Emerging Issues on Trade and Sustainability

RIS
Research and Information System
for Developing Countries
विकासशील देशों की अनुसंधान एवं सूचना प्रणाली

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PREFACE

Prof. Sachin Chaturvedi

Director General, RIS

The world has witnessed tremendous growth in international trade in the past two decades following establishment of the World Trade Organization in 1995 and mushrooming growth of Free Trade Agreements (FTAs) and Regional Trade agreements (RTAs). Along with providing opportunities for developing countries to widen their market access in the global market, trade often has prompted countries to engage in 'race to the bottom' path of rapid and high economic growth even at the cost of environmental degradation, pollution, climate change, ecological imbalance, loss of biodiversity, depletion of fisheries resources, contamination of water resources, marine plastics, unhealthy accumulation of toxic elements, and so on. This warrants the trading nations to factor environmental concerns in all different aspects of exporting and importing which would ultimately inculcate environmentally-compatible production and consumption habits and help achieve the Sustainable Development Goals.

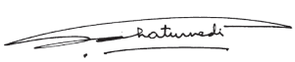
With the objective of enhancing capacity among officials and scholars working in the field of international trade to comprehend the impending challenges of environmental sustainability, particularly climate change, loss of biodiversity, environmental pollution, ozone layer depletion, depletion of natural resources in the context of trade, RIS conducts a specially tailored "ITEC Programme on Trade and Sustainability" every year in the month of July.

The programme was launched in July 2018 and the first edition of the course was well-attended by a good number of participants from the developing and the least developed countries across the continents. This edition of the course was held from 8 to 19 July 2019 with participation of 29 candidates from 16 countries representing South Asia, Sub-Saharan Africa, Latin America, Middle East and North Africa, and the Caribbean.

The course structure was designed as per four broad pillars; (1) Biodiversity and bio-safety issues including Convention of Biological Diversity, Nagoya Protocol, etc., (2) Trade in environmentally-sensitive goods and services, non-tariff measures, etc., (3) Financing including green finance, climate finance, regulations, business innovations, etc., and (4) Environmental provisions in FTAs and RTAs. Besides attending the lectures, the participants were engaged in group assignments on the four themes: Sustainable Exploitation of Biological Resources in Developing Countries: Genetic Resources for Greater Prosperity; Environmental Good and Services: Challenges and Opportunities for Developing Countries; Green Financing in Developing Countries: Experiences from Mongolia, Kenya and Nigeria; and Environmental Provisions in Regional Trade Agreements. The present publication contains the research articles prepared by the four groups on these themes.

I am sure this report may be found useful for all those who are working in the area of international trade, environmental sustainability, climate change and related areas.

I also take this opportunity to thank my senior colleague Prof. S.K. Mohanty for his intellectual contribution to the conception and design of the programme. I also acknowledge with great satisfaction the efforts by my colleague Dr. Priyadarshi Dash, Course Coordinator, for successful organization of the second edition of the RIS-ITEC Programme on Trade and Sustainability. Special thanks are due to Prof. T.C. James and Dr. Ravi Srinivas for guiding the participants in their group project work. I also thank Mr. Kamlesh Goyal, Mr. Tish Kumar Malhotra and Mr. Sachin Singhal for their contribution in publication of this report.



Sachin Chaturvedi

I

Sustainable Exploitation of Biological Resources in Developing Countries: Genetic Resources for Greater Prosperity

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I

Sustainable Exploitation of Biological Resources in Developing Countries: Genetic Resources for Greater Prosperity

Introduction

Biological diversity is the variability among living organisms of all origins, including, but not limited to, terrestrial, marine and other aquatic ecosystems, as well as the ecological complexes of which they are part. This includes diversity within species, between species and ecosystems. In the recent past, biodiversity has become a fundamental concept in the development of sustainable social and economic development policies. This concept has been implemented through the vision and leadership of countries, and with the partnership of non-governmental and intergovernmental organizations, indigenous peoples and local communities, the scientific fraternity and individuals. The Convention on Biological Diversity (CBD) (1993) and the Cartagena Biosafety Protocol (2000) and the Nagoya Protocol on Access and Benefit Sharing (2010) are important tools for the sustainable development of the countries. But awareness of the same is still not universal and implementation is very tardy. Developed countries have not been very enthusiastic about the implementation. The purpose of this study is to improve the understanding of how biological resources can be better utilized today without negative effects for future generations.

The CBD[1] is a multilateral treaty which has three main goals including: conservation of biological diversity (or biodiversity); sustainable use of its components; and fair and equitable sharing of benefits arising from genetic resources. Its objective is to develop national strategies for the conservation and sustainable use of biological diversity. It is the basic document regarding sustainable development.

The Cartagena Protocol on Biosafety to the CBD, that came into effect in 2003, seeks to protect biological diversity from the potential risks posed by genetically modified organisms (GMOs) resulting from modern biotechnology. It provides that products from new technologies must be based on the precautionary principle and allow developing nations to balance public health against economic benefits. It will, for example, let countries ban imports of GMOs if there is not enough scientific evidence that the product is safe and to require exporters to label shipments containing genetically altered commodities such as corn or cotton.[2]

The Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the CBD that came into effect in 2014 aims at implementation of the objective of fair and equitable sharing of benefits arising out of the utilization of genetic resources (GR), thereby contributing to the conservation and sustainable

use of biodiversity. It sets an international, legally binding framework to promote a transparent and effective implementation of the Access and Benefit Sharing (ABS) concept at the regional, national and local levels.

Tropical forests hold most of Earth's biodiversity. Their continued loss through deforestation and agriculture is the main threat to species globally, more than disease, invasive species, and climate change. However, not all tropical forests have the same ability to sustain biodiversity. Those that have been disturbed by humans, including forests previously cleared and regrown, have lower levels of species richness compared with undisturbed forests. The difference is even greater given the extinctions that will emanate later from the disturbance. We note here that some countries do not have many primary forests and are therefore among the most deforested countries. The mountains are cleared. Diversity at the top of the mountains indicates that endemic species have been lost with the disappearance of the forest. At the current rate, some countries their will lose essentially all of primary forest during the next two decades. In fact they are already undergoing a mass extinction of its biodiversity because of deforestation. These findings point to the need, in general, for better reporting of forest cover data of relevance to biodiversity, instead of "total forest" as defined by the United Nation's Food and Agricultural Organization (FAO). Expanded detection and monitoring of primary forest globally will improve the efficiency of conservation measures, inside and outside of protected areas.

Humans use biodiversity for their own livelihoods including in agriculture, farming, livestock herding, health, cosmetics, and biotechnology for generations. In developing countries, over 80 per cent of pharmaceuticals are either sourced or derived directly from biological and genetic resources. Sustainable use of biological diversity is indispensable to create and find new and more productive varieties and breeds of plants and animals needed to sustain the increasing food consumption of humans worldwide. With the world population predicted to reach 9.8 billion by the 2050s[3], and a 60 per cent rise of agricultural output needed just for food consumption, action is needed to save GR, and for ensuring the continued development and production of more efficient and high yielding crops. However, GRs are continuously decreasing owing to a number of factors and hybridization of local breeds and varieties is increasing.

Case Studies

In order to understand the issue better we explored the situation in the following countries: Tunisia, Mongolia, Kenya and Haiti in the Caribbean.

Tunisia

The Republic of Tunisia, located in northern Africa, is characterized by a large diversity of habitats and ecosystems that translate into impressive biodiversity. These are found in 69 natural ecosystems and 12 agro-systems, comprising in total: 7,212 species (3,749 terrestrial plant and animal species and 3,463 marine and aquatic plant and animal species) and 32 microorganism collections comprising 22,650 strains. The 2009 inventory indicates the presence of 165 endemic species/varieties of flora in Tunisia and surrounding areas, 24 species that are quite rare and 239 that are rare.

Tunisia, however, is facing various environmental challenges caused by anthropogenic practices such as overgrazing, deforestation, and desertification. More than 200 animal and plant species are listed in the IUCN Red List of rare and endangered species for Tunisia. The last Lion disappeared in 1891. The Leopard (Panthera pardus) previously occupied the mountains along the Algerian border. The Hartebeest (Alcelaphus buselaphus) has also been eradicated, with its last sighting in 1902, (Lavauden, 1924a). Other species that have disappeared are the Addax (1932, in Litt.) and the Oryx.

Tunisia can be divided into three main climatic zones as follows: a northern Mediterranean climate zone, a central steppe climate zone, and a southern desert climate zone. Because of this great environmental diversity, there are distinctive vegetation and various GR in Tunisia. This research was conducted to investigate plant biodiversity within the various bioclimatic zones and to characterize useful plant resources in Tunisia. We investigated native, medicinal and aromatic, desert, and soil erosion control plant species.

The conversion of natural ecosystems is the principal cause of plant biodiversity loss. Habitat modification (or destruction) is a major ground for the rarefaction and extinction of species in their natural habitats. This fact is further amplified by the reduction in natural plant cover, urban sprawl and global climate change.

Tunisian vegetation is generally subjected to certain pressures, including forest fires, overgrazing, land clearing, soil erosion. Certain rare species (or species in the process of becoming rarefied), such as the Atlas pistachio (Pistacia atlantica) and Carob tree (Ceratonia siliqua), deserve special attention for their protection.

Fire is a serious threat to both plant and animal biodiversity. During the first half of the last century, particularly during the two World War periods, the country experienced intense fires which decreased in intensity in the second half due to government efforts and particularly to the development and implementation of an action plan to combat forest fires. Land clearing and urbanization pose other threats to biodiversity.

A rapid increase in population and a desire for human settlement place populations in a precarious equilibrium with the environment. Over exploitation of plant resources is especially significant with respect to forest and steppe ranges, producing overgrazed land at a full-blown rate. Heavy rains that disperse soil after aggregate rupture, wind transport of fine elements, runoff on steep slopes and the destruction of natural vegetation also contribute to soil erosion, habitat destruction and biodiversity loss.

Soil erosion, degradation or loss of vegetation cover, as a result of clearing or overgrazing and untimely practices of working the soil, are responsible for desertification in the central and southern parts of the country.

Also, the Gulf of Gabes—a Mediterranean zone with important biological resources and rich coastal, marine and freshwater ecosystems—is particularly exposed to anthropogenic factor (including overfishing and seabed trawling and wastewater pollution from urban and industrial sources) altering its natural features. Since the beginning of the 2000, the Tunisian Government, fully aware of the potential and the challenges of this zone, had stressed the importance of adopting a pragmatic and integrated approach to safeguard natural resources, including land and water conservation, mitigating ongoing or potential threats to biodiversity, and addressing social and environmental concerns, while contributing to better harmonizing planning with other investment programmes and projects.

To rationalize the use and exploitation of natural resources in general and particularly biological resources, especially in semi-arid regions characterized by very fragile ecosystems, Tunisia has gradually established a legal arsenal perfectly adapted to these circumstances. A number of institutions involved in biodiversity management, in one way or another, have developed or are developing indicators for monitoring certain biodiversity components.

Many measures have been adopted over the last 10 years for implementation of CBD. They relate in particular to the ratification of the Cartagena Protocol, complementary amendments to the Forest Code and the Code on Land Use Management and Urban Development (protection of the maritime domain), the creation of the Regional Research Center in Oasis Agriculture, etc.

At present, Tunisia possesses the following legal instruments:

- Forestry Code
- Water Code
- Code on Water and Soil Conservation (CES)
- Code on Land Use Management and Urban Development
- Regulation on public maritime matters
- Specific regulations on:
  - » Protection of wetlands, with the creation of 40 Ramsar sites
  - » Protection of biological resources, notably including the Fisheries Law, the law on the organization of the production and marketing of seeds and plants, the regulation on the import-export of seeds and plants, various legal dispositions and regulations on the creation of marine and terrestrial protected areas (national parks, nature reserves, etc.).

Such measures are constantly being reviewed with a view towards their updating, supplemented and/or enhanced by new provisions for the sustainable management of natural resources and biodiversity. In recent years, the following measures have enhanced the legal arsenal:

- Law No. 2002-58 of 25 June 2002 approving the Cartagena Protocol on Biosafety (JORT No. 52, 25 June 2002)
- Law No. 2003-78 of 29 December 2003 amending and supplementing the Code on Land Use Management and Urban Development (JORT No. 104, 30 December 2003), with a view to protecting areas in the public maritime domain and some components in the public waters domain (lakes, navigation channels, watercourses and reservoirs established on watercourses).
- Decree No. 1748 of 11 August 2003 establishing the National Gene Bank, whose mission is to assess, preserve and assign values to local genetic resources.
- Law No. 2005-13 of 26 January 2005 amending and supplementing the Forestry Code (JORT No. 9, 1 February 2005), according important provisions to various aspects of the Code.
- Decree No. 2005-1747 of 13 June 2005 establishing a national council to combat desertification, pursuant to the provisions of the UNCCD.
- Decree No. 2006-1431 of 22 May 2006 establishing the Regional Centre of Research on Oasis Agriculture, its organization and manner of operations.
- Law No. 49-2009 on the establishment of marine and coastal protected areas.

Tunisia is currently finalizing the development of an Environment Code which will certainly strengthen the achievements in these domains.

Other initiatives taken to implement the CBD include the development of the first National Study on Biological Diversity (1998), which subsequently led to the adoption of the first National Strategy for the Conservation of Biological Diversity and accompanying Action Plan. The primary objective of the Strategy is the establishment and development among all actors (at their respective levels) of a common and rational basis regarding a vision, and an appreciation of the importance of biodiversity.

The Action Plan includes a wide range of activities grouped into six main areas:

- conservation of biological diversity
- integration of biodiversity conservation and natural resource management
- management of processes affecting biological diversity
- improved knowledge and tools to monitor biodiversity management
- mobilization of partners
- institutional strengthening for implementation of the action plan.

Tunisia is in the process of updating its NBSAP in the light of what has been learnt

since 1998, as well as aligning it with the Aichi Biodiversity Targets. Efforts that have been undertaken and are in process for preserving and conserving the biodiversity. Some of the programmes and projects are the following:

- Prevention of genetic erosion, particularly in the field of agro-biodiversity
  - » Creation of a gene bank (2007)
  - » Creation of a network of botanical gardens to preserve the most endangered plant species
  - » Development of action plans for the preservation of agricultural species (plant and animal)
  - » Development of the first core of the Red List (2010)
- Ecosystem protection and management through the implementation of several initiatives and projects such as:
  - » Project on protected areas management (GEF/WB)
  - » Project on the protection of marine and coastal resources in the Gulf of Gabes (GEF/WB)
  - » Project on ecotourism promotion and conservation of desert biodiversity (GEF/WB)
  - » Project contributing to the implementation of the management plan for Chambi National Park (AFD/FFEM/Monaco)
  - » Analysis of the ecological representativeness and effectiveness of protected areas management in Tunisia (2010)
  - » Project on the management of oasis ecosystems in southern Tunisia (GEF/WB, 2014)
  - » Creation of 20 new protected sites
  - » Designation of 39 new Ramsar sites
  - » Training, information dissemination and capacity-building in biodiversity, notably including a self-assessment exercise on national capacities to contribute to the preservation of the global environment, enabled the development of a "synergistic" action plan for implementing the three Rio Conventions
  - » Needs assessment in national capacity-building in biodiversity, establishment of a CHM and an assistance project for the development of a national biosafety framework
  - » Support mechanisms for national implementation (legislation, funding, capacity-building, coordination, mainstreaming, etc.)

A priori in Tunisia, as elsewhere, stakeholders with an interest in biodiversity comprise a wide and ever-expanding range of institutions and organizations, including public institutions, professional and inter-professional organizations comprised of associations of biodiversity users (farmers, ranchers, manufacturers, merchants, etc.), civil society associations with notably groups of producers and non-governmental organizations.

Biodiversity stakeholders can be classified into the following groups:

- Public sector institutions, including administrative structures and development and support structures concerned primarily with the management of biodiversity components (agriculture, mountain, arid zones, etc.)
- Institutions of higher education in agronomy and scientific research institutes equipped with laboratories and specialized research units, particularly concerned with knowledge and, to some extent, the conservation of the different components of biodiversity in different environments at both national and regional levels.
- Mixed institutions, including inter-professional organizations and specialized technical centers, primarily concerned with the use of some elements of agro-

biodiversity at national and/or regional or local levels.

- Private sector and civil society institutions, including professional organizations and grassroots organizations, such as the Agricultural Development Group (GDA), primarily concerned with the use and valuation of certain biodiversity resources (production, processing, trade, etc.).
- Grassroots organizations of civil society (NGOs) particularly involved in awareness-raising on biodiversity and, to some extent, the valuation and conservation of certain biodiversity resources at the local level.

In addition, there are consultative bodies at different levels that can play a certain role in biodiversity management and International and/or regional organizations that support national institutions in the field of biodiversity.

