathway raises GHG emissions by 25% in 2020, and 150% in 2040 far above the NDC target of 28 percent over the same period.** This indicates that Uganda's growth path will involve the use of natural capital and associated GHG emissions as it builds infrastructure, develops industry and expands and intensifies agricultural development.

3.1.2 Scenario 2: The Planned Green Growth Scenario

This scenario predicts economic growth from activities when the proposed green growth options in the current NDPII are delivered. The scenario validates and supports existing project interventions for accelerated implementation in order to optimize the green growth impacts of the NDPII. Further, the scenario considers the impact of new and additional project and policy interventions that may be considered in the NDPIII within the Uganda Vision 2040 period. This scenario forms part of an enhanced NDPII or green growth development pathway.

3.2 Findings and Policy Recommendations

The results of the empirical analysis indicated that there are several development benefits that accrue to a green growth economic scenario. While there are costs associated with this transition especially in the short term such as increased investment and the resultant trade-offs, the long-term benefits outweigh the initial investment costs.

In particular, the economic benefits included boosting GDP by 10 percent above the Business as Usual (BAU) scenario, delivering an additional four million green jobs (clean energy transition, city level infrastructure investments, solar powered irrigation and agroforestry) and reducing future greenhouse gas emissions by 28 percent, equivalent to 30.4 million tons of emissions.

The analysis also identified agriculture, energy, industry and planned urbanization (green cities) as sectors with the greatest green growth potential multiplier effect to generate the aforementioned economic benefits. The key drivers for these sectors were; resource productivity, infrastructure investment and innovation being the main potential drivers of growth in these areas. This is however envisaged to come at an additional cost in the short term with enormous long term benefits that outweigh the initial cost. The benefits associated with green growth are therefore makes a shift to a green growth pathway a must rather than an option since it accelerates the achievement of our national goals and targets.

Overall, the analysis also indicates the priority areas that have the greatest green growth multiplier potential for Uganda. Inclusive functional green cities with basic services such as energy and transport are envisaged to provide effective demand for the output from agriculture and other primary sectors such as tourism and natural resource among others. Accordingly, the green growth strategy has prioritized the following areas:

- (i) Sustainable agriculture production and value chains;
- (ii) Sustainable transport;
- (iii) Natural capital management;
- (iv) Sustainable energy sources;
- (v) Planned Urbanization (green cities).

4.0 PRIORITY POLICY OPTIONS FOR TRANSITION TO A GREEN ECONOMY

This section presents the priority implementable policy actions for ensuring Uganda's transition to a green economy. These actions are expected to be implemented in the short, medium and in the long term by a number of key stakeholders involving; public sector, private sector, development partners, the general public and civil society. The detailed implementation framework for each of these actions clearly showing the responsible stakeholders is attached. Overall, the actions cover all the key priority areas of the economy in line with the National Development Plan and Uganda Vision 2040. These actions include:

4.1 Sustainable agriculture production and value chains

- 1) Support increased access to irrigation facilities starting with 10 percent of smallholder farming areas by 2020 and cumulatively increase to 60 percent by 2030. Specifically, this will be achieved through the following projects and initiatives:
 - (i) Construction of water capture and storage infrastructure for livestock production at household and community. These include valley dams at sub county level and valley tanks in 20 districts to covering at least 20,000 households of the cattle corridor.
 - (ii) Construction of water capture and storage infrastructure for crop production at household and community levels. These include water harvesting facilities, shallow wells, and valley dams at sub county level and valley tanks in 50 districts to covering at least 100,000 households. Use solar-powered irrigation systems for community projects per parish and for individual households
 - (iii) Leverage on the road equipment supplied to districts in the construction of the water capture and storage infrastructure while the operation costs are co-shared with the farmers.
 - (iv) Construct bulk water transfers and distribution infrastructure from water bodies to farms through PPPs
 - (v) Extend credit guarantees to farmers for construction of water capture and storage infrastructure in partnership with the private sector.