Tunisia has significant capacity, with stakeholders consisting of simple users (farmers, ranchers, etc.) policy-makers, development officers, project and programme developers, administrators, planners and strategists, covering various fields such as agricultural and agro-forestry-pastoral production, agronomic research and scientific research in biology, development economics, etc. Biodiversity capacity in Tunisia is increasing; programmes to upgrade and strengthen means and capacity adapted for sustainable biodiversity management are a part of the country's biodiversity policy. In terms of individual capacity, Tunisia possesses significant assets in expertise that covers all topics of biodiversity. There is good engagement from all actors as well as a deeper commitment towards NBSAP implementation through established mechanisms, which should be supported and strengthened.

There is commendable interest in the development of traditional knowledge (TK) and the promotion of quality of life through the sustainable and rational use of all biodiversity elements. A study on the inventory of local agricultural GRs and the elaboration of an action plan for their conservation and valuation, undertaken by the Ministry of Environment and Sustainable Development (MEDD) in 2007-2008, addressed this issue with respect to local agro-biodiversity.

Indeed, it is through such knowledge and practices that many local varieties (e.g. Baklouti pepper, Chaâbani pepper, Moknine melon and pear, varieties of Djérid/Gabes dates, varieties of apricot, etc.) have been created and have survived to the present day. They were maintained because of their importance in local and regional socioeconomic life, serving as the basis for food and/or for traditional trade systems. These measures should be promoted in terms of the use of best practices and traditional knowledge on biodiversity, and also better assessed in terms of values.

A number of institutions involved in biodiversity management have developed or are developing indicators for monitoring certain biodiversity components, particularly within the context of specific projects. Such is the case with the Directorate General for Forestry, National Institute for Research in Rural Water and Forestry Engineering, Directorate General for the Environment and Quality of Life, National Agency for Environmental Protection, Agency on Coastal Protection and Management, National Gene Bank, etc.

In 2002, the General Directorate for Forestry adopted six indicators for monitoring the sustainable management of Tunisian forests, and forest and para-forest ecosystems, and is currently in the process of updating this strategy with new targets and indicators. The monitoring indicators pertain to three national parks (Ichkeul, Bouhedma, and Jbil) that are the subject of a planning and management project on protected areas (PGAP), co-financed by the GEF/IBRD for a five-year period (2003-2008), which, therefore, should see the project implemented in the short term.

- Strengthening of the institutional capacity for administering sustainable protected areas management.
- Restoration and ecosystem management in the three parks to protect the flora and fauna, support for the development of ecotourism activities, and formulation of community development plans with local communities that revolve around sustainable biodiversity conservation
- Awareness-raising and strengthening of public support for biodiversity conservation at local and regional levels.

A number of indicators to achieve the above objectives have been adopted, including:

- Stabilization or improvement of the demographic status of settlements.
- Main biological indicators considered for parks, particularly vegetation cover and the distribution of animal/bird populations for each national park, and water management for Ichkeul National Park.
- Percentage of annual work programme activities assigned or transferred to local communities.
- Participatory process for management plans and annual work programme (across the local development council and project management team).
- Number of private tourism concessions in each of the three parks.
- Overall improvement in the effectiveness of protected areas management as defined by the "IUCN SCORECARD"
- The creation of permanent delegated conservation posts in the three parks that will be responsible for public and community relations

The use of these indicators should be followed up by structures involved in project implementation, primarily the Directorate General of Forests and its local and regional structures involved with national parks.

Regarding specific projects for developing and managing coastal, lagoon and island ecosystems that focus on the understanding and characterization of the ecosystem, indicators for monitoring biodiversity have been either developed or are in development. This is particularly the case for the following projects:

- Project for the protection of marine and coastal resources in the Gulf of Gabes.
- Conservation project for wetlands and coastal ecosystems in the Mediterranean Basin (Med-Wet-Coast).
- Regional project for the development of maritime zones and protected coasts in the Mediterranean region.

The indicators in question relate primarily to the monitoring of biodiversity in the ecosystems under consideration, notably flora and fauna, habitat and species status.

These projects involve a number of institutions, mainly the Directorate General for the Environment and Quality of Life, Agency on Coastal Protection and Management, International Centre for Environmental Technologies (Tunis), National Institute of Sea Sciences and Technologies, among others, which should ensure an increase in the use of the indicators in question for the sites under consideration and establish appropriate monitoring devices.

The following outcomes are expected from the National Biodiversity Strategy that is currently underway::

- Identification of national goals
- Identification of national indicators
- Updating of the status of locations of elements of biodiversity

Mongolia

Located between Russian Federation and the People's Republic of China, in the heart of Central Asia, Mongolia spans across the Siberian taiga, Euro-Asian steppes and the Gobi and deserts of Central Asia, in the watershed of

the Arctic, Pacific, and Central Asian Internal Drainage basins. With its unique geography, ancient traditions of nomadic livestock herding, culture and customs, and sparse population, Mongolia is an important focal point in Eurasia for both sustainable and parallel existence of human and nature and the conservation of degraded ecosystems and endangered animal and plant species. Mongolia contains 16 ecosystem types within its borders, which have been consolidated into four ecoregions, namely the Daurian steppe (28.2 per cent of total area), Khangai (16.4 per cent of total area), Central Asian Gobi Desert (16.4 per cent of total area), and the Altai-Sayan (23.1 per cent of total area), in order to increase integration between national conservation and development policies and plans.

Mongolia is divided into 16 phytogeographical regions based on geographical characteristics. The flora itself contains representatives of endemic to Mongolia plant species, Siberian, Daurian, Manchurian, Central Asian and Altai Mountain ranges flora species, contributing to a unique vegetation distribution and population. At present Mongolia has 3127 species or subspecies of vascular plants over 39 orders, 112 families, and 683 genera (Urgamal and etc., 2014), approximately 1400 species of algae over 105 families and 288 genera, approximately 510 species of moss, seven species of lycophyta over 10 families and 15 genera; nine species 556 species of seed plant over one order and one family, and 22 species of gymnosperm over four orders and 6 families. According to the IUCN's Red List criteria, of the 148 species of plant are considered endangered in Mongolia, 74 per cent were assessed regionally threatened, of which 11 per cent were critically endangered, 26 per cent were endangered, 37 per cent were vulnerable, one per cent was not applicable for assessment, and three per cent were categorized as data deficient.

Mongolia's fauna consists of 138 species of mammal, 75 species of fish, 22 species of reptile, 6 species of amphibian, 476 species of bird, over 13 thousand species of insect and 516 species of mollusk. Total of 110 species of fauna and 192 species of flora were deemed to be endangered and entered into the Mongolian Red Book[4] as either critically endangered or endangered.

With the State Great Khural ratifying the CBD in 1993, Mongolia became the 30th nation to officially join this international agreement. The Mongolian Government first passed the "National Strategic Action Plan for the Protection of Biodiversity" in 1996. The action plan comprises 21 goals and 87 actions covering the research, protection, and sustainable use of biodiversity, together with goals for sector and cross-sectorial policy and regulation improvement. Two assessments have been made in the past concerning programme implementation, with a study in 2010 concluding that 96 per cent of the goals had been implemented, indicating that full implementation had been achieved. With the adoption of the "Aichi Biodiversity Targets" at the 12th Meeting of the Conference of the Parties to the CBD, a recommendation to the parties was made concerning updating national strategic action plans to reflect the goals agreed upon during the conference.

Like many other countries the issues and challenges for Mongolia in biodiversity protection are land use, degradation of forest areas and depletion of water levels. At the end of 2013, land use types of Mongolia were seen as the following: 115,361.3 thousands ha or 73.76 per cent of the total area was under use of agricultural production including pastoral land use and crop production, 699.5 thousands ha or 0.45 per cent of the area comprised of settled areas such as city, town or any other urban area, 437.8 thousands ha or 0.28 per cent land was allocated for road and other linear construction, 14,295.4 thousands ha or 9.14 per cent of land was under forested or forest fund area, 686.6 thousands ha area was water bodies and 24,931.1 thousands ha or 15.94 per cent of land area was allocated for special needs[5]. According to the statistical information

of 2013, out of 24,636.8 ha of degraded land due to mining activities,10,263.1 ha or 41.65 per cent of land was undergone for technical restoration and 6,781.5 ha or 27.5 per cent of land was biologically restored. As of 2014, 2,736 mining licenses of two different purposes were issued for an area of approximately 11 mln. ha which is about seven per cent of the total country territory. Of which 1,391 licenses are for exploitation purposes in 1,079.9 thousands ha area and 1,345 licenses are for exploration in an area of 9.9 mln. ha area. (National Statistical Yearbook, 2013).

Mongolia's protected areas have been steadily increasing over the years, with 27.2 million hectares comprising from 99 protected areas, or 17.4 per cent of the total area under protection as of 2014[6]. Of these, 20 were strictly protected areas (12,402,429 hectares), 32 were National parks (11,711,815 hectares), 34 were Natural reserves (2,958,142 hectares), and 13 were National monuments (126,848 hectares). As of 2014, total area of nationally protected areas has been increased by 5,306,452 ha or 19.5 per cent compared to 2008.

According to the national water survey of 2011, 6,646 rivers, of which 6,095 with permanent flow and 551 dry, 3,613 lakes, of which 3,130 with permanent water and 483 dry, and 10,557 springs, of which 8,970 with permanent water and 1,587 dry were counted. Due to a drought period lasting until 2011, various lakes including Goviin Orog, Taatsiin Tsagaan, Adgiin Tsagaan, Khaya, and Ulaan, together with various rivers and the Ulaan Tsutgalan waterfall, ran dry. With higher precipitation starting from 2012, Taatsiin Tsagaan, Adgiin Tsagaan, Ulaan and Orog lakes became watered again, and water levels steadily rose.

Despite an increase in surface[7] water levels, groundwater levels continue to decrease. From the other hand, the use of water resources, especially groundwater use is steadily increasing due to intensification of mining activities[8]. Problem is Mongolia is located between 2 big countries, viz., China and Russia and they are engaged in extensive mining and intense agriculture. Mongolia's most important problem is how to enhance its ground and surface water levels and how to domesticate new forests and plants. If the country succeeds, its forests and agriculture will develop sustainably.

Kenya

Kenya is located in the eastern part of Africa and is home to many biological resources. It is endowed with an enormous diversity of ecosystems and wildlife species which live in the terrestrial, aquatic and aerial environment. These biological resources are fundamental to national prosperity as a source of food, medicines, energy, shelter, employment and foreign exchange. For instance, agricultural productivity and development are dependent on the availability of a wide variety of plant and animal genetic resources and on the existence of functional ecological systems, especially those that influence soil fertility and water availability. Kenya's biodiversity wealth is integral to the delivery of Vision 2030 as it lies at the heart of the tourism sector, which along with agriculture, manufacturing, wholesale and retail trade, business process outsourcing (BPO) and financial services, is expected to deliver the 10 percent annual growth rate envisaged by the country's long-term development blueprint (GoK, 2017).

Kenya's rich biodiversity can be attributed to a number of factors, including a long evolutionary history, variable climatic conditions, and diverse habitat types and ecosystems. The major biodiversity concentration sites fall within the existing protected areas network (national parks, reserves and sanctuaries) which are mostly managed by the Kenya Wildlife Service (KWS). However, over 70 percent of the national biodiversity occurs outside the protected areas.

Kenya is considered to be one of the countries that are best endowed with biodiversity due to the abundance and variety of species that are

manifest in the country's varied ecosystems. The rich biodiversity is partly attributed to the diversity of landscapes, ecosystems, habitats and the convergence of at least seven bio-geographic units. Kenya is home to five hot spots of globally important biodiversity and 61 important bird areas (IBAs). These unique and biodiversity-rich regions include the Indian Ocean Islands of Lamu and Kisite; the coastal forests of Arabuko-Sokoke and the lower Tana River; the Afro-montane forests of Mount Kenya, Aberdare and Mount Elgon; Kakamega's Guineo-Congolian equatorial forest; and the Northern dry lands that form part of the distinct Horn of Africa biodiversity region. These ecosystems collectively contain high levels of species diversity and genetic pool variability with some species being endemic or rare, critically endangered, threatened or vulnerable (NMK, 2010).

Kenya's known biodiversity assets include 7,000 plants, 25,000 invertebrates (21,575 of which are insects), 1,133 birds, 315 mammals, 191 reptiles, 180 freshwater fish, 692 marine and brackish fish, 88 amphibians and about 2 000 species of fungi and bacteria. Kenya is ranked third in Africa in terms of mammalian species' richness with 14 of these species being endemic to the country (IGAD 2007). The country is famous for its diverse assemblage of large mammals like the African elephant (Loxodonta africana), black rhino (Diceros bicornis), leopard (Panthera pardus), buffalo (Syncerus cafer) and African lion (Panthera leo). Protection of these will therefore to be crucial to securing livelihoods and to consequently reducing poverty levels—which currently stand at 46.6 percent of the population—by up to nine percent in order to attain social equity at the scale anticipated by the social pillar of Vision 2030.

Of the 7,000 plant species occurring in Kenya, 146 species have been assessed according to the IUCN Threat Criteria (2008) and 103 have been categorized as being threatened (critically endangered, endangered or vulnerable). Although the country's flora numbers have shot up due to the influx of invasive alien species, the invasive species pose a major threat to indigenous biodiversity. In order to effectively stem the loss of plant populations and the associated genetic diversity, the country should prioritize development of a national plant conservation strategy (KBC, 2007).

In spite of its immense biotic capital, Kenya experiences severe ecological and socio-economic problems. Drought negatively impacts the country's biodiversity as well as the national economy and people's livelihoods. There are also problems of human-induced environmental degradation, such as destruction of natural landscapes, soil erosion, water pollution and loss of species. Inappropriate policies and political impunity have contributed to nationwide habitat destruction, loss of species[9] and the associated genetic resources[10]. The sustainable management of the country's biological resources is also hampered by lack of a comprehensive biodiversity policy, of a biodiversity inventory and of formal procedures for benefit t sharing as well as threats from invasive alien species (MOPND, 2010).

Today, Kenya is facing a forest threat and drought as a result of deforestation, death of animals and food shortage according to Mr. Caiaphas Wanjala, (Nov 2018). For long time, Kenyans have been warned about cutting down trees, but this has gone unheard people do not understand that without trees there would not be any rains which means no farming, hence drought and famine. Cutting down trees for fuel, firewood and Charcoal are the biggest reasons why there are no rains in many parts of the country. This continue even after the government has made other sources of energy such as gas more affordable, ratification of CBD, arrest those caught illegal cutting down trees but it all seems too little.

Nevertheless, much of the country's bio capital remains unknown and even with regard to the recorded species, there are information

gaps on the proportion of those that are endemic, threatened, critically endangered or extinct. A contributory factor has been that most of biodiversity research is largely funded by foreign donors which retain the data at the end of the project lifecycles. The situation is exacerbated by the fact that for the last two decades, Kenya has not conducted a comprehensive biodiversity inventory to determine the number of species it hosts or the magnitude of habitat loss. The existence of such bioinformatics would facilitate informed decision making and enable the country to better carry out the niche marketing advocated by Vision 2030 that would increase domestic, regional and international tourism while easing the pressure on over-visited destinations such as Maasai Mara National Reserve, Amboseli National Park and Lake Nakuru National Park.

Kenya ratified the CBD in 1994 and has put in place governance structures with strong policy and legal instruments. More than eight regulations and guidelines on environmental conservation and management including biodiversity have been gazette and operationalized. The country has also instituted measures to link the CBD, the Ramsar convention on wetlands, the Bonn convention on migratory species, the World Heritage Convention, the United Nations Convention to Combat Desertification (UNCCD), CITES and the United Nations Framework Convention on Climate Change.

In order to contribute to the global biodiversity conservation targets of 2020 and 2050 and to ensure constant supply of ecosystem goods and services from healthy habitats that benefit people (NEMA 2010), the government revised the old National Biodiversity Strategy and Action Plan of 2000 in 2010 in line with the Nagoya outcomes of the Conference of the Parties to the CBD. The revision seeks to ensure that the country's genetic resources are properly valued and sustainably used, to enhance information sharing and to build institutional capacities. The National Climate Change Response Strategy has also been finalized. KWS is, appropriately, the national focal point for the Ramsar Convention on Wetlands and Bonn Convention on Migratory Species of Animals as it is mandated with conserving Kenya's terrestrial and aquatic natural resources in the gazette protected areas. In addition, KWS is the lead agency for the management of the country's wetlands and by 2010, five wetlands had been listed as wetlands of international importance (Ramsar Sites). The National Museums of Kenya (NMK) is the focal point for the Global Taxonomy Initiative (GTI), African Network for the International Pollinator Initiative (IPI), Global strategy on plant conservation (GSPC), and Ramsar Convention communication, education, and public awareness in Kenya and it represents the Africa region on the CBD Plants Committee (NMK, 2010).

In 2006, Kenya joined 22 other nations in signing the Agreement for the Establishment of the Global Crop Diversity Trust. The Trust was established through a partnership between the FAO and the Consultative Group on International Agricultural Research (CGIAR). The primary goal of the Global Crop Diversity Trust is the conservation of the agricultural diversity housed in a myriad of gene-banks across Africa and around the world. The mission of the Trust is to ensure the long-term conservation and availability of crop diversity for food security worldwide (Alvarez, 2009).

At the regional level, there is considerable on-going work to develop synergies among the existing multilateral environmental agreements, to harmonize reporting frameworks and to develop new legal agreements. Legal instruments and initiatives at the regional level include the African Convention on the Conservation of Nature and Natural Resources, the New Partnership for Africa's Development (NEPAD) Environmental Initiative, African Ministerial Conference on the Environment (AMCEN), and the Protocol on Protected Areas and Wild Fauna and Flora in Eastern Africa. Another important regional development

was Kenya becoming a signatory, along with Uganda, Tanzania, Ethiopia and Rwanda, to the Nile River Basin Cooperative Framework. Besides providing for more equitable use of the waters of the world's longest river, the parties committed themselves to collectively working towards conserving the Nile and implicitly, the vast biodiversity wealth of the Nile basin.

At national level, the government set up the Centre for Biodiversity at the NMK whose primary role is to coordinate country biodiversity studies. In addition, a number of legal instruments (policies, rules, regulations, and acts) have been put in place to enhance conservation and regulate utilization of biodiversity resources. 2010's landmark development however, was the promulgation of the new Constitution which entrenches a range of environmental imperatives and provides an avenue for remedying the land tenure, land use and gender inequity issues that have negatively affected the country's biodiversity. The Constitution also devolves management of a range of natural resources to the nascent county governments. Policy instruments finalized in the course of 2010 include the Revised Kenya National Biodiversity Strategy and Action Plan (2010) and the Integrated Coastal Zone Management Policy (2010). These are expected to complement the growing body of biodiversity-related legal and policy instruments which include the Environment Management and Coordination Act (1999), National Water Policy (1999), Water Act (2002), Draft Forest Policy (2004), Draft ASALs Policy (2004), Forest Act (2005), Fisheries Policy (2008), Heritage Sites (2006), National Land Policy (2009), Energy Act (2006), Biodiversity regulation (2006), Draft Wildlife Policy (2007), and the draft Minerals and Mining Policy. While many of these instruments were not directly informed by the Vision 2030 objectives, it is clear that any initiative which directly or indirectly helps to conserve the country's biodiversity tacitly helps to meet the specific Vision 2030 poverty alleviation objectives as well as the overarching goal of improving the general welfare of the citizenry. It is also self-evident that a national biodiversity policy and law would be a useful complement to the above operative instruments (Mwandambo, 2010).

A National Wetlands Standing Committee was established in 2010 to create public awareness, formulate and coordinate the creation of a national wetlands inventory, coordinate Environmental Impact Assessments (EIAs) and give technical advice on wetland issues. The committee is also tasked with drawing up a framework for a national policy on wetlands. It is envisaged that this policy will include policy strategies for securing and managing as well as assessing, inventorying and monitoring wetlands. It is also envisioned that the wetlands policy will also contain strategies for improving the knowledge base related to the protection of wetland functions, guidelines for identifying the most threatened wetlands and provide for a national platform to enhance communication among various stakeholders (Ikiara & Okech, 2002).

KWS supports the livelihoods of communities that interact with wildlife and bear the brunt of human-wildlife conflict through three programmers namely; Community Enterprise Development (CED); Corporate Social Responsibility programme (CSR) and protection of people's life and their property from wildlife destruction through a Problem Animal Management Unit (PAMU) (KWS, 2011). The goal of the CED programme is to develop the capacity of communities and private landowners to establish and manage economically viable nature-based enterprises within targeted landscapes. Communities which interact with and host wildlife on their lands are key stakeholders in wildlife protection and are sensitized to wildlife-compatible land use practices. Examples of these are the Mwaluganje Elephant Sanctuary along the Mombasa South Coast and Lumo Community Wildlife Sanctuary[11].

The following are the major challenges facing biodiversity conservation:

- Poaching and overexploitation
- Pollution
- Habitats loss
- Climate Change

Kenya's enormous natural resources are a source of livelihood to Kenyans, are central to the economy and are indispensable to achieving the aspirations outlined in Vision 2030's economic, social and political pillars. Important steps in recognizing the role of biodiversity have been made although a number of challenges remain. It is envisaged that the following interventions will enable sustainable use of the country's biodiversity resources:

A national biodiversity policy should be formulated and a biodiversity law enacted in order to provide a robust regulatory framework that balances biodiversity conservation with the need to harness the country's enormous biodiversity wealth for the economic, social and political goals of Vision 2030.

Mechanisms for sharing and exchanging biodiversity data among Kenyan institutions should be designed in order to ensure strategic management and planning of all important biodiversity areas.

There is need to be ensure centralized coordination of biodiversity conservation and management activities. This could be achieved through establishing a National Biodiversity Steering Committee with specific mandates and terms of reference.

National and regional partnerships should be strengthen in implementation of relevant conventions relating to technology transfer to better utilize the country's biological resources. Issues that have hindered technology transfer since the ratification of conventions that support technology transfer by Kenya should be identified and appropriate interventions instituted.

There is also need for capacity building of the NEMA biodiversity focal point and establishment of a national biodiversity panel of experts to synthesize outputs from lead agencies and the convention secretariat.

Strategies should be developed to shield biodiversity resources from biopiracy, negative impacts of global climate change and the impacts of liberalized of global tourism. It is also important for Kenya to become a signatory to the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits arising from their Utilization to the Convention on Biological Diversity and to domesticate its provisions.

Haiti in the Caribbean

Haiti is situated in the Caribbean Islands in the continent of North America, and it occupies approximately 10,640.98 square miles of land and 73.36 square miles of water. Haiti shares the island with the Dominican Republic, and it covers about 37.5 per cent of the island.

The Caribbean is an internationally recognized biodiversity hotspot, and is one of the world's greatest centers of endemic biodiversity as a result of the region's geography and climate: an archipelago of habitat-rich tropical and semi-tropical islands tenuously connected to surrounding continents. The Caribbean Islands comprise 30 nations and territories and stretches across nearly 4 million square kilometers of ocean. The Caribbean is one of the world's 36 biodiversity hotspots[12] - Earth's most biologically rich yet threatened areas.

Many of the 45 key biodiversity areas are coastal and dependent on the health and resilience of the adjacent marine environment. Conservation corridors are located in four countries[13]:

- Cockpit Country-North Coast Forest-Black River Great Morass – Jamaica
- Portland Bight Protected Area – Jamaica
- Massif du Nord – Haiti

- Massif de la Selle – Jaragua – Bahoruco - Enriquillo bi-national corridor – Haiti and Dominican Republic
- Cordillera Central – Dominican Republic
- Central Mountain Range – St. Vincent and the Grenadines

Haiti is one of the richest countries in the Caribbean in terms of botanical diversity. Haiti also has a rich fauna, of which 75 per cent are considered endemic[14]. Less than two percent of Haiti remains afforested. These forest areas are of global importance because they are home to endemic species that are on the verge of extinction. With a coastline of 1775 km, a coastal plateau of 5,000 km2 and five main offshore islands, Haiti's coastal and marine resources include examples of a remarkably varied ecology rich in biodiversity.

Deforestation in Haiti and the resulting land uses, resulting in erosion, alteration of water flows, flooding, sedimentation and destruction of aquatic ecosystems have been and continue to be the main threats to biodiversity of the country.

Protected areas, as an integral part of the development process and as a basic tool for sustainable development, have recently been integrated into Haiti's development plan, although, from a historical perspective, the creation of protected areas In the 1920s, the Haitian government officially identified a total of 35 protected areas covering about 6 per cent of the national territory. However, the percentage of actual protected areas is estimated at only 0.3 per cent of the total area of the country. Given these latest statistics, the Republic of Haiti is far behind other Caribbean countries[15], namely Jamaica (8.2 per cent), the Bahamas (8.9 per cent), Cuba (14.3 per cent) per cent), the Dominican Republic (21.7 per cent), Turkey and Caicos (39.7 per cent) and Martinique (66.3 per cent).

Haiti's endowment of forest resources has been treated as a free good and exploited to capitalize economic development since colonial times. Europeans cleared mountain forests to establish coffee plantations and used clean-tilling agricultural practices that promoted soil erosion. European colonists and then, later, Haitian governments harvested and exported timber (chiefly mahogany, ironwood and logwood) to earn hard currency. Haiti's peasants, especially the land-poor, have historically cleared forest to expand agriculture. Peasants also exploit forest stocks in time of economic insecurity or to finance unexpected contingencies. In several situations, the unsustainable exploitation of trees or forest is the only remaining income-generating option available to peasants. In fact, forests (or former forest lands) are everything to the Haitian peasant: space to grow annual crops, engage in animal husbandry, extract useful products, and a last ditch store of capitol. From a forest cover of 90 per cent in pre-Columbian times and 60 per cent in 1923, Haiti now has a true forest cover of only 1.5 per cent of its land area[16]. In 1990, only 600 km2 were under dense forest cover, which represented only 4 per cent of what should be forested, or 2.2 percent of the lead area. Today only 338 km2 are under dense forest cover (1.0 per cent [17]). Twenty percent, of the land area is under sylvo-pastoral conditions (grazed brush land and savanna), which is being constantly degraded due to overgrazing and charcoal cutting[18].

Unsustainable and destructive exploitation of fisheries, exotic species, and development are also threats to biodiversity and tropical forests in Haiti. The earthquake of January 2010 had direct and is having continuing indirect effects on the biodiversity of Haiti.

In spite of severe environmental degradation problems, Haiti has, together with the Dominican Republic, the second most diverse flora in the Caribbean, after Cuba. Floristic studies among the vascular plants invariably reveal new species, particularly in biological rich areas. According to a floristic study conducted by the University of Florida in the 1980s and 1990s, an inventory of orchids in the "Macaya National Park" (in the Southern Peninsula) revealed that a third of 134 species were not described at the

time of their collection. The total orchid flora, occupying less than 10 km2, represent roughly 40 per cent of the three hundred fifty orchid species known to exist on Hispaniola island[19]. Scientists who conducted inventories of Haiti's flora did not reach a consensus on existing vascular plant species. The number of those published in the literature ranges from 4,685[20] to 5,242[21]. The dated treatment of the "Flore d'Haiti"[22] suggests that over 5,365 vascular plant species are found in Haiti. It has been estimated that among these plants, 37 per cent are endemic comprising approximately 300 species of Rubiaceae, 300 species of Orchidaceae, 330 species of Asteraceae, 300 Graminae and three species of Conifers (Pinus occidentalis, Juniper juniperus, Juniperus ekmanii). Overall, the Haitian landscape hosts, according to the Holdridge classification based on climate factors, a total of nine zones which supports the diversity of forest formations. The country boasts a rich fauna as well, with more than 2000 species of vertebrates of which 75 per cent are considered endemic. The mainland and satellite islands reflect a high degree of endemism. A biological inventory of one offshore island, Navassa island (7 km2), found more than 800 species, many of which may do not exist anywhere else in the world, and as many as 250 that might be entirely new to science (Center for Marine Conservation, 1999).

Some major factors and driving forces have contributed to biodiversity loss in Haiti. They include: poverty and population growth that negatively impact natural ecosystems and drive the erosion of biological diversity; introduction of alien species; habitat fragmentation due to increasing pressure from the agricultural sector and other human activities (such as urban development and transportation corridors); institutional issues characterized by the following (confusing roles among several institutions involved in biodiversity, lack of a strong commitment of the NGO community to conservation causes, political instability and fragility of the institutions, lack of well-trained human resources in biological sciences, conservation biology and protected area management, poor financial support for managing biodiversity, lack of political support to the Ministry of Environment, among other factors); policies that fail to integrate biodiversity concerns into non-environmental sectors (National Development Agenda), interagency conflicts and contradictory policies among them, regressive taxation, etc.).

Haiti has ratified, in September 1996, the CBD, but it is not part of any protocol. The Haitian government initiated a GEF Biodiversity Protection Enabling Activity to prepare a National Biodiversity and Action Plan (NBSAP)[23] and establish a Clearing House Mechanism, with World Bank assistance. In order to meet obligations under the CBD, the MDE conducted a series of national and international consultations (thematic workshops on biodiversity, seminars, etc), whose major objective was to capture views on main biodiversity issues and gain a clear sense of the measures for the sustainable management and conservation of the country's biodiversity. However, the NBSAP was never completed due to the suspension of World Bank operations in the country as a result of the controversial elections of May 2000. The NBSAP profile prepared pleads for a vision that links the future of the Haitian nation with the way local population plans to use the diversity of biological resources. The future, to become sustainable, needs to integrate a management approach that reconciles Haitian people with their environment and satisfies their present needs without compromising the well-being of the future generations. The Government of Haiti has taken certain other initiatives for implementation of the CBD which are examined in the following paragraphs.[24]

The Ministry of Environment, through the General Inspectorate for the Environment, has deployed a surveillance corps into the three main protected areas (Macaya, La Visite and Forêt des Pins) to halt the degradation of forest

biodiversity in these rich natural areas. The Haitian government has promulgated in the Official Journal of the Haitian State, Le Moniteur, on January 26, 2006 (161st Year, Number 11) a general Decree on Environment (Décret-Cadre) which represents the legal foundation of the national policy of environment and provides regulation guidance for a responsible behaviour of Haitian citizens in terms of sustainable development and will serve as a legal umbrella strategy for all sectors of the environment in Haiti, including biodiversity. The General Decree on Environment contains a specific Chapter dealing with Biological Diversity (art. 135-139). Art. 136 stipulates: Authorities in the country should ensure in-situ and ex-situ biological diversity conservation. The Ministry of Environment is also taking concrete steps to submit to the GEF a proposal for the Establishment of National Protected Areas System and Strengthening of the Forest Sector and Biodiversity in Haiti to create the Office National de Gestion des Aires Protégées et des Forêts.

The Ministry of Environment has signed a Memorandum of Understanding (MoU) with The Nature Conservancy (TNC) to complete the National System of Protected Areas of the Country. The finalization of the NBSAP is included among the areas of action prioritized by the MOU. The Haitian government, through the Ministry of Environment, has also taken concrete steps to submit to the GEF a Project to establish, with the Dominican Republic an International Biosphere Reserve, including a Biological Corridor along the Mountains of Massif de la Selle and Sierra de Bahoruco for conservation and economic purposes. In the same vein, a GEF Project to establish a Marine Park on the North-East of the country is also underway. There is a broad consensus that Haiti would like to capture some of the benefits of the tourism trade in the Dominican Republic ($2 billion in revenues per year and 45,000 jobs created), but also avoid reliance on large-scale resort based tourism. The Ministry of Tourism of Haiti has identified adventure tourism, ecological tourism, cultural tourism, and social tourism (living/working in rural communities) as priority areas for development. These activities are intended to offer an alternative tourism development model, one that incorporates conservation and sustainable development concepts into tourism from the beginning, and recognizes that sustainable development through tourism is possible only if the conservation and restoration of biological diversity is insured, if local stakeholders are guaranteed participation, and if benefits are equitably shared (USAID, 1986).

The Haitian Government initiated a GEF Biodiversity Protection Enabling Activity to prepare a National Biodiversity Strategy and Action Plan (NBSAP) and establish a Clearing House Mechanism with assistance from the World Bank. In order to meet obligations under the CBD, the Ministère de l'Environment (MDE) conducted a series of national and international consultations (thematic workshops on biodiversity, seminars, etc.), whose major objective was to capture views on main biodiversity issues and gain a clear sense of the measures for the sustainable management and conservation of the country's biodiversity. However, the NBSAP was never completed due to the suspension of World Bank operations in the country as a result of the controversial elections of May 2000. The NBSAP profile that was prepared pleads for a vision that links the future of the Haitian nation with the way the local population plans to use the diversity of biological resources. This future, to become sustainable, needs to integrate a management approach that reconciles Haitian people with their environment and satisfies their present needs without compromising the well-being of future generations.

With a view to achieving sustainable biodiversity management, the country has identified five main priority axes covering a number of sectoral activities to deal with current issues:

- Priority one: conservation of biological diversity This theme concerns the in-situ conservation, conservation and sustainable use of natural areas providing water resources and buffering natural risks and hazards, conservation and valorization of genetic resources, ex-situ conservation.
- Priority two: education, identification and monitoring of biodiversity components that include: Incorporating biodiversity issues in Universities curriculum and support their integration into environmental education manuals ; Develop promotional materials, biodiversity awareness through educational campaigns to the radios in order to ensure that the Haitian public is specifically aware of biodiversity conservation issues and that they clearly understand their role in conservation; Complete or refine, under a step by step approach, local or national inventory on biodiversity to set up monitoring plans with clear objectives and indicators; Establish a data collection system on biodiversity; Publish a national report on the status of Haitian biodiversity; Establish links with biodiversity networks.
- Priority three: sustainable use of components of biological biodiversity: Develop and promote a forestry focused on the issues of conservation; Support initiatives dedicated to develop ecotourism in Haiti; Promote management and use of halieutic (fish) resources in a manner compatible with conservation issues; Take appropriate steps to formulate a Sustainable Agriculture Plan for the country.
- Priority four: control of alien species and management of Genetically Modified Organisms: that address the threats posed by invasive alien species on Haitian biodiversity by promoting awareness on these threats, identify Haitian needs and priorities in this field and developing policies and legislation; set up enabling activities to assess the status of biotechnology development in the country and create an adequate institutional framework for the management of biotechnology issues; ratify the Cartagena Protocol on Biosafety and formulate national legislation to regulate the local use of Genetically Modified Organisms; Facilitate the access to relevant foreign technologies that have potential to conserve and use in a sustainable way biological resources.
- Priority five: set up a new legal, regulatory and institutional framework to manage Haitian biodiversity: by Implement the new institutional framework, the Office National de Gestion des Aires Protégées consecrated by the National Environmental Action Plan; actualising the legal framework related to biodiversity issues in particular Laws on biodiversity, biosafety and access on benefits sharing.