- (vi) Provide appropriate tax incentives on irrigation equipment such as solar pumps, hose pipes, sprinklers, water storage tanks, etc
 - (vii) Rehabilitate and promote effective management and use of existing irrigation infrastructure such as dams, irrigation schemes through creating and strengthening water user associations and farmer cooperatives
 - (viii) Promote low cost innovative irrigation technologies appropriate to small scale farmers such as treadle pumps (moneymaker), bottle-drip irrigation, and bucket-drip irrigation.
 - (ix) Construct gravity flow irrigation schemes in rangelands
- 2) Upscale sustainable land management practices
- (i) Invest in integrated soil fertility management through use of organic manure, agro-forestry, fertilizer
 - (ii) Protect watershed and water catchments in partnership with communities, local leaders, civil society and cultural institutions
 - (iii) Undertake land use planning through soil mapping up to parish level
 - (iv) Train farmers in intensification small scale farming
 - (v) Increase land areas under organic agriculture
- 3) Upgrade value chains for strategic enterprises with focus on product quality and quantity, market diversification and efficiency in agro processing.
- (i) Construct agro-processing facilities through PPPs under warehouse receipt system to avoid post-harvest losses and wastage targeting establishment of a processing facility at sub-county level.
 - (ii) Invest in and promote solar powered small-scale processing equipment for example threshers, hullers, sun-drying, solar dryers

4.2 Natural Capital Management and Development

The focus areas under this priority area are tourism development, sustainable forestry management, sustainable wetlands and optimal water resources management.

4.2.1 Tourism Development

- 1) Diversify and market innovative tourism packages such as; conferencing, religious tourism, cultural tourism and community tourism where tourists live with communities. This is likely to offer sustainable and equitable benefits to communities surrounding protected areas
- 2) Improve physical planning and quality enhancement for hospitality investment in nature based tourism in partnership with the private sector
- 3) Design innovative funding mechanisms for tourism hotspots such as hot springs, water falls to enhance their protection

4.2.2 Sustainable Forestry Management

- 1) Expand forest plantations for biomass supply at community and institution level. This should be one of the key performance areas for local council leaders.
- 2) Promote the household sustainable biomass supply responsibility system for self-sufficiency. For example through promoting quick maturing and multi-purpose trees for biomass, fodder, timber and fruit.
- 3) Undertake forest landscape restoration, especially on private land through agro-forestry (e.g “Mutuba” tree) and afforestation actions covering 30 million trees by 2020
- 4) Scale up tree planting through provision of free seedlings (fruit trees, timber and woodlots) targeting road reserves, public institutions, bare lands and degraded landscapes
- 5) Undertake restoration of central forest reserves and local forest reserves through enrichment planting, natural regeneration and compliance enforcement of forest management regulations
- 6) Invest in infrastructure for alternative clean energy sources such as LPG through PPP arrangements

- 7) Support incentive programs oriented towards livelihoods enhancement, environmental stewardship and landscape management for climate change adaptation, mitigation, food security and energy;
- 8) Incorporate reforestation costs into extraction fees
- 9) Undertake payment for ecosystem service as a source of finance for ecosystem management schemes.

4.2.3 Sustainable Wetlands

- 1) Strengthen regulation of wetlands management especially for District Local Governments and urban Authorities. In particular, empower and adequately facilitate district natural resource officers to undertake enforcement and streamline their reporting channels.
- 2) Compensate private owners of strategic wetlands to ensure protection and sustainable utilization by government.
- 3) Ensure that the development of infrastructure maintains the integrity of wetlands through innovative green designs such as bridge highways (e.g Entebbe express way). This should be considered as criteria for approval of all infrastructural projects through wetlands.
- 4) Restore degraded wetlands and harness opportunities from sustainable use of wetlands including investments in provisioning, regulating and aesthetic ecosystem services such as ecotourism sites.

4.2.4 Optimal Water Resources Management

- 1) Strengthen multi-institutional efforts in research and development for effective management of invasive water weed species such as sylvinia and water hyacinth. There is need to fast track the operationalization of the invasive species coordination unit under NARO.
- 2) Build and strengthen private sector partnerships in water resources management through catchment management, participation in PES schemes and construction of water supply infrastructure.
- 3) Implement trans-boundary water resource programmes for shared resources like Lake Victoria, River Nile and Lake Albert.

4.3 Planned Green Cities

Focus should be on ensuring planned urbanization through; integrated urban planning, sustainable waste management, climate proofing urban development, urban transport and mobility, and green spaces. Specifically, the following should be considered:

- 1) Construct affordable housing estates outside flood plains in strategic and regional cities of Mbarara, Gulu, Arua, Mbale, Hoima, Fortportal and Jinja through PPPs arrangement.
- 2) Undertake city-wide slum upgrading through investment in low cost housing and extension of support infrastructure and utilities especially safe water.
- 3) Fast track preparation and implementation of district spatial plans for priority regional cities.
- 4) Enact and enforce regulatory reforms for green housing.
- 5) Upgrade the existing and expand the national sewerage system for the Greater Kampala Metropolitan Area under a PPP arrangement.
- 6) Scale up solar street lighting in all urban centers and promote household solar security lighting across the country.
- 7) Develop green belts starting with major streets and highways. This should be integrated in the physical planning of all Urban Authorities.
- 8) Promote and enforce the use of pollution mitigating technologies in industrial parks.