The Action Plan identified six programmes to be implemented with objectives, components, stakeholders involved, and sources of funding: conservation and management of biodiversity in coastal and marine ecosystems in the northeast, north, Artibonite departments and the satellite islands; biodiversity protection and sustainable development in the Nippes and Grande Anse regions; sustainable management of the main lakes and ponds and conservation of wetlands in the main Lite Islands of Haiti; sustainable valorization of Haitian biodiversity with a particular accent on the use of medicinal plants in Haiti, ecotourism and agrobiodiversity; extension and strengthening of national systems of protected areas in Haiti; and poverty alleviation through biodiversity conservation.

The percentage of effective protected areas is evaluated at no more than 0.3 per cent of the overall surface of the country. In order to remediate this and achieve Aichi Biodiversity Target 11, the Ministry of Environment has signed a Memorandum of Understanding (MoU) with The Nature Conservancy (TNC) to complete the National System of Protected Areas. The finalization of the NBSAP is included among the areas of action prioritized by the

MoU. The Haitian Government, through the Ministry of Environment, has also taken concrete steps to submit to the GEF a project to establish, with the Dominican Republic, an International Biosphere Reserve, including a Biological Corridor along the Mountains of Massif de la Selle and Sierra de Bahoruco for conservation and economic purposes. In the same vein, a GEF Project to establish a Marine Park in the northeast is also underway.

There is a broad consensus that Haiti would like to capture some of the benefits of the tourism trade in the Dominican Republic ($2 billion in revenues per year and 45,000 jobs created), however avoiding reliance on large-scale resort-based tourism. The Ministry of Tourism of Haiti has identified adventure tourism, ecological tourism, cultural tourism, and social tourism (living/working in rural communities) as priority areas for development. These activities are intended to offer an alternative tourism development model, one that incorporates conservation and sustainable development concepts into tourism from the beginning, and recognizes that sustainable development through tourism is possible only if the conservation and restoration of biological diversity are ensured, local stakeholders are guaranteed participation and benefits are equitably shared.

There have also been various types of institutional support given to some associations of traditional healers which uphold implementation of CBD Article 8(j).

Legislation that is in place to support biodiversity-related issues comprises the General Law on the Environment (La Loi Cadre sur l'Environnement) and the General Law on Water which includes important articles on a National Fund for Water Management and measures to protect groundwater. In addition, efforts to develop legislation related to watersheds, Environmental Impact Assessments (EIA), aquaculture and mariculture are being envisioned by competent authorities. The legal system will also integrate critical multilateral agreements for watersheds and coastal zones, such as Cartagena Convention (Convention for the Protection and Development of the Marine Environment in the Wider Caribbean Region) with its three Protocols, namely: the Protocol Concerning Cooperation in Combating Oil Spills, the Protocol Concerning Specially Protected Areas and Wildlife (SPAW) and The Protocol Concerning Land-based Sources of Marine Pollution.

To develop capacity within the Government, staff training initiatives for officials, decision-makers, professionals, managerial staff and community leads have been developed with accompanying information campaigns which seek to improve environmental awareness at the Government and stakeholder levels.

Future Strategies

Increasing awareness and knowledge on biodiversity and sustainable

Developing countries have to integrate sustainability concept into education at all levels through curricula and information should be disseminated in mass media. They can cohere and improve cooperation among policy developers, decision makers and general public in implementing programme on education for sustainable development. Also they have to provide the general public with systemized and comprehensive knowledge on sustainability and establish the biodiversity database through improving the content and ensure its use in decision making.

Developing and implementing policies on conservation and sustainable use of biological resources

Governments of developing countries have to create a legal environment for the protection, sustainable use, and fair and equitable sharing of benefits arising from widely used and economically significant genetic resources, and

to implement sustainable use, and protection from genetic erosion and depletion. Developing countries have to fulfill commitments as a signatory party to this Convention and do Programme of Action for the Conservation of Biodiversity, for an equitable sharing of benefits of the use of genetic resources.

Improving policies and legal environment for conservation and use of biological diversity and ecological services

National programmes on conservation of rare and endangered animal and plant species should be fully implemented. Countrywide environment policy based on national security concerns and development goals, but incorporating green development concepts be developed and implemented. Governments should focus attention on the conservation and sustainable use of endemic, endangered, and threatened flora and fauna. Additionally, laws on Fauna, laws on natural plants, laws on protection of plants, and laws on usage of natural resources may be enacted by the State to address the issues. The main factors contributing to the loss of flora and fauna, reduction and fragmentation of habitats, poaching, and improper usage of vulnerable and endangered species should be addressed in these laws. The consequences of changing livestock herding techniques and the over-exploitation of land and plant resources, coupled with effects of climate change lead to decline of animal and plant habitat areas and loss of resources, contribute to endangerment of species.

Developing countries have to work to prevent poaching and trafficking of animal organs. It will increase the population of various animal species. Although considerable efforts have been made in the formulation of policies and the creation of a legal framework for the protection, sustainable use, and breeding of endemic, endangered and threatened species of animals, issues such as shortage of funding, insufficient coordination between different sectors, and lack of participation of local communities are proving to delay implementation. Therefore, in order to fulfill the requirements of goals of global action plan based on the Aichi Targets, a stable implementation and funding mechanism is required. Developing countries should adopt Bylaws on identified protected areas, create a network of protected areas or regimes of protection and classification of protected areas for each categories. They may maintain the continuity of ecosystem conservation efforts, and regional cooperation plans should be formulated for contiguous regions. In areas where agriculture is practiced in climatically risky environment, appropriate use of fertilizers and pesticides should be prescribed. Crop yields should be encouraged.

Improving management of systems:

- Introduce management techniques for the sustainable use and conservation of natural resources, especially game animal resources, by mean of utilizing the creation of partnerships between government, local citizens, and private sector. In a sparsely populated country, the cooperation of local community is vital to conservation efforts. Environmental protection laws will codify the rights and duties of citizens, cooperatives, enterprises, and organizations to participate in environmental protection. In addition, laws including the civil law, law on land, law on forest, law on fauna, and agreements will create to protect natural resources.
- Modernize industrial farming techniques and activities to meet requirements for food safety and conservation of biodiversity in the environment's agricultural ecosystem.
- Take biodiversity-related indicators into account in the System of National Accounts to monitor the implementation plan and programmes of the relevant sectors.
- Create a legal environment where subsidies or financial assistance are prohibited for use in agriculture, mineral resource extraction,

infrastructure, energy, light industry, food manufacturing, service industry projects and actions deemed to be harmful to or potentially harmful to biological diversity in accordance with environmental strategy evaluations.

- Define and establish economic incentives to conserve and sustainably use biodiversity.
- Identify potential sources of funding that are needed to implement the national biodiversity programme and create a framework for efficient use of these funds.

Role of International Organisations and Civil Society Organisations

Nationwide programmes may be implemented by the joint efforts of governmental, international, and public organizations, together with citizens and the private sector.

Multilateral, bilateral and international organizations including United Nations' specialized programmes and agencies, World Bank, regional Development Banks and other various international organizations advocating environmental conservation can act as important partners in providing guidance and policy recommendations. Introduction of new techniques and technologies and funding, while the proper management and Interco ordination of projects and programmes being implemented by these organizations can have a positive effect on the implementation of Biodiversity Programme.

The real effort of protecting and maintaining sustainable use of the environment's biodiversity in sparsely populated is important for conservation country's natural resources. Populations who got used to a globalized, free market economy need to protect and sustainably use the environment's biodiversity when endeavoring upon their enterprises, as well as impress upon future generations the importance of doing so. In addition, the participation of civil organizations and individuals who understand their social responsibilities shall be the main force that advocate implementation of laws and promote issues to decision makers. Promoting cooperation and dissemination of accurate information to these groups is an important part in the action plan.

The private sector will be an important local partner in the protection and sustainable use of biodiversity, by supporting workable improvements of green economies. Protection and sustainable use of biodiversity should be reflected in all activities.

Conclusion

The decline in the Earth's biological diversity gives rise to much more intense concerns than others, sometimes more widely recognized, environmental impasses. Because biodiversity loss is irreversible - lost species are lost forever - the potential impact on the human condition, on the structure of Earth's living systems and on the evolutionary process is enormous. Our species has evolved biologically and culturally in a very diverse ecosphere. Our past interactions with other forms of life have shaped our humanity in a complex way, and our future cannot be separated from that of the other forms of life with which we share the world. National programmes and strategies for protection on biological diversity and for ensuring fair and equitable sharing of benefits arising out of the use of the genetic resources backed with appropriate legislations and adequate funding are the need of the hour.

Endnotes

1. The Convention was adopted by the Intergovernmental Negotiating Committee for a Convention on Biological Diversity, during its Fifth session, held at Nairobi from 11 to 22 May 1992.
2. The Cartagena Protocol on Biosafety. The required number of 50 instruments of ratification/accession/approval/acceptance by countries was reached in May 2003 and in accordance with the provisions of its Article 37, the Protocol entered into force on 11 September 2003. As of February 2018, the Protocol had 171 parties, which includes 168 United Nations member states, the State of Palestine, Niue, and the European Union.
3. 21 June 2017, New York. The current world population of 7.6 billion is expected to reach 8.6 billion in 2030, 9.8

billion in 2050 and 11.2 billion in 2100, according to a new United Nations report being launched today. With roughly 83 million people being added to the world's population every year, the upward trend in population size is expected to continue, even assuming that fertility levels will continue to decline. https://www.un.org/development/desa/en/news/population/world-population-prospects-2017.html

4. updated version of 2013
5. National Statistical Yearbook, 2013
6. MEGDT, 2015
7. © B.Lkhagvasuren, NATIONAL BIODIVERSITY PROGRAM 10
8. MEGDT, 2015
9. Mwandambo 2010, Othieno 2010
10. Examples of loss of genetic materials in Kenya

a. The Mawingo tree found in Sagalla forest in Taita is among the strongest hardwood trees and is often used to make railway line slippers as a substitute for steel. It is reported to have been used for making furniture for the British royal family.

b. Sandalwood from Taita forest reportedly has immense medicinal value that fetches a premium price. It is frequently exploited and consignments of it are shipped through Tanzania with the connivance of the local administration authorities.

c. Extremophile microbes, which are endemic to Lake Bogoria were collected and taken to the US by Procter and Gamble. These microbes produce enzymes which are highly prized by the pharmaceutical industry and are estimated to generate about US$ 38 billion annually. The lake microbe is also used to convert jean material into popular stonewash shades and this property alone reportedly earns an American textile fi rm about US$ 3 billion annually. However, neither the Kenyan government nor the local community at Lake Bogoria has shared any of the ensuing monetary benefits.

d. Source: Mwandambo 2010, Othieno 2010

11. The Lumo community wildlife sanctuary lies at the heart of the Tsavo ecosystem, surrounded by Tsavo East and Tsavo West National Parks and the Taita Game Sanctuary. It is composed of three group ranches namely; Lualenyi, Mramba and Oza all of which decided to pool their natural resources in the interest of sustaining their unique wilderness area that, in addition to its rich biodiversity, off ers stunning views of Mount Kilimanjaro and some surrounding hills. The Sanctuary is an ancient elephant migratory route and also serves as an important wildlife corridor for the Tsavo East and Tsavo West National Parks wildlife.
12. CEPF grantees work in developing and transitional countries in the world's biodiversity hotspots—some of Earth's most biologically diverse yet threatened terrestrial areas. Since 2001, CEPF has funded conservation in 24 of the 36 hotspots.
13. Caribbean Islands Hotspot Ecosystem Profile, Prepared by: BirdLife International in collaboration with: Durrell Wildlife Conservation Trust / Bath University / The New York Botanical Garden. CEPF - 15 January 2010
14. https://www.cbd.int/ Haiti-Profiles
15. IUCN 1994
16. Ministry of Planning, 2002
17. UTSIG 2004
18. FAO, 1987
19. Dod, 1993; Hespenheide & Dod, 1993
20. WRI, 1998
21. IUCN, 1997
22. Barker and Dardeau, 1931
23. The NBSAP profile has retained five specific objectives:

a. to promote education awareness among the public and decision-makers on biodiversity issues, in order to increase their understanding on the interest to conserve Haitian biodiversity and recognize its contribution in the process of sustainable development;

b. to undertake immediate measures to stop biodiversity erosion in natural areas and ecosystems of Haiti;

c. to conserve biodiversity resources of the country;

d. to develop and implement ecological management approaches to preserve and use biodiversity on a sustainable manner; and

e. to implement institutional, legal and fiscal measures in support to biodiversity conservation and sustainable use of components of biological diversity.

24. The content of this biodiversity profile is still draft. The text below has been prepared by SCBD and remains subject to final approval by the Party concerned.

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II

Environmental Good and Services Challenges and Opportunities for Developing Countries

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II

Environmental Good and Services Challenges and Opportunities for Developing Countries

Introduction

Environmentally Sensitive Goods (ESG) are significantly produced, consumed and traded in the world. An overview of ESG markets and trade trends would present the intensity of global activities in this product segment. For fostering activities in the sector, trade plays a vital role in the diffusion of environmental goods and services. Advances in technology and transportation have reduced the costs of trade, making previously disparate goods and services globally available. Given growing global awareness of the importance of environmental sustainability, the demand for environmental goods and services has been increasing rapidly.

Despite the growth of environmental goods and services markets and increasing acceptance of the need to switch to a green economy, comprehension of potential opportunities and challenges of trade in environmental goods and services remains inadequate. This is in part due to the size and complexity of the sector, encompassing goods and services related to clean-technology, pollution control, water, wastewater and energy & energy-efficiency, amongst others, (Wind, 2008).

This endeavor is an attempt to work on background research and literature review to present an overview of the market, along with opportunities and challenges for developing countries. The paper is intended primarily for the benefit of developing country policymakers, trade support institutions, business associations and firms in the environmental goods and services sector.

Despite having immense importance for cleaner technologies, products and services, there is currently no agreed methodology to deal with the issues relating to identification and measurement of ESGs and meeting aspirations of both developed and developing countries. It is not possible to exclusively or exhaustively identify environmental goods and services. Often conflict of interest comes on the way in identify certain products as ESGs. Developing countries hold the view that the products which are rejected in getting market access in developed countries under the pretext of environmental regulations, should be identified as ESGs. On the other hand, developed countries prefer to include those commodities which are ESGs, having proven clean technology with them for cleaning them. Instead of making an attempt to clean the product at the time of production and consumption for human, animal and plant health, focus is on market access and selling clan technology.

At the present state of negotiation in the WTO, product classification of ESGs should aim at complete, flexible and operational in

order to measure the industrial sector based on environmental sensitivity. That would allow for future structural changes, such as shifts from end-of-pipe to cleaner technologies or the development of new environmental services.

It is not possible to exclusively or exhaustively identify environmental goods and services. Since early 1990s, many developing countries adopted export–led growth (ELG) strategy as a development strategy, leveraging on export as the driver of growth (IDS 2006; Mohanty 2012). For most of these economics, traditional products dominated their export baskets. Various empirical studies reveal that environmental Sensitive Goods (ESGs) have dominated the baskets of traditional products in Developing Countries (Chaturvedi and Nagpal 2007; Jha et al, 1997). However, the issue of ESGs has been debated intensely in several forms in order to define and identify these products for global trade negotiations. The World Trade Organisation (WTO) initiative since 2008 has been impressive in making a step forward and resolving the issue of tariff protection in ESGs in a multilateral framework.

The trade in ESGs has been analyzed by Low & Yeats (1992) Xu (1999) and Henson & Loader (2001) among others. Low & Yeats (1992) have shown that the developed countries have specialized in the ESGs emanating from manufacturing sector while share of the developing countries have largely remained in the agricultural sector. Overall these studies have given the global trend on the trade of ESGs.

The main objectives of the study are the following:- 1) To provide an overview of the concept, definition and coverage of environmental goods and services, 2) To understand and review the approaches for identification of environmental goods and 3) To examine the global trends and partners in trade in environmental goods.