4.4 Sustainable Transport

- 1) Develop a comprehensive plan for an integrated multimodal mass transport system including; inland water transport, light railway and bus rapid transport.
- 2) Develop and implement Bus Rapid Transit system (BRT) for the GKMA and other fast growing urban centers
- 3) Establish incentives and disincentives for promotion of public transport over private transport.
- 4) Enforce responsible road use and safety

- 5) Plough back revenue collected from environmental fiscal reforms to the promotion and enforcement of environment management initiatives.
- 6) Introduce and enforce vehicle emission standards

4.5 Energy for Green Growth

There is need to increase the proportion of renewable energy as a percentage of Uganda's energy mix through:

- 1) Commission an assessment on the potential for large scale clean power plants
- 2) Develop and promote energy saving technologies such as energy saving cook stoves and bulbs.
- 3) Carryout an energy audit for to assess efficiency among industries and public institutions.
- 4) Identify and implement tax exemptions for renewable energy equipment and technology.
- 5) Formulate targeted renewable energy incentives to lobby the private sector.
- 6) Institute interest rate subsidies to loans for energy access businesses and district energy projects.

5.0 CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

This paper has presented the green growth approach as a complementary pathway for catalysing the realization of Uganda's national goals for transition to middle income as clearly specified in the Uganda Vision 2040 and the NDPII. Implementing the current development agenda without consideration to a green growth pathway shall lead Uganda to her development aspirations although with high environment and social costs that are likely to undermine sustainability. In particular, the green growth path assures the country of higher economic growth rates and GDP figures that come along with optimal environmental and climate change response outcomes as well as minimum income disparities among people and regions.

It is also important to note that Uganda has successfully mainstreamed green growth interventions at the strategic level especially through the second National Development Plan and the Uganda Vision 2040. None the less, there has been slow integration especially at implementation level. Also, there are a number of on-going green growth initiatives that are either in a smaller scope or with unsustainable financing that need to be scaled up. Therefore, this paper identifies the immediate policy actions that are likely to catalyze Uganda's transition to green growth.

5.2 Summary Recommendations

In order for Uganda to maximise benefits that come with implementation of Green Growth pathway, it is important for PEC to note the following for consideration:

1. The requirement to integrate environmental sustainability in approval of all infrastructure projects. Emphasis should be on promotion of sustainable use of wetlands and natural habitats as opposed to their replacement and degradation. The Entebbe express highway suspended bridge model should be replicated in all public projects.
2. The need for development and enforcement of regulations on green housing in architectural designs and plans. These designs cater for rain water harvesting, allow in sufficient natural light, waste sorting and management, efficient use of utilities such as energy and meet health and safety standards.
3. The need to enact and enforce environment fiscal reforms such as pollution taxes, charges and fees as innovative funding mechanisms for investment in environmental sustainability. There

is also need to adjust the national growth accounting system to incorporate full benefits and depreciation of natural capital.

4. The necessity for government to urgently upgrade and expand the national sewerage system for the Greater Kampala Metropolitan Area through sustainable financing mechanisms such as PPPs. The system may also be harnessed for biogas energy supply.
5. The requirement for construction of affordable housing estates to ensure decent housing for low income urban dwellers. There should be city wide slum upgrading through low cost housing and extension of support infrastructure and utilities especially safe water.
6. The need to leverage road equipment supplied to districts in the construction of water capture and storage infrastructure through a cost sharing arrangement with farmers.
7. The need for government to promote the households sustainable biomass supply responsibility system through quick maturing and multi-purpose trees for biomass. There is also need to consider expansion of community and institutional level forest plantations. This should be considered as a performance measure for local council leaders.
8. The need to prioritize massive investment in Liquefied Petroleum Gas (LPG) as an alternative clean cooking energy source.
9. The urgent requirement to develop and enforce vehicle emission standards.
10. The need to scale up solar street lighting in all urban centers and promote household solar security lighting across the country.
11. The need for responsible sectors and MDAs and local government to mainstream and implement the green initiatives relevant to their mandate with clear measurable indicators.