The paper is organized into five sections as follows: Second section discusses about the concept and broad issues relating to ESGs. specific approaches are discussed in the literature to identify ESGs are presented in third section. Global trends in trade of ESGs are examined empirically based on RIS list based approach in section four. The last section summarises broad conclusions of the study.

Issues in ESGs and Concept

The entire discussion on ESG hinges upon definition of the concept. With different perspectives, ESG is defined in number of ways. The OECD in Eurostat defines environmental goods and services industry to activities which produce goods and services to measure, prevent, limit, minimize or correct environmental damage to water, air and soil, as well as problems related to waste, noise and ecosystems. The OECD list has broadly classified into three goods and services categories - Pollution Management (air pollution control, wastewater management, solid waste management etc.); Cleaner Technologies and Products; and Resources Management Group (indoor air pollution control, water supply, recycled material, etc.).

On the other hand, APEC defines environmental goods and services as an industry sector devoted to solving, limiting or preventing environmental problems. The industry should be involved in manufacturing and/or services related to water or air pollution, waste management, recycling, renewable energy, monitoring, analysis and assessment. The APEC list was classified into various environmental activities such as Air Pollution Control; Heat/Energy Management; Monitoring/ Analysis; Noise/Vibration Abatement; Other Recycling Systems; Potable Water treatment; Remediation/Clean up; Solid/Hazardous Waste; and Wastewater Management.

Mohanty and Manoharan (2002) present another list of products where ESGs are defined as those globally traded products which are subjected to one or more environmentally sensitive NTMs in industrialised countries

based on various considerations. These are the products which are denied market access in the markets of developed countries in the pretext of environmental grounds. These products cover all broad sectors of economic activities including agriculture, mining and manufacturing sectors. The list also recognizes environmental services.

Modalities for Environmental Goods Negotiations

OECD and APEC lists used as starting point for discussions on Environmental goods in the WTO. The APEC list based on goods proposed by Member countries heavily focused on end-of pipe pollution treatment and monitoring equipments. The OECD list is broader and includes goods and services under three headings:

- Pollution management
- Cleaner technologies and products
- Resource management.

The APEC list has broader support including Members such as Canada, Singapore, US, Australia and New Zealand.

The OECD Classification Group C category "Resource Management" is broad and includes sustainable agriculture, forestry and fisheries. However, the reference is to goods (equipment, technology or specific materials) that are inputs required for sustainable agriculture, forestry and fisheries and not outputs emerging from these activities (International Centre for Trade and Sustainable Development (ICTSD). OECD/ APEC lists mostly contain products of which developing countries are net importers.

For some of the few products in the OECD/ APEC list, developing countries as a group were net exporters, e.g., methanol, ethanol, mats and screams, fluorescent lamps, plastics. Most top exporters are middle income or emerging economies including Mexico, Singapore, Korea, Malaysia and Brazil, etc. among others.

Identification of ESG Approaches

In the past, various attempts have been made to identify ESG based on certain criteria. Some approaches are based on cost involved in cleaning a product, level of pollutants released by industries and level of cleanness embedded in products based on scientific evidences or existing trade practices in advance countries. Several studies were undertaken during the last three decades and some of them are discussed below:

Abatement Cost Approach

Under this approach, industrial activities are classified according to pollution intensity based on abatement and control costs, some of highly polluting industries are those producing cement, chemicals, pulp and paper ferrous and non- ferrous, metal as well as certain wood and Industries and petroleum refineries, among others. Tobey (1990) defined pollution – intensive industry as one where pollution abatement cost in USA was 1.85 per cent or more of total cost.

Low & Yeats (1992) also identified some industries on the basis of pollution abatement cost in the USA. According to their definition, Environmentally Sensitive Industries are those for which pollution abatement and control expenditure costs account for approximately 1 per cent or more of the total cost.

The World Bank, in collaboration with the USA Environmental Protection Agency and the US Census Bureau, identified some sector as Pollution Intensive in the USA, using the actual emission intensity method. Mani & Wheelar (1998) and Lucas et al: (1992) identified dirty industries as metal, cement, pulp, paper and chemical, based on aggregate toxic releases per unit of output.

On that approach it will not be available for every country to measure the real cost of the pollution that an industry contributes. So, specific technology should be identified to ensure most of the pollution intensive industries, which can use such technology.

Emission Intensity Approach

In this approach, those sector are identified which are having high emission intensity. Mani & Wheelar (1998) argued that the regulatory gap between developed and developing countries could, in principle, produce pollution havens analogous to low wage havens. In their study, pollution intensive industries are identified as those, with low elasticities of substitution between the use of the environment and other productive factors, which could join labor intensive industries, migrated from the OECD countries to developing economics. In case these migrated industries remain unregulated environmental pricing, then it could be a significant determinant of comparative advantage. Some South Asian countries have tried to identify polluting industries rather than hazardous products covered under normal trade practices.

List Based Approach

On several counts, there is a need for choosing alternative approach to identify ESGs other than based on the Dirty Industry approach. In order words, an industry may produce different products of varying pollution intensity. Under the list-based classification, ESGs can easily be identified.

In a study, Mohanty and Manoharan (2002) examined this aspect and find that several tradable products do not fall under the category of ESGs, despite the fact that their originating industry is recognized as a polluting industry. Secondly, the current practices in the global trade indicate that several products are subject to various forms of NTMs on the basis of similar ground as those used in the pollution Havens Hypotheses. In several occasions, NTMs imposed on certain products are based on valid (Scientific) considerations. Therefore, identification of products based on Dirty Industry Approach may lead to an overestimation of ESGs as many of them would not qualify as environmentally sensitive in some countries. Thirdly, the definition of ESGs need to be linked with specific International classification which could support both regional and multilateral trade negotiations.

As discussed earlier, the list of ESG products developed by Mohanty and Manoharan (2002) is more comprehensive from the point of view of developing countries than other two approaches (i.e., OECD and APEC). The empirical analysis in the present study is based on the afore study.

Coverage of products: It is often desirable to have a product classification, based on the harmonized system (HS) to make the classification relevant for multilateral and regional trade negotiation.

As discussed earlier, APEC and OECD lists are similar in terms of number of products and are significantly different from that of the RIS list. In the global trade, the actual product lines, subjected to entry barriers in developed countries, are not adequately reflected in the APEC and OECD lists. These gaps are appropriately reflected in the RIS list. In terms of coverage of products lines, APEC and OECD lists are much smaller than the RIS list. While the number of items in RIS list is 874, the corresponding figures for APEC and OECD are 108 and 153, respectively at six digit HS.

Manufacturing Sector: The coverage of the manufacturing sector in the RIS lists is less than 50 per cent of the total ESGs product lines identified, and similar figures for the APEC and OECD are around 99 per cent in the total number of tradable products. In the lists of APEC and OECD, there is hardly any provision for covering agricultural products. In fact, developing countries suffer from rejection of sizable amount of their agricultural consignments on the ground of environmental reasons by industrialized countries. Therefore, industrialise countries reject large number of consignments, carrying both manufacturing and agricultural products from developing countries under the provisions of environmental NTMs.

Global Trend in the Environmental Sensitive Goods

The Global Trade in ESGs performed differently during various phases of the global business cycle during the 2000s. The impact of global buoyancy or pessimism affect global, regional and sectorial trade differently which may be due to varying levels of technology content in ESGs. Developed countries are less affected during the recession due to significant trade taking place through their RTAs. On the contrary, the developing countries are marginal players in this sectorial trade. South South RTAs have very little capacity to absorbed large flows of ESGs trade among themselves.

Trends in the Global ESGs trade debate on Trade and Environment since the 1970s, have focused on tight trade policies concerning the production and trade in ESGs, and having a lasting impact on global trade in this category of products. Since the Marrakech Agreement in 1994, global trade in this product category was declining persistently.

Table 1: Overall Trends in global Trade in ESGs during 1996 – 2010

Year	Amount (Tr.US$)		Share of ESGs (%)	
Import	Non-ESGs	ESGs	Non- ESGs	Total
1996	3.6	0.8	22.2	18.2
2000	6.5	1.2	18.5	15.6
2005	11.1	2	18	15.3
2008	17.9	2.9	16.2	13.9
2009	13.9	2.3	17.6	14.9
2010	16.3	2.6	16	13.8
CAGR				
1996-2000	15.6	8.4		
2000-2005	11.4	11.2		
2005-2008	17.1	13.7		
2008-2010	14.4	10.5		
1996-2008	14.2	10.9		
2000-2010	9.7	8.6		
Export				
1996	3.6	0.9	25	20
2000	6.2	1.2	19.4	16.2
2005	10.7	2	18.7	15.7
2008	17.3	2.9	16.8	14.4
2009	11.9	2.4	18.6	15,7
2010	11.8	2.3	19.5	16.3
CAGR				
1996-2000	14.6	7.8		
2000-2005	11.7	11.5		
2005-2008	17.3	14		
2008-2010	13.4	10		
1996-2008	14	10.8		
2000-2010	6.7	7.1		

Source: Mohanty (2014)

Table 2: Sectoral Trend in Global Trade of ESGS During 1996 -2010

DES	Actual US$ Bn		CAGR (%)					ESGS Share in Total (%)		Non-ESGS share in Total (%)	
	1996	2010	1996 – 2000	2000-2005	2005-2008	2008-2010	2000-2010	1996	2010	1996	2010
IMPORT											
Animal Products	93.4	238	5.7	8.3	12	-6.2	7.4	11.1	9	351	360
Base Metal	2.4	8.9	11.4	14.6	11.2	-11	9.1	0.3	0.3	0.8	0.8
Jewellery	0.4	2.9	16.4	21.8	9.8	-3.6	14.6	0	0.1	0.4	0.7
Vegetable Products	122	365	4.9	9.1	20.7	-9.1	9.5	14.5	13.8	727	722
Plastics	2.1	7	8.2	11.1	10.8	-7.1	9.3	0.2	0.3	1.1	1
Exports											
Animal Products	88.6	184	5	8.7	12.7	-6.1	5.5	10.3	8	393	378
Base Metal	2.9	8.3	9.1	12.9	12	-11	7.1	0.3	0.4	1	0.9
Jewellery	0.4	1.2	13.9	15.6	10	-4.5	6.9	0	0.1	0.4	0.4
Vegetable Products	114	250	2.5	9.2	21.3	-6.6	7.2	13.2	10.8	744	632
Plastics	1.6	4.8	6.2	12.2	12.4	12.3	9.1	0.2	0.2	0.8	0.9

Source: Mohanty (2014).

We have examined the trade behavior of ESGs and Non-ESGs during one recession to another recession in the world economy. The volume of trade in ESGs was rising along with the Non-ESGs in the global economy while the global import of ESGs rose from US$0.8 trillion in 1996 to US$2.6 trillion in 2010 while the ESGs import share in total global trade improved marginally from 8.4 per cent in 1996 to 8.6 per cent in 2010 and a similar trend persisted for the global exports as presented in Table 1. The results show that the growth rate of the global trade in non-ESG products expanded more rapidly than the overall growth rate of the world trade.

Sectorial Performance: Trends in the sectorial profiled of a global export and import of ESGs present dynamics of global trade over a period of time. The composition of sector in terms of sectorial weights is almost similar for export and import during 1996 -2010 as shown in Table 2. Trade in global ESG witnessed voluminous trade in specific sectors like animal and vegetable products in the entire global trade basket.

As discussed earlier, three important ESG lists exit in the literature. RIS has comprehensively listed 141 animal products and many of these products are not figured in the OECD and APEC lists, particularly those which are of interest to developing countries, as presented in Table 3. There are numerous such important sectors such as animal products, fruits and vegetables, animal and vegetable fats and oils, skin and leather, footwear, gems and jewellery, other manufactures and handicrafts, which are not covered by either OECD or APEC lists.

Developed countries consume more ESG whereas the transitional countries consume less of it as presented in Table 4. Though developed countries contribute more in global trading of ESG, several products originating from developing countries are not securing appropriate market access in developed countries, leading to loss of welfare to both developed and developing countries. In the interest of global trade in ESG, there should be more intense discussion between them to liberalise trade regimes for the ESGs.

This brings home the point that developed countries are major importers and exporters of ESG. Developed countries trade in ESGs but claim to engage only in so-called clean

products. It may be argued logically that "clean technology" with affordable price may be shared with developing countries in order to facilitate global trade in clean products. Transfer of "clean technology" with affordable price to developing countries may contribute to cleaning of global trade in ESGs (Mohanty, 2019).

Conclusion

Despite having several approaches to identify and classify the ESG, it is still not serving the purpose of identifying ESG products, and therefore, further work still needs to be done. Global trading system should guarantee sustainability in ESG trade without endangering living creatures in our planet including microorganisms that are essential for the eco system.

Developing countries could tackle many crucial environmental problems like air-pollution, water-pollution, etc. through increased access to environmental goods resulting from lower tariffs and NTBs-consequently leads to beneficial health indicators, a step forward in facilitating Sustainable Development Goals. The same argument applies to developed countries who are the major actors responsible for the denigration of climate change, and therefore,

Table 3: Number of ESG Products in Three Different Lists

HS Section	Description	APEC	OECD	RIS
1	Animal Products			141
2	Fruits & vegetable			231
3	Fats & Oils			36
4	Prepared Food	1	2	40
5	Minerals & metals		4	2
6	Chemicals		27	95
7	Plastics	2	4	1
8	Skin & Leather			48
9	Wood Products	1		45
11	Textiles & Clothing	2	1	81
12	Footwear			16
13	Cement, plaster, etc	10	3	5
14	Gems & Jewel			1
15	Base Metals		2	8
16	Machinery	48	83	64
17	Auto, vehicles, etc	2	1	27
18	Photography	42	26	15
19	Arms & Ammunitions			1
20	Other Manufactures			16
21	Works of Art			1
Total		108	153	874

Source: Mohanty (2014).

Table 4: North Remains Important: Major Consumers of ESG in 2017

Region	Imports ($Bn)	Share in Total
Developed Countries	2394.4	61.0
Developing Countries	471.7	12.0
Emerging Countries	1010.7	25.7
Transitional Countries	49.81	1.3

Source: Mohanty (2019).

we all must pay a close attention to the way we produce consume and manage waste as well.

In addition, a lot has to be done in waste management across the globe as it is one of the major contributors to climate change and depletion of biological resources, wasting food and water and intensifying hunger in different parts on our planet, despite having excessive production of food products that are wasted on a yearly basis. Conservation of waste food may be used for feeding poor people in order to achieve the second Sustainable Development Goal.

Despite concerns about proliferation of the global trade in ESGs, there is consistent decline in the relative share of it in the global trade. At the beginning of the first episode of global recession, the share of ESG in to total trade was ranging between 17 per cent and 19 per cent. In the trade game of ESG, developed countries are the main players, sharing more than 60 per cent of the total ESG trade globally. Trade in the sector is mostly concentrated in the agricultural sector which is followed by manufacturing sector. In the agricultural sectors, major concentration of trade is seen in animal products and fruits & vegetables. Similarly, minor trade in the ESG sector is observed in the manufacturing sector, particularly in plastics and base metals. These are the sectors which are of interest to developing countries. OECD and APEC lists have not considered these products/ sectors where global trade in ESG is taking place in a more intensive manner. But the RIS list covers most of those sectors discussed above and also other sectors which are highlighted by other two lists. There is a need for undertaking more studied as envisaged by the Committee on Trade and Environment (CTE) in WTO.

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III

Green Financing in Developing Countries: Experiences from Mongolia, Kenya and Nigeria

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III

Green Financing in Developing Countries: Experiences from Mongolia, Kenya and Nigeria

Introduction

Stabilizing global climate is one of the most urgent challenges for the world in the coming decades. Our warming world affects the people and the ecosystems equally, particularly the poor who already suffer disproportionately from the climate-change impacts. As per the 2030 Agenda for Sustainable Development and the Paris Climate Accord, investment will have to be directed away from carbon-and resource-intensive activities to more sustainable and environment-friendly activities. Responsibility for financial and macroeconomic stability implicitly or explicitly rests with the local and international financial intuitions, which therefore ought to address climate-related and other environmental risks on a systemic level (Dikau and Volz, 2018).

Green finance is referred to as facilitating and financing projects involving renewable or clean energy, resource efficiency, clean production, reduced emissions, improved waste management and other activities that contribute to green economic growth and development. A green economy can be thought of as an alternative vision for development; one that can improve the lives of people in a consistent way with sustainable development. A green economy promotes a triple low line by maintaining and advancing economic, environmental and social well-being (Dikau and Volz, 2018; Volz, 2018).

In this paper, an attempt has been made to understand the issues, policies and initiatives relating to green financing in Nigeria, Kenya and Mongolia. Nigeria and Kenya share similar characteristics as far as population, GDP per capita and large geographical territories are concerned, while Mongolia has a small population and low per capita income even though it is relatively large in terms of geographical area. Based on literature, the paper examines the level of green financing in developing countries and the institutions or funds working in developeing countries to meet the climate finance requirements drawing specific examples from the three sample countries.

Global Approaches to Green Financing

Most countries of the world are dependent on external funding for investment. As exhibited in Figure 1, domestic savings as percentage of GDP is low implying dependence on FDI inflows and official development assistance. Over the period 2005-2010, FDI as percentage of GDP has gone down steadily which does not signal healthy trends for the developing countries.

Global green and sustainable loans issued between January and June 2018 totaled nearly US$17 billion. This was double of 2017 full year issuance and four times the volume over the

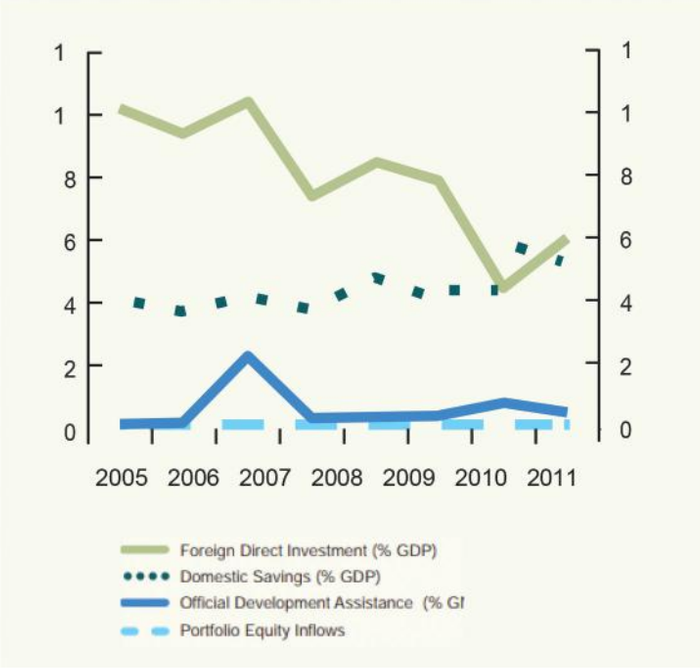
equivalent 2017 six-month period. The 2018 Global Impact Investor Network (GIIN) survey covers impact investments where the majority of transactions are in private equity or private debt. The invested capital has grown by 32 per cent and the number of transactions has grown 27 per cent over a five-year period (UNEP, 2018). Total green bond issuance broke through the US$500 billion level in November 2018, 11 years after the first bond was issued. Secondary markets (where providers of capital transact with other providers of capital, often for investment in financial assets): European sustainable funds witnessed net inflows of €32.1 billion in the first half of 2018, up from €28.8 billion in the previous six months. Sustainable funds in the United States averaged US$924 million in monthly inflows in the first five months of 2018, a pace that is nearly twice the 2017 average of US$532 million.

During the 15th Conference of the Parties (COP15) held in December 2009 in Copenhagen, developed countries pledged to provide new and additional resources to combat climate change, approaching US$30 billion for the period 2010–2012 and US$ 100 billion by 2020 with balanced allocation between mitigation and adaptation strategies. The committed resources, however, are much lower than the estimated amount required for financing mitigation and adaptation actions. Estimates vary from around US$140-175 billion and US$70-100 billion per year for the period of 2010-2050. This collective commitment is known as 'fast-start finance' and prefigures the institution of the Green Climate Fund (GCF) established by the 194 countries that are members of the United Nations Framework Convention on Climate Change (UNFCCC) in 2010 to support a paradigm shift in the global response to climate change (Global Climate Fund, 2019).

Green Climate Fund

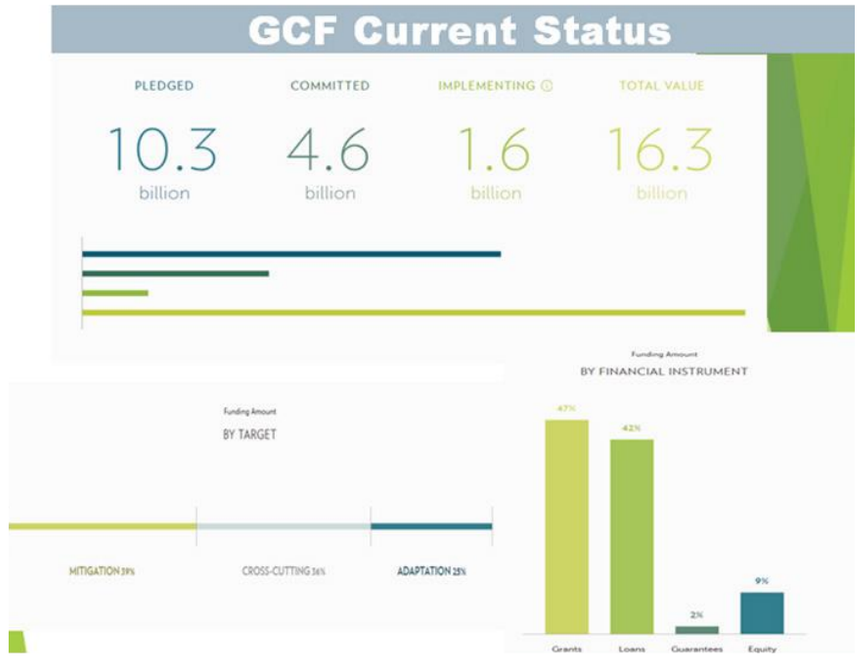
Through the GCF mechanism, donor governments distribute funds to the recipient developing countries to finance low-emission and climate-resilient projects and programmes

Figure 1: Sources of Investment Capital



Source: World Bank (2013), World Development Indicators.

Figure 2: Current Status of GCF



Source: Ray (2019).

in these countries. As the number of these projects increase, the challenge of coordinating funds and the monitoring of recipient countries' emissions has become an important matter to assess their effectiveness. In 2018, the World Bank Group provided a record breaking US$20.5 billion in finance for climate action. Currently, the total value of GCF is around US$16.3 billion. Of which, pledged amount is US$ 10.3 billion committed amount is US$4.6 billion and implementing component is US$ 1.6 billion (Figure 2) (Ray, 2019).

Green Climate Fund launched its initial resource mobilization in 2014, and rapidly gathered pledges worth of US$10.3 billion. These funds come mainly from developed countries, but also from some developing countries and regions. The GCF Board has allocated up to US$500 million for mobilizing funding at Scale Pilot Programme to identify innovative, high-impact projects and programmes that mobilize private sector investment in climate change activity.

The green label makes it simple for institutional investors, who increasingly have made climate change commitments, to identify green investments. The label is a discovery tool that reduces friction in the investment process. In June 2015, the outstanding issuance in the green bond market stood at US$66 billion. Labelled green bonds have been issued in the emerging markets, including India and Brazil, as well as in developed economies, and there is a strong appetite for green bonds amongst the investors. The labelled green bond market is small relative to the unlabelled climate-aligned bond universe, which stands at US$532 billion, but labelled green bonds are the fastest growing segment of the market.

UNEP

The UN Environment Programme (UNEP) has initiated the 'Financing for Sustainable Development' which is increasingly gaining traction in terms of the magnitude of financing and country participation. In 2018, 45 banks and financial institutions have endorsed the principles for responsible banking. In addition, the green bond issuance has increased from US$11 billion in 2013 to US$155 billion in 2017 with doubling of policy measures on promoting sustainable finance. UNEP has also launched the first Tropical Landscapes Bond worth of US$95 million in collaboration with the BNP Paribas, World Agroforestry Centre and other partners (UNEP, 2018).

Development Finance Institutions

Multilateral development banks (MDBs) such as the World Bank and regional development banks including the Asian Development Bank (ADB), the African Development Bank (AfDB), Inter-American Development Bank (IADB), New Development Bank (NDB), Asian Infrastructure Investment Bank (AIIB) and other development finance institutions (DFIs) have long been the pillars of financing for global development. These multilateral institutions play a crucial role in green financing by introducing green bonds, promoting renewable energy projects, clean energy and environment-sensitive aspects of their financing portfolio. The efforts by the African Development Bank (AfDB) and the Asian Infrastructure Investment Bank (AIIB) discussed below signify the green finance drive by the DFIs.

African Development Bank

The global climate finance through the African Development Bank (AfDB) has increased by 18 per cent from US$ 331 billion in 2013 to an estimated US$ 391 billion in 2016. Of this, Africa received only 3 per cent of adaptation finance in 2016. Between 2011 and 2015, AfDB has approved approximately 260 projects with climate relevant components estimated at US$ 12 billion. The share of this finance invested in mitigation greatly exceeded that of adaptation—an imbalance that also occurs globally. The Bank also achieved a milestone through issuance of four green bonds. The capital raised was invested in 14 projects which will contribute to Green House Gas (GHG) emissions reduction of approximately 6.9 million tons of CO2 at completion.

Asian Infrastructure Investment Bank

The Asian Infrastructure Investment Bank (AIIB) aims to promote sustainable economic and social development by investing in infrastructure and other productive sectors in the member countries in Asia and other regions. Sustaining high-quality infrastructure for improved economic, social and environmental outcomes is a global effort in which AIIB contributes. Since its inception in January 2016, AIIB has provided financing in loans and other lending modalities, with commitments totaling close to US$7.5 billion (by the end of 2018), including a number of projects outside Asia, and hope to approve projects worth of US$4 billion in 2019. This much-anticipated inaugural transaction in the debt capital markets attracted over 4.4 billion orders from over 90 investors across the globe representing 27 countries. The capital raised will further catalyze the Bank's projects in sustainable infrastructure development, cross-border connectivity and ESG Investing Principles in Emerging Asia.

National Climate Funds

Many countries have established National Climate Funds (NCFs) as dedicated financing windows to comply with their commitments with the Paris Agreement and other global conventions on climate change along with meeting domestic support to climate change and environment sustainability efforts. Some of the functioning NCFs and their objectives are mentioned in Table 1. As illustrated in Table 1, the objectives of the NCFs are manifold ranging from providing grants for environmental

conservation in Bhutan to sustainable natural resources management in Lao PDR, to securing external funding for developing technical and institutional capacity.

The National Climate Funds have different funding structures. It is observed from Table 2 that the sources of funding includes contributions by the respective national governments, grants from the World Wildlife Fund (WWF), grants from the multilateral development banks like the World Bank, Asian Development Bank, etc., levies on CDM projects, levies on petroleum products, contributions by bilateral and multilateral donors.

Major Issues in Green Finance

Green finance play a key role in adapting and mitigating environmental damages, especially the consequent impact of climate change on the economic system and human society. According to the Intergovernmental Panel on Climate Change (IPCC), climate change will amplify existing risks and create new risks for both nature and human habitats. As the severity of

Table 1: National Climate Funds

Name of fund	Year of Establishment	Objectives
Bhutan Trust Fund for Environmental Conservation	1991	Supporting environmental conservation in Bhutan by providing grants for government agencies, local non-governmental organizations, grassroots communities and qualified Bhutanese individuals for conservation projects.
Lao PDR: Environmental Protection Fund	2005	Strengthening environmental protection, sustainable natural resources management, biodiversity conservation and community development in Lao PDR.
China Clean Development Mechanism Fund	2007	Managing government revenue from CDM projects to provide immediate supports for line ministries to conduct policy studies, international negotiation, capacity building and public awareness and to pilot innovative economic and financial instruments to reduce risks and remove market barriers of climate investments in China
Thailand: Energy Conservation Promotion Fund	1992	Managing government levies collected on petroleum products to finance the promotion of renewable energy and energy efficiency in Thailand
Cambodia Climate Alliance Fund (CCCA) Trust Fund	2010	Securing external funding for priority interventions to develop technical and institutional capacity at national and sub-national levels to address current and future climate related challenges.
Micronesia Conservation Trust	2002	Support biodiversity conservation and related sustainable development for the people of Micronesia by providing long term sustained funding
Tuvalu Trust Fund	1987	Contribute to the long-term financial viability of Tuvalu by providing an additional source of revenue for recurrent expenses of the Government of Tuvalu.

Source: Irawan, Heikens and Petrini (2012).

the climate change problem for the society is emphasized by several scientific analyses and forecasts, specific plans involving financial support have been discussed to solve this matter. Green finance as targeted financing can support green growth. Since green growth is a relatively new paradigm which combines environmental sustainability and economic growth, a financial role that meets capital funding requirements from industries is necessary to facilitate it.

Noh (2010) points out the reasons for which the importance of green finance is growing in the recent years. First, the risks from environmental pollution and depletion

Table 2: Sources of Funding of National Climate Funds

Name of fund	Type of Fund	Capital	Total capital/assets managed
Bhutan Trust Fund for Environmental Conservation	Endowment fund	Grants from WWF, Government of Bhutan, GEF, Netherlands, Norway, Finland, Denmark, and Switzerland	Total assets as of 2010-2011: US$ 42.3 million
Lao PDR: Environmental Protection Fund	Endowment and sinking funds	Grants and loans from the World Bank and ADB, contributions from businesses, and interests or benefits from the investments	Total incomes (2006-2010): US$ 13.9 million
China Clean Development Mechanism Fund	Revolving fund	A portion of levies on CDM projects in China collected by the government, earnings from CDM Fund business operations, donations from international, domestic institutions, organizations and individuals	Total assets (end of 2011): US$1.58billion (RMB 10 billion)
Thailand: Energy Conservation Promotion Fund	Revolving fund	Imposed levies on petroleum products	Annual income: US$ 225 million (THB 7 billion)
Cambodia Climate Alliance Fund	Sinking fund	Grants from bilateral donors, including the European Union, Sweden, Denmark, and UNDP.	Committed donor contributions: US$ 8.9 million
Micronesia Conservation Trust	Endowment and sinking fund	Grants from the US Department of the Interior, the Federal Republic of Germany, UNDP-GEF, Packard Foundation, SGP and The Nature Conservancy.	Total endowment: US$ 11.2 million; Total donations for sinking fund: US$ 7 million
Tuvalu Trust Fund	Endowment fund linked to a revolving fund	Contributions from the Governments of Tuvalu, Australia, New Zealand, United Kingdom, Japan, South Korea	Total assets: A$127 million (Maintained Value as of 2012)

Source: Irawan, Heikens and Petrini (2012).

of natural resources are increasing. Therefore, firms have to be prepared to handle those risks to avoid potential economic losses. Second, the stakeholders require firms and financial agencies to be socially responsible. Third, the seriousness of the problem has recently been magnified. In other words, there has been a change in social awareness of crises such as climate change, lack of natural resources, and environmental destruction. Fourth, there is an increasing recognition of sustainability in firms' management paradigms. He also highlights the challenges that prevent smooth funding of green industries. First, investing in green industries has a high level of uncertainty. This is because most green industries have intangible assets rather than tangible assets. Second, investing in green industries is based on future growth potential from a long-term perspective. Third, there is information asymmetry between investors and green industry companies, which may consequently cause imbalance of power in transactions and capital market failures. Therefore, a new approach that is different from traditional finance is required to support green growth.

Countries which have sustainable development finance policies include Brazil, Bangladesh, Canada, China, Hong Kong, France, India, Indonesia, Japan, Korea, Kenya, Mongolia, Netherlands, Philippines, Singapore, Thailand, Turkey, United Kingdom and Vietnam. The transition towards a low-carbon and climate-resilient economy requires the investment of significant economic resources in "green" sectors (Campiglio, 2016). The UNEP estimates that the annual investment necessary to ensure green economy over the period 2010–2050 will be approximately 2 per cent of global GDP. One of the most relevant features of environmentally sustainable investments particularly in clean energy sources and green technologies is the inclusion of multiple technologies at different stages of maturity; each of these technologies may require a different type of financing. Moreover, the funding requirements for a sustainability transition may significantly exceed the capability of the public sector, demanding substantial involvement from private sources of financing and more tailored use of existing funds. From this perspective, green financing plays a critical role in fostering firms' environmentally sustainable investments, supporting countries to reduce emissions, de-carbonize economies and adapt to the consequences of climate change.

Following Höhne, Khosla, Fekete and Gilbert (2012), green financing can be defined as the whole of "financial investments flowing into sustainable development projects and initiatives, environmental products, and policies that encourage the development of a more sustainable economy." Accordingly, green financing is not limited to climate finance (i.e. the set of financial tools specifically aimed at mitigating greenhouse gas emissions and adapting to climate change), but includes all financial products and services aimed at a wider range of environmental objectives, such as industrial pollution control and water, sanitation and biodiversity protection. Moreover, it comprises the operational costs of green investment, the costs that are generally not included within the definition of green investment e.g. project preparation and land acquisition costs but can pose relevant financing challenges (Zadek and Flynn, 2011).

Green financing encompasses numerous financial instruments such as public funds, venture capital, business angels, project financing, equity, debt, pension funds and green infrastructure bonds. Many are tailored to a specific developmental stage of a green project: venture capital is employed with unproven and untested technologies; project financing is used for mature technologies and green infrastructure bonds are used in the latter stages of a project e.g. operational refinancing. A key feature of all green financing instruments is that those investment and lending decisions happen according to environmental screening

and risk assessment with the aim of meeting environmental sustainability standards (Volz et al., 2015). In other words, green financing takes environmental factors into account throughout the investment and lending decision making, ex-post monitoring and risk management processes (PWC, 2013).

In this regard, investors should be driven to green investment for various reasons, including ethical considerations, advantageous return profiles, legal or regulatory constraints and improved investor reputation (Della, Kaminker and Stewart, 2011). An increasing body of literature is devoted to assessing green financing effectiveness by investigating the way in which smaller amounts of finance can be used to enable a sustainability transition (Nakhooda and Norman, 2014). In this framework, Chaum et al. (2011) suggest that effectiveness of green financing depends on different factors, including the efficiency of the green project, the sustainability of the funded investment and transparency of the decision making processes. However, compared to other types of investment projects, green projects exhibit a number of case-specific characteristics. First, most projects produce cash flows and returns in the long term only, despite the large upfront investments required (Ticci and Gabbi, 2014). Second, they often show an unattractive risk/return profile due to the relative immaturity of green industries; this increases the perception of risk from investors associated with the future evolution of the technologies and markets (Campiglio, 2016).

Although some green technologies are developing quickly, they are still in the early stages of market penetration, and this significantly raises the market volatility associated with these kinds of investments. Additionally, the risks for investors are increased by market distortions due to the maturity of traditional high-emission technologies. Third, green investments are perceived as strongly dependent upon public support, which is often unpredictable and not transparent. Consequently, political instability and the uncertainty of the regulatory and policy environment represent an additional risk for investors (Ruppel and Luedemann, 2013). All of these features significantly contribute to reducing the attractiveness of green investments to many investors, generating a financial gap and reducing the overall funds available for green projects, especially in small and medium enterprises. In other words, according to the finance literature, the capital market frictions that arise from green investments increase the cost of external capital for enterprises that try to finance their investment projects primarily through internal funds (Romo, 2014). Therefore, any shortage of internal financial resources makes companies "financially constrained," and this prevents them from funding their desired investments (Savignac, 2008).

As stated in the Copenhagen Accord, the green finance would come from various sources—public and private, bilateral and multilateral, and alternative sources of finance (UNFCCC, 2018). Although Private Sector Facility (PSF) has been set up to encourage private participation, the facility's share in green finance has not been settled (Mathy and Blanchard, 2016). Private finance can complement public finance activities. However, the former is not consistently reliable because of insufficient investment motivation, which implies that public finance should go first to cultivate the market in order to attract private investment. Private sector investors deploy their capabilities and capital on investments only to the extent that risk-adjusted returns are positive and competitive. Private investors focus on countries with good investment climates and well-developed capital markets where the regulatory environment and pricing signals are clear and stable, and these elements are not provided in many developing countries (Pauw, 2015; Pauw and Pegels, 2013).

Several studies also focus on leveraging private finance using the existing public fund, but they are considered gray literature and have not reached an agreement on the leverage

ratios because of varying definitions of what constitutes climate finance and how it can be mobilized, as well as the unavailability of data and inconsistencies in the methodologies (Hascic et al., 2015; Jachnik, Caruso and Srivastava, 2015; Ockenden et al., 2012; Whitley, Chiofalo and Barnard, 2014). The 2015 Paris Agreement stipulates that developed countries should provide financial resources to assist developing countries with respect to both mitigation and adaptation activities. The initial resource mobilization period of GCF lasts from 2015 to 2018. As of July 2016, the GCF has raised US$10.3 billion equivalent of pledges from 43 state governments. The funds raised are mainly voluntary. Several developing countries e.g., Mongolia, Vietnam, and Indonesia have pledged to finance the GCF. However, most of them have not signed their commitments. Therefore, excluding the three developing countries, the remaining 40 developed countries are assumed to finance the GCF. Presently, no formula to allocate the responsibilities among different donor parties has been agreed upon. Establishing a clear method may contribute to the stabilization of the finance contributions for a long period.

Existing research on sustainable finance in developing countries such as Kenya and Colombia highlights that many of the barriers constraining sustainable investment are not specific to sustainable finance. In fact, those are more general barriers to attracting and allocating capital through the financial system. For example, the main barriers to inclusive green investment in Kenya were identified in a UNEP Inquiry study as short-term outlook in the investment chain, a fragmented institutional investor market and high returns to government bonds which tend to crowd out investments in other asset classes.

Reflecting the importance of the banking system, many developing countries including Kenya, Nigeria and Mongolia are taking action, both to mobilize finance and to mainstream sustainability through the banking system. The Kenya Bankers Association, Mongolian Bankers' Association (MBA) and Nigeria Bankers Committee and the commercial banks in Kenya, Nigeria and Mongolia have developed a set of universal principles to guide banks in balancing their immediate business goals with the economy's future priorities and socio-environmental concerns. The Central Banks and the Bankers Associations are forming a partnership to promote the effective implementation of the market-led Sustainable Finance Principles, and have also recently joined the global Sustainable Banking Networks supported by the International Finance Corporation (IFC). The process envisaged will begin with capacity building and internalizing the principles, followed by implementation and direct regulation (on credit policy, risk assessment and directed lending) over time. This will allow the banks to build the required capacity for effective and meaningful implementation. It will also give the regulators time to build the internal capacity of its supervision arm.

Country Experiences

Three countries are chosen for the study to understand the green finance initiatives and environmental & societal risk management practices.

Nigeria

In 2013, the Nigerian government launched the National Policy on Climate Change. The main objective was to implement measures that will promote low carbon as well as sustainable and high economic growth. Although the Policy does not specifically mention green finance flows, Nigeria faces vast investment needs for the transition to a sustainable, low-carbon and climate resilient economy. The government has made it clear that private sources of finance are needed. Nigeria issued a 10.96 billion Naira Sovereign Green Bonds (the first in Africa) in

December 2017 to increase capital flows for climate finance (ICF, 2018). In 2019 Access Bank Plc has announced the issuance of the 1st certified corporate green bond in Africa, raising N15 billion to $41 million.

The endorsement of Nigerian Sustainable Banking Principles (NSBP) by the Central Bank of Nigeria ensures a strong level of involvement from financial institutions. The principles, accompanied by methodological notes and specific sector guidelines (oil and gas, power and agriculture), provide the financial institutions with adequate and detailed guidance and tools in order for them to build their own E&S policies. Committed financial institutions are required to report and disclose their E&S policies and performance on a biannual basis. The financial markets are involved in the promotion of sustainability practices through the corporate governance rating system and the Nigerian Stock Exchange's membership of the SSE Initiative (SBN, 2018).

The Nigerian government launched the National Policy on Climate Change in 2013, the main objective of which is to implement "measures that will promote low carbon as well as sustainable and high economic growth". Although the Policy does not specifically mention green finance flows, Nigeria faces vast investment needs for the transition to a sustainable, low-carbon and climate resilient economy. The government has made it clear that private sources of finance are needed. Nigeria issued a 10.96 billion Naira Sovereign Green Bonds (the first in Africa) in December 2017 to increase capital flows for climate finance.

The size of the average annual sustainable investment opportunity up to 2030 is just under US$100 billion. Realizing this sustainable investment opportunity would contribute to the continued transformation of Nigeria into a global powerhouse to support a growing population in a sustainable manner and provide good returns for investors in parallel.

The Nigerian Government has spoken of its plans to seriously scale-up its green finance initiatives over the coming year which includes issuing green bonds worth $150 billion naira ($415 million) to help fund a range of sustainable and climate-sensitive projects beside the $10 billion naira issuance in December 2017 to see the success of their first issuance. Based on the success of the first issue, their target for 2018 is N150 billion. Already they are getting more proposals and support"

The ratings agency, Moody's, gave an 'excellent' grade to its original issuance as the government had created the structures needed to track how the proceeds were being used. It was also the first African country to offer a sovereign green bond, which was also certified by the Climate Bonds Initiative. The organisation expected the global green bond market to hit US$300 billion in 2018, it was dominated by European countries.

One of the new projects, the Energizing Education Programme, aims to provide reliable, off-grid power supplies to 37 universities and 7 university hospitals across the country. These will utilise renewable energy in the process, particularly solar and hydropower.

Mongolia

The Mongolian Sustainable Finance Principles are the result of a joint effort by the Mongolia Banking Association (MBA), the government (the then Ministry of Environment, Green Development and Tourism), and the banking regulator (the Bank of Mongolia).The principles are accompanied by guidance notes on their implementation, which include reference to relevant international standards and good practice. The MBA provides training programmes that are customized to specific roles in a lending process or in a bank. The MBA established a sister entity in December 2017, named the Mongolian Sustainable Finance Association, with a mandate to promote sustainable finance in the entire financial sector.

In Mongolia, the financing of green policies and sectors is mainly determined by the state budget, investment by international donors, and natural resources fees. The ADB has supported Mongolia's finance sector through US$130 million in lending programs, US$109 million in technical assistance (TA) projects, and US$96 million in private sector investments. The Development Bank of Mongolia (DBM) is a government-owned, policy-oriented development finance institution in Mongolia The Central Bank and the Financial Regulatory Commission could play an important role in green finance by introducing policy frameworks and standards that promote the issuance of green financial products, such as through Green finance guidelines and frameworks; Directed green credit policy instruments (e.g. subsidized loan rates for priority sectors, interest rate discounts, guarantees); and Differentiated reserve requirements; Differentiated capital adequacy requirements.

At the core of Mongolia's transition to a green economy is the National Green Development Policy adopted in 2014. The Policy emphasizes six strategic objectives, each with clearly defined, measurable targets such as:

- Reducing GHG emissions in the energy sector by increasing energy efficiency by 20 per cent by 2030, increasing the share of renewable energy in total energy generation to 20 per cent by 2020 and 30 per cent by 2030, renewing energy and industrial sector technologies, reducing wasteful consumption and losses, and optimizing pricing policies;
- Reducing building heat losses by 20 per cent by 2020 and 40 per cent by 2030;
- Reducing solid waste for landfills by 20 per cent by 2020 and 40 per cent by 2030; and others.

The total investment needed to finance the Mongolian National Green Development Policy is estimated at US$6.96 billion. The NDC targets are based on the NGDP objectives. Estimations of adaptation measures as part of the NDC show that Mongolia will need around US$2.7 billion to meet climate finance goals. The implementation of the mitigation measures is estimated at another US$3.5 billion until 2030. The total annual financing needed to achieve Mongolia's green development and climate targets could therefore be estimated at US$413 million, breaking down the total financing needs of around US$6 billion over 15 years. The majority is medium and long-term investment with 80 per cent expected to be financed from international and private sources (SBN, 2018).

Kenya

Kenya's involvement in addressing environmental, social and governance (ESG) issues began in the 1990s with the Code of Corporate Governance. In 2016 the country launched the Climate Change Act to mobilize both public and private sector actors for transition to a low-carbon economy. Kenya launched its Green Economy Strategy and Implementation Plan (GESIP) in 2017. In 2015 the Kenya Bankers Association (comprising 47 active bank members) launched the Sustainable Finance Initiative (SFI) Guiding Principles (the Principles), which aim to raise awareness on sustainable practices and ESG risks within the banking sector, in particular through a dedicated e-learning training platform intended to reach all Kenyan bank employees. The application of the principles is not mandatory. The principles could be strengthened if practical guidance and shared definitions are provided. Some of these aspects are addressed via the e-learning platform which is now publicly available to all the banks. The country is striving to promote green financial flows, especially through the Climate Change Act (accompanied by a Climate Change Fund) and Kenya's Green Bonds program. Kenya has not yet launched green finance guidelines covering the operations of the entire financial market. However, a draft Green Bond Guidelines background document has been developed to promote green financing in the country.

According to the Kenya National Climate Change Action Plan 2013-2017, extreme climatic events could cost the economy as much as US$500 million a year, equivalent to about 2.6 percent of the country's GDP in 2013. Aggregate models project that these economic costs will increase in the future, with some sources suggesting they could reach the equivalent of seven per cent of GDP by 2020. Kenya's aspiration to become a middle-income country based on sustainable development is premised on strong investment growth. The government targets investment growing from 24.7 per cent of GDP in 2013-2014 to 30.9 per cent of GDP by 2017-2018. The current level of public sector investment of between 8 per cent and 10 per cent is expected to be sustained throughout the period, with the bulk of the increase in overall investment expected from the private sector. The Medium Term Plan (MTP2) target is about US$58 billion in private investment between 2013 and 2017. Priority sectors are tourism, agriculture, livestock and fisheries, trade, manufacturing, business process outsourcing and information-technology enabled services, and oil and other minerals.

Further to this, devolved governments (County Government) are customizing the climate change Act in their system of operations by developing relevant laws, policies and allocate funds in its annual budget. Technological advancement in areas of mobile money is notable. Examples include Kenya, where the rapid growth of mobile banking has become a platform to enable renewable energy: several companies offer pay-as-you-go solar home systems that use mobile payments to unlock the use of the solar panel and battery system.

Conclusion

Successful green finance for developing countries will go a long way in meeting the Sustainable Development Goals (SDGs) without adversely impacting the environment. Developing countries need strong institutions that works in collaboration with the developed countries and with both the private and public national and international institutions to implement the green finance.

In particular, the paper sets out some of the needs and concerns particular to developing countries, as well as innovations that have emerged to address some of these specific aspects. It highlights the importance developing country actors place on embedding green into a broader sustainable finance lens, the significance of international developments in greening the financial system, given their dependence on foreign direct investment, and the evidence of and potential for leapfrogging in aligning their financial systems to sustainable development, for example, through the deployment of fintech. All the three sample countries e.g. Kenya, Nigeria and Mongolia have initiated several major on green finance.

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IV

Environmental Provisions in Regional Trade Agreements

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IV

Environmental Provisions in Regional Trade Agreements

Introduction

The nature and scope of trade negotiations have undergone radical shifts over the years both at the multilateral level led by the World Trade organisation (WTO) and in regional and bilateral preferential trade agreements such as Regional Trade Agreements (RTAs) and Free Trade Agreements (FTAs). As negotiating space in tariffs has already shrunk, non-tariff measures (NTMs) become the major instruments of trade policy in the recent years. The much-discussed Singapore issues that include government procurement, investment and competition and trade facilitation attracted worldwide contestations on the merits of their inclusion in the WTO trade negotiations. Likewise, inclusion of labour standards, environmental standards and intellectual property rights in failed Trans-Pacific Partnership (TPP) negotiations as different chapters of the legal text of the agreement have been quite contentious issues. Whether in RTAs/FTAs or in plurilateral negotiations, these so-called GATT-plus, GATT-extra and non-trade issues have increasingly appearing as new trade disciplines for negotiations (Bhagwati and Panagaria, 1996).

In particular, RTAs have begun to incorporate far-reaching, more comprehensive environmental and sustainability provisions, alongside conventional areas of negotiations on tariff reductions. These can be attributed to different factors like increasing awareness of climate change, striving towards sustainable development, immense pressure from environmental groups for countries to include them in trade agreements and the WTO's own failure to effectively address environmental and sustainability issues at the multilateral level.

Environmental provisions are emerging as new trade disciplines. The scientific rationale for incorporating environmental trade provisions in RTAs is not always easy to prove; hence not so easy to be endorsed by all the members of the WTO. However, for an environmental provision to create the impact it must be targeted, accompanied by mechanism of funding, information exchange and capacity building.

There is a need for qualitative approach using case studies of North American Free Trade Agreement (NAFTA) and The Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP). The two FTAs have been selected for the present study because NAFTA is the first FTA to include environmental provisions while the CPTPP is the latest and comprehensive in environmental provisions. An analysis of the case studies will reveal the effectiveness of implementation of the environmental provisions.

The Trade-Environment Debate

Very often, it is argued that free trade is bad for the environment and there can be no gains from it. The proponents of the Pollution Haven Hypothesis posits that countries with weak environmental regulations i.e. pollution havens (Cole, 2004), will attract polluting industries relocating from countries with more stringent environmental regulations (Eskeland and Harrison, 2003).), while others believe freer trade leads to higher income which eventually results in improved environmental quality, a hypothesis represented by the environmental Kuznets curve (EKC). The EKC suggests that a country's pollution concentrations rise with development and industrialization up to a turning point, after which pollution falls again as the country uses its increased affluence to reduce pollution concentrations (Kaika and Zervas, 2013).

While different theoretical paradigms hold strongly in certain contexts, none of these perspectives is entirely wrong. In fact, those differences further buttress the importance of both trade and environmental objectives. The world, in its current state, cannot do without the economic gains from trade, but humankind also needs a planet to live in, and to pass on to the next generation. Therefore, it has become increasingly important that we find a way to balance out the objectives of trade and environmental protection, and make them mutually supportive of each other.

There is now a great deal of research evidence supporting three major findings (Copeland and Taylor, 2004). The first finding supports the view that rising incomes affect environment quality in a positive way. This suggests that while assessing the effects of growth and trade on the environment, one cannot simply associate increased economic activity with increased environmental damage. Beneficial changes in environmental policy are likely to follow and this leaves the net impact on the environment unclear. The second major finding is that the previous consensus that environmental policy does not affect trade and investment flows was premature. A number of recent studies find that both trade and investment are influenced by the pollution regulations.

The third and more tentative conclusion is that there is little convincing evidence to support the pollution-haven hypothesis. While there is evidence of a pollution-haven effect, it is only one of many factors that determine trade patterns, and there is no evidence that it is the dominant factor. Although the policy debate is often characterized as a conflict between those for and against globalization, it is really a struggle over how the rules governing trade should evolve (Copeland and Taylor, 2004).

Nature, Type and Scope of Environmental Provisions

For the last four decades, several environmental problems such as pollution, global warming, ozone layer depletion, acid rain, deforestation, and desertification have remained a major focus of scientists, policy makers, and common public across the world. These problems are perceived as the major threats to the life-supporting environment of the earth, thus making our survival on the planet increasingly unsafe. In order to tackle these challenges, holistic knowledge about working of our life-supporting environment and thorough understanding of the dynamics of these problems become imperative (Halle, 2006).

Since no other academic discipline covers the above two knowledge requirements completely, environmental science evolved as an academic discipline to fill in this gap. Our life-supporting environment and various environmental problems are highly complex and require interdisciplinary efforts to understand them. Environmental science, therefore, integrates approaches of various academic disciplines to fulfil its objectives. Environmental science is defined as an interdisciplinary academic field that integrates various academic fields (particularly sciences) to study the structure and function of our life-supporting environment

and to understand causes, effects, and solutions of different environmental problems. In other words, environmental science is the scientific study of all the components or factors that make or influence our life-supporting biophysical environment.

The predictions of the environmental science and the dangers of human action and industrialisation on environment is being increasingly realised by the common people. As a result, the awareness about adaptation and mitigation measures among people, firms and government is quite high in the recent years. It has become contentious areas of negotiations in trade negotiations particularly in RTAs and mega-RTAs.

A provision can be defined as a legal clause or condition contained within a contract that requires parties to the contract to perform a particular requirement. Environmental provisions are simply provisions present in trade agreements (or side agreements linked to an FTA) that deal with environmental issues. The scope of the environmental provisions basically corresponds to the objectives of: (i) Management of natural resources, (ii) Conservation of ecosystem and biodiversity; and (iii) Prevention and control of pollution.

There are various types of environmental provisions which are often used in the context of trade. The OECD has identified the following types of environmental provisions which are as follows:

- *General provisions*: Many RTAs include a reference to environment or sustainable development in the preamble, through which the Parties establish broad objectives for the entire agreement.
- *Exceptions*: Provisions based on or fully incorporating the general exceptions of Articles XX(b) and XX(g) of GATT or Article XIV(b) of GATS contribute to the definition of the scope of the agreement.
- *Environmental law*: to maintain or improve environmental standards and create a level playing field for trade between the Parties, by ensuring that they cannot secure a trade advantage through low standards of environmental protection. Such provisions typically include:
  - » ensuring that domestic laws and policies provide for higher levels of environmental protection;
  - » a commitment not to derogate from environmental laws in order to gain a trade advantage;
  - » efforts to improve levels of environmental protection;
  - » effective enforcement of environmental laws; and
  - » effective access to remedies for violations of environmental laws.

Partnership and co-operation set out broad arrangements for environmental co-operation with few specific details. Others establish a commitment in greater depth by establishing a specific mechanism for implementing co-operation activities.

Specific environmental issues are promotion of trade in environmental goods and services; renewable energy; energy conservation; climate change; biodiversity; control of invasive species; air quality; water quality; soil quality; marine pollution; water resources; fisheries resources; forest resources; illegal timber; desertification. Many RTAs do have specific implementation mechanism. However, many of those RTAs those have established an implementation body give little indication of its responsibilities.

Mechanisms to address environmental protection have been a part of international trade agreements since the General Agreement on Tariffs and Trade (GATT) that was signed in 1947. While the GATT does not contain affirmative environmental commitments, Article XX lays out a number of specific exceptions to its provisions including exceptions for natural

Table 1: Trends in Environmental Sustainability Provisions

Category	US	EU	Canada	Chile	EFTA	Japan	Australia
Main environmental provisions	Ozone layer, marine environment, biodiversity, fisheries, endangered species, conservation of the environment	Fisheries, aquaculture, environmental protection and forests, scientific & technical information	Fisheries and forests, ozone layer, aquaculture, endangered species, environmental protection, scientific & technical information	Ozone layer, endangered species, marine environment	Conservation of the environment	Conservation of the environment, fisheries, forests, endangered species, biodiversity, ozone layer, marine environment	Conservation of the environment, endangered species, biodiversity, ozone layer, marine environment,
Incorporation	Preamble, environmental chapter	Trade and sustainable chapter	Side agreements	Preamble, side agreements, environmental chapter, general exceptions,	Preamble and general exceptions	Body f the text, preamble	Preamble, environmental chapter
Enforceable via dispute settlement	Yes	No	No	Yes, but not all agreements	No	No	No
International standards	MEAs	MEAs	MEAs	MEAs	MEAs	MEAs	MEAs

resources and protection of public health to allow for environmental policy measures.

Since its establishment in 1995, the World Trade Organization (WTO) has tried to address environmental issues through its dispute settlement system and through the Doha Round of trade negotiations concerning the relationship between existing WTO rules and international environmental treaties, known as "multilateral environmental agreements" (MEAs). While there has been much focus on the GATT and WTO dispute settlement systems, they have heard only nine Article XX cases during its existence. In addition to the WTO's Doha Round, a plurilateral group of WTO members is negotiating the elimination of tariffs on environmental goods such as wind turbines or solar panels. Further, the reduction and elimination of fishing subsidies and fossil fuel subsidies are being negotiated in the WTO, G-20 and other fora. This signifies the rise of environmental provisions and related concerns in the RTAs. Following the failure of the Doha negotiations, which included trade and environmental issues the world witnessed the proliferation of RTAs which apparently have commitments including environmental provisions (Chaturvedi and Nagpal, 2003).

The implementation tools (mechanisms) for environmental provisions typically involves the following:

- Mechanism for dialogue on implementation between Parties with a record of the meetings made public;
- Consultation and arbitration mechanism to resolve disputes when dialogue fails to address implementation shortcomings;
- Public accountability mechanism such as public submissions and public sessions, access to environmental information, participation in decision-making processes and effective access to proceedings; and
- Periodic motoring and review by the Parties (periodic reports and review meetings)

Article 20.1 of Common Market for Eastern and Southern Africa (COMESA) defines environmental provisions as statute or regulation of a party including any that implements the party's obligation under a multilateral environmental agreement. Furthermore, the primary purpose is the protection of the environment or the prevention of a danger to human life and heath through the control of pollution and conservation of biological diversity.

Understanding the possible channels of environmental provisions in RTAs that may deliver environmental benefits is an important step in setting up the empirical framework. There is some anecdotal evidence on how RTAs with environmental provisions might promote environmental outcomes. According to George and Yamaguchi (2018) environmental provisions in RTAs can seemingly contribute to improve environmental quality.

By examining the trends in environmental sustainability provisions in the several RTAs mostly agreed by the United States, Canada, EU, Chile, Japan, Australia and European Free Trade Agreement (EFTA), it is found environmental provisions are mostly with respect to environment protection, biodiversity conservation, ozone layer depletion, fisheries, marine environment and scientific & technical information (Table 1). While for some RTAs these provisions appear in the preamble and the body of the text of the agreement, for some other there are separate chapters on environment. Further, EU adopts a soft approach to sustainable development provisions in RTAs whereas the United States follows strong provisions with respect to environment sustainability ranging from NAFTA to TPP (Draper, Khumalo and Tigere, 2017).

Case Studies

NAFTA

The first trade agreement that introduced the concept of the environmental provisions

was North American Free Trade Agreement (NAFTA), which is an agreement between the USA, Canada and Mexico. It contained weak environment provisions, in a side agreement known as the North American Agreement on Environmental Cooperation (Jinnah and Morgera, 2013). In contrast with NAFTA US-Peru preferential Trade Agreement in 2009 contains one of the most prescriptive forms of environmental provisions. It goes as far as requiring a development of new domestic environmental policies and institutions (Ghosh and Yamarik, 2006).

The main NAFTA agreement has environmental provisions in its preamble and five chapters (1, 7, 9, 11 and 21). The preamble sets out the main purposes of the agreement and three of its 15 purposes relate to the environment, including: undertaking each activity "in a manner consistent with environmental protection and conservation"; promoting sustainable development; and strengthening the development and enforcement of environmental laws and regulations.

In Chapter 1, Article 103 gives precedence to the NAFTA agreement in the case of inconsistencies between it and the other agreement except for three multilateral environmental agreements and two bilateral agreements (Article 104 and Annex 104.1). The multilateral agreements are:

- The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES);
- The Montreal Protocol on Substances that Deplete the Ozone Layer; and
- The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal. – all three countries are signatories of these three Multilateral Environment Agreements (MEAs).

The two bilateral agreements are the Agreement between the Government of Canada and the Government of the United States of America Concerning the Transboundary Movement of Hazardous Waste and the Agreement between the United States of America and the United Mexican States on Cooperation for the Protection and Improvement of the Environment in the Border Area. The inclusion of the MEAs, according to Hufbauer et al. (2000), is recognition by Canada, Mexico and the United States of the legitimacy of trade provisions in MEAs as enforcement mechanisms.

Chapters 7 (Section B) and 9 are concerned with sanitary/phytosanitary (SPS) measures and technical barriers to trade (TBT), respectively. While generally setting international standards as the appropriate guidelines, the SPS provisions in NAFTA allow the signers to utilize measures that are stricter than in other international agreements.

The Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP)

The CPTPP is a free trade agreement between Canada and 10 other countries in the Asia-Pacific region: Australia, Brunei, Chile, Japan, Malaysia, Mexico, New Zealand, Peru, Singapore and Vietnam. Once fully implemented, the 11 countries will form a trading bloc representing 495 million consumers and 13.5 per cent of global GDP, providing Canada with preferential access to key markets in Asia and Latin America. The CPTPP entered into force on 30 December, 2018.

In Art 270.2 of the CPTPP the Parties reaffirm their commitment to effectively implement the following multilateral environmental agreements in their laws and practices:

- The Montreal Protocol on Substances that Deplete the Ozone Layer
- Basel Convention on the Control of Trans-boundary Movements of Hazardous Wastes and their Disposal
- Stockholm Convention on Persistent Organic Pollutants

- The Convention on International Trade in Endangered Species of Wild Fauna and Flora
- The Convention on Biological Diversity
- The Cartagena Protocol on Biosafety of the CBD

Kyoto Protocol

- Rotterdam Convention
- The Cartagena Protocol on Biosafety of the CBD

Various countries have simulated effets of various environmental provisions in the CPTPP on their economies. The benefits would be the following:

- The inclusion of provisions on the environment in CPTPP:
- Provides a valuable avenue for New Zealand to advance environmental and conservation interests internationally by working collaboratively and pooling resources with other CPTPP countries;
- Promote high levels of environmental protection and effective enforcement of environmental laws;
- Protect within its territory of any wild flora and fauna taken or traded in violation of its law, the trade of wild flora and fauna transhipped though its territory as well as threatened fish stocks;
- Prevent the illegal trade of protected wildlife;
- Give impetus and support to related initiatives in the WTO, APEC and elsewhere;
- Promote collective action to address climate change through actions that enable each CPTPP country to transition to a low emissions and resilient economy;
- Creates opportunities for cooperation on matters of importance to New Zealand including energy efficiency, low emissions technologies (e.g. transport), renewable energy, forestry, and information sharing; and
- encourage the development and use of flexible voluntary mechanisms to protect natural resources and the environment, recognising that those developing or applying voluntary environmental standards should do so in a transparent way that does not create unnecessary barriers to trade.
- The CTTPP has enhanced the environment provisions of New Zealand's towards policy enhancements building capacity and capability.

Disadvantages of Entering CPTPP (New Zealand)

All obligations in the chapter are subject to the CPTPP dispute settlement mechanism. However, the Environment chapter has specific procedures requiring consultation that must be used before the dispute settlement provisions of CPTPP are employed. In addition, the Disputes Settlement chapter requires Parties to make every attempt to resolve disputes through cooperation and consultations before resorting to the procedures provided for in the chapter. This carries the potential for application of trade sanctions or monetary compensation for breaches of the Environment chapter obligations. While this discipline creates a risk of action being taken for alleged breaches, it reinforces the importance of adhering to the commitments to promote high levels of environmental protection and to effectively enforce environmental laws. New Zealand's robust practice in environmental policy, and the careful design of the relevant disciplines and dispute settlement mechanism in the CPTPP means these risks are very low. The CPTPP Parties agreed to suspend the phrase "or another applicable law" in Article 20.17.5. The suspended language would have required Parties to take action to address violations to the wildlife trafficking laws of countries that

were non-Parties to the CPTPP. While this was not New Zealand's preferred outcome, other partners felt they raised practical difficulties around the nature of evidence required, the appropriate authority to take action, and knowledge of non-Parties' laws.

Withdrawal of USA from the CPTPP, and Environmental Provsions

After President Donald Trump withdrew from the TPP, the remaining eleven signatories, known as the TPP-11, continued talks and salvaged the pact without the United States. While much of the CPTPP remains unchanged from the original TPP, trade experts say that there are important differences. These are largely changes to or the removal of measures pushed by Washington that were unpopular among the other participants.

The largest and most substantive change centers on intellectual property. In TPP negotiations, Washington pushed hard for longer copyright terms, automatic patent extensions, and separate protections for new technologies, including so-called biologics, a cutting-edge medical technology. Largely opposed by the other participants, these provisions were removed from the CPTPP. The investment chapter was also modified. Members kept the Investor State Dispute Settlement (ISDS) provision, but they limited its scope. Some timelines for implementation of certain measures were also altered, and some labor and environmental rules partially relaxed.

CPTPP members specify that the removed provisions have only been suspended, a distinction intended to signal that they could be easily reinstated if the United States decided to rejoin. Trump has floated the idea of returning to the deal, but trade analysts say that his preference for bilateral trade agreements and his willingness to impose tariffs on allies, including Japan, have forestalled that possibility for the immediate future.

Inclusion of Environmental Provisions in FTAs and Implementation of Domestic Environmental Laws?

The innovative and interactive online tool TREND analytics based on the Trade & Environment Database (TREND), which tracks almost 300 different environmental provisions in the texts of about 630 FTAs, offers new ways of going further and of undertaking research to generate fine grained information on the interplay between trade and the environment, providing fresh insights into a number of relevant policy discussions. According to TREND today, 85 per cent of all FTAs already contain environmental provisions. FTAs included around 60 different environmental provisions by 2015 on average. Both industrialised as well as developing and emerging economies include them in their FTAs (Berger, Brandi, Bruhn & Chi, 2017).

One reason is that, under the joint pressure exerted by environmental and labour groups, the then US president Bill Clinton decided not to sign NAFTA unless the side agreements on labour and the environment were also concluded. The second most innovative agreement is the 2007 US-Peru Agreement, containing 18 regulatory innovations. Again, domestic politics can also explain this exceptionally high number of environmental provisions. Other highly innovative agreements include the Lomé agreements between the European Union and African, Caribbean and Pacific countries as well as the Single European Act signed in 1986 by the members of the then European Community. The fact that the most innovative agreements were either signed by the United States or the European Union suggests that these countries share a certain preference for including environmental provisions in PTAs and enjoy a similar bargaining power, conducive to regulatory innovations.

Conclusion

Like Singapore issues, environmental provisions are the most contentious issues in the multilateral and regional trade agreements. Many consider inclusion of environmental provisions as non-trade issues and new ways of restricting market access of the developing and less developed economies. On the other hand, it is not entirely baseless to protect the human, plant and animal heath, conserve biodiversity, and reduce environmental protection. While the Dispute Settlement Body of WTO has been dealing with environment-related disputes for past several years, the Committee on Trade and Environment of WTO facilitate country interactions on trade-related environmental concerns. Like labour standards and intellectual property issues, many RTAs have included environmental provisions in the trade negotiations; the failed TPP Agreement being the most-debated one in the recent years. Among the RTAs, NAFTA, CPTPP, and other RTAs where the United States, Canada, EU and others are parties to the agreements the scope of environmental provisions are wide and deep. Even after withdrawal of the United States, there is little evidence of weakening of environment-related provisions in the negotiated text. Moreover, the implementation and dispute settlement mechanisms are rather weak and hence weak enforceability as well.

Regardless of the existing provisions with respect to environmental concerns, developing countries need to fully assess the merits of such provisions in RTAs and build capacity to comply with the globally accepted rules and regulations relating to environmental provisions as per the WTO procedures. At the same time, there need to be compatibility between domestic and external sector norms with respect to environmental provisions in trade. As such, developing countries are not opposed to environmental provisions in trade; rather they have reservations on non-compliance of developed countries to harmonization of standards and practice of different standards in different countries. In nutshell, developing countries need to examine the specific advantages for them in any trade negotiations than mere agreement on those matters as part of standard template of trade agreements.

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